

January 10, 2012

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Mr. Ted Wackler
Deputy Chief of Staff
Office of Science and Technology Policy
725 17th Street, N.W.
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Re: FR Doc 2011-28621: "Public Access to Digital Data Resulting from Federally Funded Scientific Research:
FR Doc 2011-28623: "Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research"
Comments of American Business Media

Dear Mr. Wackler:

These comments are submitted on behalf of American Business Media (ABM), an association representing more than 200 business-to-business information providers such as publishers, producers of print and other publications and websites, and organizers of trade shows and similar events. ABM's members produce more than 2,000 high quality, business-to-business publications. From *Oil and Gas Journal* to *Advertising Age* to *Insect & Disease Control Guide*, ABM publications form an essential role in assembling and disseminating the industry-specific news and information needed by businesses in thousands of different fields. Because the issues are quite similar, these comments are similar to those filed in January 2010 in response to OSTP's inquiry regarding "Public Access Policies for Science and Technology Funding Agencies Across the Federal Government."

Many American Business Media members publish journals and periodicals about government-funded activities or containing Scientific, Technical, and Medical (STM) research and reference

information created by or on behalf of government agencies. Indeed, the United States has a long tradition of encouraging the dissemination through various channels of information created by the government or about government activities, including through publishers that report on the results of government-funded activities.

ABM supports the objectives of disseminating scientific research and developments in academic thought, and indeed as publishers ABM members take a leading role in informing the public about technical and scientific developments and research. As discussed below, ABM believes that government objectives relating to public access to important useful information can best be achieved through partnerships and cooperation with publishers like ABM members.

ABM offers the following comments which apply generally to both of the captioned inquiries, and more specifically to Question (2) posed in both inquiries (concerning means to protect the intellectual property interests of publishers).

Distinction between research and value-added copyrighted content. In any discussion of this topic, one must distinguish between (a) government-funded research and (b) the value-added articles and other content for which the publishers have copyright and other rights.

a. **Research.** The federal government, through various agencies, funds various research enterprises which generate outputs such as experimental data, technical reports, grant reports, and conference papers. Thus, if the agencies or the researchers so choose, they already have full rights to make available to the public the outputs of taxpayer funded research, such as through electronic posting of technical reports. OSTP's request for information 2011-28621 specifically refers to this right, by describing the government's right to share "the primary data, samples physical collections and other supporting materials created or gathered in the course of work under NSF grants."

b. **Value-added content from the publishing process.** The publication of STM research (unlike the research itself) is not funded by the government. Accepted author manuscripts and published journal articles contain substantial added value through the actions of publishers, as explained in further detail below.

Crucial role of publishers. While STM research or information would often not be produced without the support of federal agencies, publication and wider dissemination of peer-reviewed journal articles about the research to the public would not occur without the millions of dollars publishers spend each year on gathering, peer reviewing, editing, publishing, disseminating, and archiving their copyrighted works. Among other things, publishers play a critical role in scientific and medical discovery and knowledge by establishing and promoting journals, editing the journals or managing the appointment of journal editors and the ongoing development of journal editorial boards, establishing and maintaining editorial standards and procedures, editing and preparing articles for publication, and publishing and distributing the publications.

Put simply, the initial funding and conducting of government-funded research is only part of the process; the value added by publishers is critical to identifying, classifying, refining, evaluating, and disseminating useful results of such research.

Adverse effects of mandated public access. Various government agencies have recently sought to override publishers' copyrights in instances where they deem the information contained in copyrighted works important to the public. Such government attempts to mandate public dissemination of copyrighted works of STM materials nature is a growing threat to all information content providers and the millions of readers and users who rely on their work and publications.

Publishers, not the government, bear the costs and risks involved in the value-added editorial process. Moreover, publishers have invested in new electronic technologies which allow them to make their publications and the STM and other information they contain more widely and timely available at reasonable expense to interested persons, including leaders and decision makers in the industries that will put that the research results to practical and productive use. Publishers must recoup their investments through traditional subscription, sponsorship, advertising, and 'pay-per-view' fees. Copyright protections have maintained the incentives for publishers to continue to invest in STM and other journals and periodicals and have permitted such publishers to realize a reasonable return on their investments. These incentives are necessary to encourage the continuing traditional value-added efforts of publishers, and to allow publishers to expand and improve their electronic dissemination options.

Some agencies appear to believe that they can balance publishers' needs for exclusive initial publication against the agency's perceived need for mandated public access by requiring that the mandated public access not occur until a certain time period after initial publication. ABM believes, however, that even with such a delay, a program of mandated public access for publishers' copyrighted works would significantly decrease publishers' incentives for creating value-added content and threaten the traditional balance between government activities in disseminating information and the important role that non-government organizations play in furthering knowledge about that information. For example, considering that the Copyright Act generally grants publishers exclusive rights to control their copyrighted material for a period of 95 years, it is obvious that restricting publishers to an exclusivity period of only six months or a year would represent a drastic curtailment of their normal incentives, and would present them with an unnaturally short period in which to recoup their investment.

Publishers' revenue sources will be imperiled if the value-added products of publishers' activities will be made freely available to the public by the government. Such mandated access would directly negate the exclusive publication rights which the publishers have under copyright law, and those exclusive publication rights are in turn essential to publishers' ability to earn subscription, sponsorship, and advertising revenue.

Conclusion

ABM believes that OSTP should not recommend that outputs of the publishing process, such as accepted author manuscripts and published journal articles, be made freely available. Any such policy that mandates free access to the outputs of the publishing process will likely remove the essential financial incentives for such publishing activities. It could also deprive citizens of a choice of sources from which to gain knowledge of government activities – an important aspect of our democracy since its inception. From either perspective, there is a good likelihood that mandating deposit of publishers' materials will destabilize the publishing system upon which researchers and the public have long depended.

Thank you for your consideration of these comments.

Very truly yours,
THOMPSON COBURN LLP

By 

Mark Sableman
MS/ss

cc: Mr. Clark Pettit



AMERICAN
PSYCHOLOGICAL
ASSOCIATION

January 10, 2012

Office of Science and Technology Policy
Executive Office of the President
725 17th Street, Room 5228
Washington, DC 20502

**RE: Request for Information: Public Access to Peer-Reviewed Scholarly Publications
Resulting from Federally Funded Research (FR Doc. 2011-28623)**

Submitted electronically to: publicaccess@ostp.gov

Dear Sir or Madam:

I am writing on behalf of the American Psychological Association (APA) in response to the Request for Information issued by the Office of Science and Technology Policy (OSTP) in the *Federal Register* (Volume 76, Issue 214) of November 4, 2011. The OSTP notice seeks public input on “approaches for ensuring long-term stewardship and broad public access to the peer-reviewed scholarly publications that result from federally funded scientific research.” We welcome this opportunity to provide recommendations, which we understand will serve to inform the National Science and Technology Council’s Task Force on Public Access to Scholarly Publications.

APA is the largest scientific and professional organization representing psychology in the United States and the world’s largest association of psychologists with 152,000 researchers, educators, clinicians, consultants, and students. APA is also the largest publisher of behavioral science research, with 59 of the premier scholarly journals in the field of psychology. Our association strongly supports efforts to enhance public access to scientific publications that advance science and benefit the public, while safeguarding the copyright interests of publishers.

It is essential to recognize that peer-reviewed manuscripts and scholarly publications are not the direct “result” of federally-funded research subsidized by taxpayers. Such a misconception fails to take into account the value that private sector publishers contribute to the scientific enterprise through such critical functions as editorial selection, peer review, copyediting, design production, dissemination, and archiving. Publishers are also currently engaged in, and exploring, a variety of approaches to increase public access to their publications, which include free access to abstracts with reasonable costs for the full article, free access for patients, and free access to developing countries. It is not in the public interest to use taxpayer funds to duplicate services that are currently well provided by publishers. Such an action would draw funds away from critically needed research and stifle innovation in a rapidly evolving industry.

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Norman B. Anderson, Ph.D.
Chief Executive Officer

It is noteworthy that the National Institutes of Health (NIH) and the National Science Foundation (NSF) are currently implementing two very different public access policies. The NIH model requires all NIH-funded investigators to submit or have submitted for them an electronic version of their final, peer-reviewed manuscript resulting from NIH-funded research to PubMed Central to be made publicly available within 12 months after the actual date of publication. The NSF public access model, as established by the America COMPETES Reauthorization Act of 2010, requires NSF-funded investigators to submit their final project reports and citations of published research documents resulting from their research, *along with a summary specifically for the general public that describes the nature and outcomes of their research project.* These materials are to be made publicly available in a timely manner and in electronic form through the NSF Web site.

The NSF public access model is by far the preferred model for other federal agencies to emulate because it offers a means to provide the public with accessible and more readily comprehensible information about the results of federally funded scientific research without jeopardizing the copyright interests of authors and publishers.

In the process of developing priorities for public access policies, federal agencies should be guided by the principles of “transparency, participation, and collaboration.” These principles provide the cornerstone of the “Open Government Directive” that Office of Management and Budget Director Peter Orszag detailed in his December 8, 2009, memorandum to the heads of executive departments and agencies. The last line of this memorandum is particularly instructive: “Moreover, nothing in this Directive shall be construed to suggest that the presumption of openness precludes the legitimate protection of information whose release would threaten national security, invade personal privacy, breach confidentiality, or damage other genuinely compelling interests.” The future of scientific publishing should certainly be regarded as among these “genuinely compelling interests.” Possible unintended consequences of public access policies include a reduction in the number of peer-reviewed journals, a shift toward “author pays” models of publishing, privileged access to publishing based on ability to pay, and commercial exploitation or re-use of content that is otherwise protected by the legitimate copyright and intellectual property interests of authors and publishers.

We would now like to address each of the eight questions posed in the Federal Register notice for public comment. In particular, we would like to call your attention to our response to question #8, which includes an analysis of life-time usage of scholarly articles published in a select set of our APA journals. The results of this analysis raise serious concerns about the establishment of “appropriate” embargo periods for federal public access policies.

(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?

- The most important step federal funding agencies can undertake to ensure the growth of existing/new markets and to improve productivity within the research community is to engage in a collaborative dialogue with all stakeholders, recognizing that each stakeholder has critical but varying interests that support the success of the scientific enterprise. The NSF model provides an excellent funding model, serving the interests of science through its targeted research grants. The role of federal funding agencies should remain at the funding level. The American scientific enterprise system has long excelled—and will continue to excel—in maximizing the outcomes of research funding (federal, private, or commercial).
- Publishers are willing and able to work with all stakeholders to address existing or future gaps in access. Agencies should identify specific needs of particular user groups that are not already being met and collaborate with publishers and other stakeholders to meet those needs most effectively. Researchers, the general public, funders, patients, doctors, and others each have different information requirements. Many publishers have already demonstrated their commitment to identifying and addressing these access gaps, e.g., DeepDyve rentals, Research4Life, patientINFORM, Emergency Access Initiative, and access for public libraries, journalists, and high schools.
- Some options to broaden access to materials that analyze and interpret research for scientists and the public:
 - Work to develop standards for data and meta-data to make research more readily searchable and discoverable. Publishers are already working in partnership to develop standardized information and collections through initiatives such as CrossRef.
 - Working with researchers and other stakeholders to create appropriate policies to make the federal agency-collected and maintained outputs of taxpayer-funded research, such as grant reports and research progress reports, freely available to the public.¹
 - Make funds available to support payment for open access to published articles. Several research funders already do this (Howard Hughes Medical Institute, The Wellcome Trust, and the Max-Planck Institutes).
 - APA recognizes that specific needs arise in our global community. In response, APA licenses content through HINARI and other such global initiatives. APA and other publishers can generally customize those licenses to meet specific or specialized user needs, including those of government agencies, and have the ability to ensure the availability of their content within existing infrastructures.

(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?

¹ This would ensure readability to the broadest audience. NSF is already pursuing such a policy: <http://www.nsf.gov/pubs/policydocs/porfaqs.jsp>

The federal government should:

- Refrain from establishing mandates that take Intellectual Property (IP) without full rights holder authorization and compensation.
- Ensure copyrighted materials are protected from unauthorized dissemination and piracy. Copyright is an essential ingredient in promoting creativity, innovation, and the continued integrity and reliability of the scholarly record. We have seen that the NIH policy undermines IP and promotes piracy. The free, widespread availability of scholarly publications through PubMed Central (PMC) has clearly contributed to the appearance of copyrighted material on rogue sites, leading to millions of dollars in annual losses to U.S. publishers. *In this regard, it is highly problematic that, according to NIH's own PMC data, two-thirds of database users are from overseas, undermining critical export opportunities for an \$8 billion publishing industry that employs 50,000 Americans. Not only does this finding raise concerns about international piracy, but it also runs counter to the primary justification for the NIH public access policy – i.e., to provide free access to U.S. citizens whose tax dollars fund federal research projects.*
- Provide open access to final research reports, rather than asserting a type of eminent domain over peer-reviewed journal articles. This solution would allow standardization of information reported,² rapid and broad dissemination of the government-funded materials even before publication of a peer-reviewed article, and the preservation of IP. The NSF policy referenced above can be positively contrasted with the NIH policy in this regard.
- Support the continued operation of various models of publishing to ensure access to innovation and the ability for researchers to publish in the venue of their choice.

(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

- Centralized, government-controlled custody of publication carries significant downsides and few upsides:
 - Long-term stewardship of content carries significant costs that are already being borne by publishers. In an era of dwindling federal resources, central federal repositories are duplicative and an unnecessary expense and recurring burden that may not be viable for long-term stewardship. They also create an extra burden for U.S. taxpayers.

² Some agencies may want to establish a template for certain kinds of reports so as to facilitate various kinds of aggregate meta-analysis.

- With multiple sources of scholarly publications, many of which are not based on government-funded research, partnerships among stakeholders are essential for achieving effective access to the scientific literature that represents the latest scholarly discoveries.
 - A centralized governmental approach will deter private sector innovation by establishing unnecessary levels of oversight and bureaucracy that stifle creativity. It will also minimize scientific and commercial opportunities by reducing potential traffic to innovative new applications that facilitate the work of researchers.
- The publishing industry is already promoting interoperability, search, development of analytic tools, and other scientific and commercial opportunities to an impressive degree.³ There is no reason to doubt that they will continue providing innovative products and services, unless their financial livelihood is undermined by harmful policies.
 - APA ensures continued access to essential scientific information for its members and the public through its scholarly journals, books, videos, abstract services, databases, and the APA PsycNET platform. PsycINFO®, in particular, is an expansive abstracting and indexing database with more than 3 million records devoted to peer-reviewed literature in the behavioral sciences and mental health. Similarly, PsycARTICLES® delivers APA journal content to more than 40 million end users.
 - A competitive publishing environment of not-for-profit and for-profit organizations – all of which must receive a return on investment to survive – has led to robust technology development in scholarly publishing during the past 20 years. This sector of the publishing community, which includes professional associations, commercial publishers and university presses, moved quickly and decisively to introduce new technologies that meet researchers’ demands for faster and more user-friendly delivery of scholarly information.
 - Publishers over the past decade have developed the Digital Object Identifier (DOI), a unique identifier for each piece of content in a scholarly publication.⁴ In partnership with stakeholders, we are continuing to innovate in the creation and standardization of metadata to make it easier for researchers and the public to find and use scientific research information.
 - Publishers collaborated with librarians and database providers to establish COUNTER (Counting Online Usage of Networked Electronic Resources), which has produced an international set of standards and protocols governing the recording and exchange of online usage data. This enables libraries to better understand how the digital collections are being used, and it allows publishers to better understand the usage patterns of their digital content.
 - Internet search engines, abstracting services, and other tools do an excellent job of ensuring the discoverability of research, and innovations in this area are happening every day without government interference.

³ See response to question 5.

⁴ CrossRef is a not-for-profit group founded by publishers in 2002 and maintains 50 million items. Almost 1000 publishers participate and assign DOIs to published content items. Development of the CrossRef service has resulted in seamless navigation of the research literature by users so that researchers using the bibliography in one article can link from a reference to the full text of the referenced article.

(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?

- Journal publishers are actively working with federal research agencies to develop and implement multiple collaborative projects that will enhance the public access, utility, and preservation of materials that report on, analyze, and interpret federally-funded research. These materials include progress reports, scholarly publications, and data for use by both the research community and the general public.

(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?

- Publishers are dedicated to the widest possible dissemination and discoverability of publications that analyze and interpret research.
- Partnerships with industry are already underway to determine, develop, and include appropriate metadata in publications. Examples of such metadata initiatives include:
 - (1) Standards and persistent identifiers to enhance the discoverability of publications that analyze and interpret government-funded research and to promote interoperability among the funding agencies, publishers, and any third party databases and platforms:
 - a. Standardizing and facilitating funding agency information.** Publishers are collaborating with agencies to create a pilot initiative to clearly indicate the funding agency responsible for research described and analyzed in a scholarly publication or an associated dataset, giving the research community and public easy links to a variety of access options on publisher and agency Web sites. Engaging with the publishing community to gather and link this information will save agencies considerable effort and expense compared with producing or maintaining such information or services on agency Web sites.
 - b. DOIs for data sets and article supplementary material.** There is considerable opportunity for strengthening the multiple organizational partnerships that already exist to promote the identification, discoverability and archiving of data, including Datacite (www.datacite.org) and the NISO/NFAIS Working Group on Supplementary Journal Information (www.niso.org).
 - c. Author and institution disambiguation.** Name ambiguity and attribution are persistent, critical problems embedded in the scholarly research ecosystem. The Open Researcher & Contributor ID (ORCID) project (www.orcid.org) is a successful

public-private partnership with 275 participating organizations.⁵ It is funded by \$2M in loans from publishing partners and builds on successful investments by publishers in the past. A pilot demonstration began earlier this year and is on schedule. Institutional IDs will be addressed in a second stage.

(2) Discovery tools to facilitate journal content mining, access dark archives, and improve data management:

- a. **Content mining.** Content mining projects could be developed as collaborations between publishers and federal funders. Publishers are already working on projects to mine journal and book content.⁶ It might be helpful for federal funders to develop a content mining demonstrator to illustrate the value of content mining to the broader scientific community.
 - b. **Author-driven data management.** For many years, publishers have produced and archived data-specific journals, and they are maintaining and updating such data sets with DOIs and semantic tagging. There are also many examples of pilot projects on data management.⁷
- Federal agencies should work with publishers and other stakeholders who have expertise in developing and promulgating metadata to ensure standardization across disciplines and share best practices.

(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?

- An excellent mechanism to ensure public access to materials that analyze and interpret research funded by the taxpayer is already partially implemented. By law, every federally funded research project is required to provide a detailed final report. Although these reports are not journal articles, they may be superior in many ways in satisfying the goal of increasing public access to the results of federally-funded research. Detailed final reports are often much longer than the resulting journal articles. In some cases, journal articles are never produced or published, and so the final reports provide the best and only access to the outcomes of the research projects, including those with negative findings. Final reports often precede the resulting journal articles by many months or years.
- Some science funding agencies make these final reports freely available via the Web, but others do not. Making them all available would vastly enhance public access. The federal

⁵ Of these participating organizations, 15% are in publishing, 40% in academia and 15% in industry.

⁶ The Publishers Research Consortium recently completed a study on article-level content mining based on a broad survey of ongoing or planned activities among nearly 30 STM publishers or associations.

⁷ For example, there is an NSF project under consideration (IOS-1127112) on data management in the biosciences that involves a partnership with a publisher in the field of plant biology, creating a discipline-specific archive (Dryad.org) for biology data. This allows authors to archive data used in peer-reviewed articles for a nominal fee. The American Astronomical Society (AAS) is pursuing the establishment of a universal astronomy-specific data repository based on the Dryad model, by engaging all major publishers of astronomical journals.

funding agencies themselves are in the best position to require appropriate final reports from investigators and institutions, to set appropriate standards for their content and accessibility, and to disseminate them via the Web. Web-based final reports offer the highest level of public accessibility by providing hypertext links to published peer-reviewed journal articles and other products of the research. NSF has already made significant progress in developing a viable model through its investment in *Research.gov*.

- Agencies should seek productive and mutually beneficial projects and partnerships that ensure greater availability of both taxpayer-funded research directly from the government and peer-reviewed, value-added publisher content. For example, publishers can partner with federal agencies to provide easy links between progress reports detailing research results, including lay summaries, and the peer-reviewed version of record, including complete access to the abstract or summary. Such projects would result in interoperability between funding agencies and publisher content, ensuring more timely and complete availability of scientific communication related to federally-funded research, as well as better reporting on the results of taxpayer funding for research.
- Such partnerships will maximize public access to the federally-funded research in which taxpayers invest, while minimizing the burdens and costs for stakeholders. The federal investment is in research, not publication. The publishers' investment is in cultivating and maintaining a rigorous and high-quality peer-reviewed literature. Both sources of investment contribute to the merit of U.S.-based science and research. Fruitful collaborations and partnerships will most efficiently leverage those continuing investments and maximize the benefit of public access.
- NSF provides a compelling example of how a federal agency is able to leverage its partnerships with other stakeholders to broaden the distribution and accessibility of the research it funds. Easily accessible through the NSF Web site is a constantly updated list of “discoveries” made possible through NSF grants (<http://www.nsf.gov/discoveries/>). In addition, NSF supports Science 360 – an array of resources accessible through the Web (<http://www.science360.gov>), along with smartphone applications, which provide video, audio, and news coverage of scientific discoveries made possible by NSF. These resources aggregate materials from many stakeholders, and as a result, are able to maximally leverage the contributions of those stakeholders (which include scholarly publishers). NSF is already doing this in a way that minimizes the burdens and costs for all stakeholders, including taxpayers. It is a workable model that can be emulated by other federal agencies.

(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?

No. Publishers also invest in these other types of content used by researchers, often by conceptualizing the project, commissioning the content, and investing heavily in its development. As with any kind of content published by a nongovernmental entity at its own initiative, government-mandated access to books, proceedings, or other such materials is an appropriation of private property.

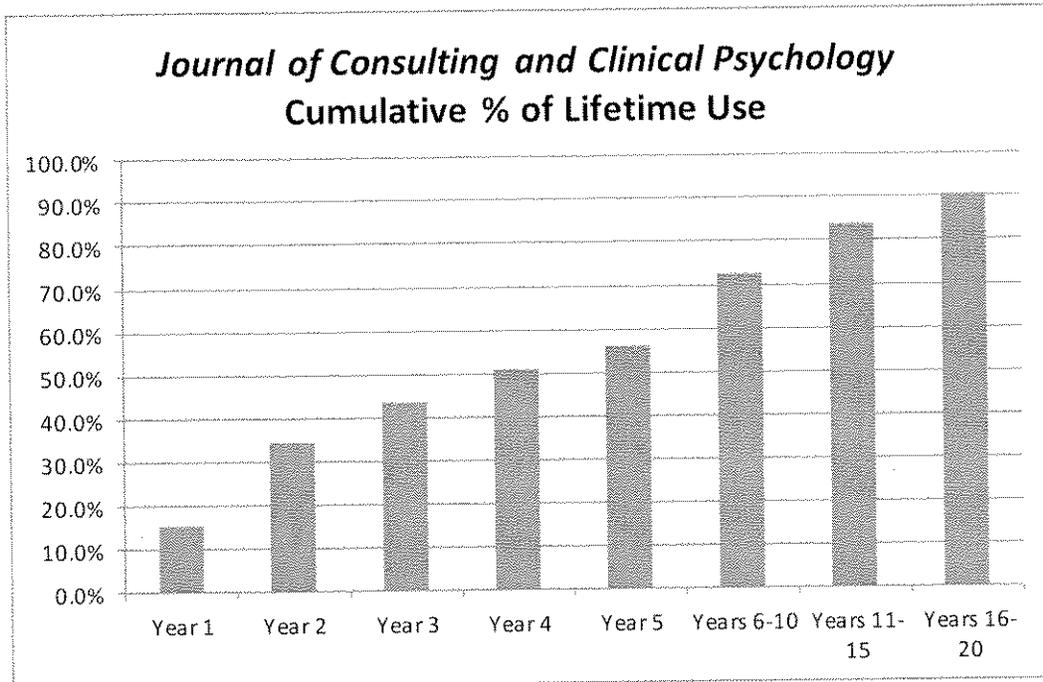
(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?

- There are no “appropriate” embargo periods, and the research in different disciplines (and even subfields) has different life spans. APA tracks the usage of individual journal articles and conducts annual data analyses on a journal-by-journal basis. Usage statistics are generated based on annual journal data and lifetime article data. APA’s PsycARTICLES full-text database is used to estimate the “shelf-life” of an average journal article, i.e., the lifetime usage or how long the article is used over time, by examining downloads by copyright year.

The analysis of lifetime usage is conducted in two ways. First, individual articles are followed prospectively from their years of copyright forward. The ability to track download usage in this way is relatively recent and therefore does not allow the analysis to extend from more than five to seven years. A second method is therefore employed. This involves use of the APA full-text database, which includes the entire back-catalog inventory of APA journal articles. For a given year, download usage is computed retrospectively by computing current year usage stratified by year of copyright. This method allows the analysis to extend back in time for 20 or more years.

APA currently publishes 59 scholarly journals. For ten of these journals, approximately one-third or more of the articles were supported in whole or in part by NIH grant funds. These 10 APA journals include: *Abnormal Psychology*, *Behavioral Neuroscience*, *Developmental Psychology*, *Emotion*, *Health Psychology*, *Journal of Consulting and Clinical Psychology*, *Journal of Personality and Social Psychology*, *Neuropsychology*, *Psychological Assessment*, and *Psychology and Aging*.

The pattern of download usage of articles in these journals is remarkably consistent, both across journals and across method of analysis. Outcome data for the *Journal of Consulting and Clinical Psychology* are shown in the graph below. These data show the percentage of articles downloaded in a given year with copyrights of that year (Year 1), the previous year (Year 2), and continuing retrospectively for 20 years (Years 16-12). Also provided is the cumulative percentage of “lifetime use,” defined as 90% of use.



Journal of Consulting and Clinical Psychology

	% in Year	% of Lifetime
Year 1	15.4%	15.4%
Year 2	34.4%	19.0%
Year 3	43.7%	9.3%
Year 4	50.9%	7.2%
Year 5	56.3%	5.4%
Years 6-10	72.7%	16.4%
Years 11-15	83.9%	11.2%
Years 16-20	90.7%	9.8%

The data for this one journal mirrors the experience across all of APA's 59 journals. The basic pattern of lifetime usage in a given year is as follows: 16.3% in the initial year of copyright, 17.8% in the second year, 9.5% in the third year, 7.3% in the fourth year, 4.5% in the fifth year, 17.0% in years 6-10, 10.5% in years 11-15, and 7.3% in years 16-20. The basic pattern of cumulative lifetime usage across all APA journals is 16.3% in the first year, 34.1% in the second year, 43.6% in the third year, 50.9% in the fourth year, 55.5% in the fifth year, 72.5% in years 6-10, 83.1% in years 11-15, and 90.4% in years 16-20.

These data demonstrate that articles published in APA journals have a long half-life and lifetime usage of about 4.5 and 19.5 years, respectively. Using the life-time utilization of APA journal articles (which occurs over a much longer period of time than the first 12 months) as an example, funding agencies must recognize that there are no "appropriate" or

“universal” embargo periods, and that research in different disciplines (and even subfields) has different life spans.

In conclusion, given all that is at stake in the development of federal public access policies, we urge the federal government to refrain from mandating a policy that would apply across federal agencies without further study at a minimum. In short, the federal government would be well advised to view this situation as a natural experiment with the benefits that it offers to evaluate the various public access models currently in place in both the public and private sector. As noted by OSTP in an earlier January 2010 *Federal Register* notice: “The NIH model has a variety of features that can be evaluated, and there are other ways to offer the public enhanced access to peer-reviewed scholarly publications. The best models may [be] influenced by agency mission, the culture and rate of scientific development of the discipline, funding to develop archival capabilities, and research funding mechanisms.” The results of such an evaluative study would help to determine whether there is indeed a one-size-fits-all model of public access for federal agencies that could address the interests of key stakeholders, and if so, what the requisite features of such a model would be.

Thank you once again for this opportunity to offer APA’s recommendations on ways to enhance public access to the peer-reviewed scholarly publications that are based on federally funded research. We believe that the best approach to achieve greater public availability to federally funded research is through public/private collaborations that include publishers. We will continue to work in partnerships with all stakeholders – scientists, institutions, libraries, federal agencies, and other publishers – to maximize the dissemination of scientific publications, ensure their discoverability, and provide long-term stewardship to enhance the research enterprise.

Sincerely,

A handwritten signature in black ink that reads "Norman B. Anderson". The signature is written in a cursive, flowing style.

Norman B. Anderson, Ph.D.
Chief Executive Officer

January 10, 2012

Office of Science and Technology Policy
The White House

Re: Request for Information: Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research

The Rutgers University Libraries write in response to the Request for Information, published in the *Federal Register* on November 4, 2011, by the Office of Scientific and Technology Policy regarding public access to peer-reviewed scholarly publications resulting from federally funded research. We appreciate this opportunity to comment.

(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that results from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?

New scientific information spurs research, development, and innovation. Broad access to scholarly publications enables us to build on the past and is fundamental to the scientific enterprise. A major barrier to the scientific enterprise is lack of access to scholarly journals due to prohibitive costs. As research institutions and libraries are increasingly unable to afford subscriptions to peer-reviewed publications that have resulted from government-funded research, the benefit from research and development is lost and productivity of the scientific enterprise is needlessly impeded.

Facilitating the broad dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research is a means for government, at a minimum, to stem the loss in productivity from scientific results that do not currently reach the intended audience due to extreme pricing models and also to expand economic growth in sectors that benefit from such research – health, agriculture, and the environment, among others.

The most effective way to accomplish this broad dissemination in the current research climate is through a national policy, or a coordinated set of national policies, at the federal agency levels, that ensures public access to research through the archiving of peer-reviewed publications resulting from taxpayer-funded research in open access repositories, the so-called *Green Open Access* model. This model will eliminate losses on taxpayer investment in research and will accelerate research time.

The costs and benefits of such policies have been studied. Here below is evidence from two studies:

1. John Houghton, Bruce Rasmussen, Peter Sheehan, et al., *Report Summary: Economic Implications of Alternative Scholarly Publishing Models: Exploring the Costs and Benefits* (London and Bristol, Joint Information Systems Committee, 2009), <http://www.jisc.ac.uk/media/documents/publications/summary-economicoa.pdf>.

At these costs, open access publishing would be around £813 per article cheaper than toll access publishing, and open access self-archiving with overlay services around £1,180 per article cheaper. (p. 9)

For UK higher education, these journal article cost differences would have amounted to savings of around £80 million per annum circa 2007 from a shift from subscription access to open access publishing, and £116 million from a shift from subscription access to open access self-archiving with overlay services. (p.10)

2. Malcolm Getz, *Open Access Scholarly Publishing in Economic Perspective* (Nashville, TN, Department of Economics Vanderbilt University, 2004), <http://www.vanderbilt.edu/econ/wparchive/workpaper/vu04-w14.pdf>.

On the positive side, a number of initiatives are at play that may lead to a shift to quality-assured, open-access publishing by the non-profit sector. By the estimated values in table 1, current costs total \$6.48 M for a typical library to subscribe to, process, and store its serials compared to a potential cost of \$4.142 M with quality-assured, open-access journals published by non-profit publishers. The average US research library might save \$2.3 million per year with perhaps \$230 M saved per year among all US research libraries. (p. 39)

As the European Union invests in a super-governmental infrastructure – OpenAIRE,¹ as the UK pursues its recently announced national strategy to require “[f]ree and open access to taxpayer-funded research...”,² and as governments in developing nations across the globe discuss long-term stewardship and public access to scholarly publications, the U.S. too needs to take action to ensure that education and research continue to enable “the creation, access and use of information, knowledge and culture for human development and the exercise of freedoms [that] is widely acknowledged as critical.”³

Section 6.6 of the UK report on *Innovation and Research Strategy for Growth* states:

The Government, in line with our overarching commitment to transparency and open data, is committed to ensuring that publicly-funded research should be accessible free of charge. Free and open access to taxpayer-funded research offers significant social and economic benefits by spreading knowledge, raising the prestige of UK research and encouraging technology transfer. At the moment, such research is often difficult to find and expensive to access. This can defeat the original purpose of taxpayer-funded academic research and limits understanding and innovation.... But we need to go much further if, as a nation, we are to gain the full potential benefits of publicly-funded research.⁴

Agencies can accomplish this by partnering with leading institutions, like research university libraries, that have already invested significantly in developing open repositories for the intellectual property of

¹ “OpenAIRE: Open Access Infrastructure for Research in Europe,” <http://www.openaire.eu/>.

² Secretary of State for Business, Innovation and Skills, *Innovation and Research Strategy for Growth* (London, Department for Business, Innovation and Skills, 2011), 76, <http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf>.

³ Sisule F. Musungu, *Using Copyright to Promote Access to Information and Creative Content. Education and Research (Part I)*, WIPO/CR/WK/GE/11/2 (Geneva, World Intellectual Property Organization, 2011), 3, http://www.wipo.int/edocs/mdocs/copyright/en/wipo_cr_wk_ge_11/wipo_cr_wk_ge_11_2.pdf.

⁴ *Innovation and Research Strategy for Growth*, 76.

their parent organizations. Such repositories capture intellectual property in all disciplines and formats, for large and small science, and without regard to funding source. This comprehensive approach is necessary to provide support for modern interdisciplinary research and would be enriched by timely inclusion of peer-reviewed scholarly publications resulting from federally funded research.

University library systems, furthermore, have a long history of collaboration that could be the basis for development of a national access infrastructure. Agency leadership could leverage individual repository achievements into a comprehensive system that would certainly include, but not be limited to, publications resulting from federally funded research.

We would like to clarify our view by noting that the growing of existing markets and creation of new markets relates to access and analysis of peer-reviewed publications, but not to the publications themselves, which should not constitute the markets. Our work going forward should not be about markets in the peer-reviewed scholarship but about markets in scientific and technological sectors made possible through use of federally funded scientific research that is publically accessible without fee, and not monetized downstream. Included are markets that develop practical applications of research results as well as such new markets as those that organize, mine, and present research results for downstream use. Action Science Explorer,⁵ a visualization tool developed at the University of Maryland, is an example of a text mining application that seeks to aid researchers seeking understanding of developments in areas that are complicated by multidisciplinary resources. The usefulness of this or any similar tool is proportional to the access it has to resources.

Public access in the form of *Green Open Access* to peer-reviewed scholarly publications resulting from federally funded research is the best way to maximize U.S. economic growth and improve the productivity of the American scientific enterprise. Public access to federally funded research is fair to all stakeholders in society, it best reflects the democratic values upon which the U.S. is founded, it eliminates economic waste, and it encourages research and development to ensure the nation's competitiveness and the well-being of its citizens into the future.

(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?

U.S. copyright law protects the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications. It protects these works whether they are publicly accessible without a fee, inaccessible, or available for purchase. The best way to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders is to maintain federal policies that enable all stakeholders to benefit from their investment in scholarship and research within the copyright system, and to maintain balanced copyright law that includes a full array of limitations and exceptions to support scholarship and research in the digital environment.

Policies modeled on the NIH Public Access Policy effectively balance IP interests by ensuring that authors, as copyright holders, retain the rights needed to allow public access to their works through a non-

⁵ "Action Science Explorer: Tools for Rapid Understanding of Scientific Literature," <http://www.cs.umd.edu/hcil/ase/>.

exclusive license; by leaving authors free to contract with publishers on a non-exclusive basis; by ensuring that conditions imposed by Federal agencies surrounding access to research results are met; and by recognizing the right of the public to access and make use of peer-reviewed scholarly publications, to which they have materially contributed, as permitted by copyright law.

(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

We agree with Stevan Harnad, who pointed out in his submission to this RFI, that it is important to distinguish between the problem of access to peer-reviewed research and the problem of digital preservation and storage of the published intellectual and cultural record. Preservation of the published versions of research output (publishers' versions of record in scholarly journals) may best be accomplished within national digital preservation infrastructures, while retention of peer-reviewed final drafts is best accomplished through institutional repositories that may be harvested by centralized subject-based repositories.

To the issue of preservation, the Library of Congress is leading the National Digital Information Infrastructure and Preservation Program, which recognizes the importance of a collaborative, "multiphased plan to collect and preserve a broad spectrum of high-value digital content, with special attention to the needs of the public policy, education and research, and cultural heritage communities."⁶ Initiatives such as LOCKSS⁷ and Portico,⁸ along with research library repositories, could be leveraged to provide the infrastructure for this system.

A parallel federal initiative is needed for public access to peer-reviewed scholarly publications resulting from federally funded research. Federal agencies do not need to maintain custody of all published content, but the government has an important role to play in ensuring long-term stewardship by setting policy and standards, and by providing sufficient and ongoing funding.

(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?

Public access to research materials in scientific as well as other disciplines is being provided primarily by individual authors, by research institutions, and by university libraries. As trusted institutions dedicated to permanent preservation of and access to the scholarly and historical record, libraries are uniquely positioned to ensure long-term stewardship of the results of federally funded research.

We see opportunity for public-private partnerships where private foundations dedicated to improving the well-being of our citizenry are willing to support development of public access to scholarly publications.

⁶ *Preserving Our Digital Heritage: The National Digital Information Infrastructure and Preservation Program 2010 Report* (Washington, DC, Library of Congress, 2011), 2, http://www.digitalpreservation.gov/multimedia/documents/NDIIPP2010Report_Post.pdf.

⁷ "LOCKSS," <http://www.lockss.org/>.

⁸ "Portico," <http://www.portico.org/digital-preservation/>.

Universities and research libraries are well positioned to leverage the essential agency-provided funding and infrastructure support referenced earlier to attract such private funds.

There is some opportunity for public-private partnerships involving publishers. Publishers have never been primarily involved in long-term preservation, and it is unlikely that they could or should assume that role now. To bridge the gap from publisher to public access, PubMedCentral, the primary effort of the U.S. government to provide public access to publications resulting from federally funded research, required new law. However, partnerships with publishers could be developed to preserve publishers' archives as part of the infrastructure for federally funded scholarly publications.

Accessibility will best be accomplished through the parallel effort of open access institutional and subject repositories linked in a national open access infrastructure designed for interoperability.

(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?

As a first priority, Federal agencies need to mandate that peer-reviewed scholarly publications resulting from federally funded research be publicly accessible. This would best be done through new national policy like that recently announced by the UK and being pursued by European Union governments, among others, as cited above. The second priority would be for collaborative selection or development, with government leading as convener of recognized experts, of the tools that will allow search, discovery, and analysis. Government funding will be key.

Core metadata needs to include information about the object itself (descriptive metadata), the physical piece from which a digital file is created (source metadata), the digital file that is created from the source resource (technical metadata), and copyright information and any rights restrictions that may exist that pertain to the collection (rights metadata). It must enable users to find, identify, select, obtain, and understand the appropriate resource. A core metadata schema needs to be flexible, extensible, and interoperable with other schema.

We offer as a model the metadata schema developed by the Rutgers University Libraries as part of the workflow management system for our institutional repository. The metadata schema is available to everyone as part of OpenWMS: Workflow Management System for Digital Objects. The WMS is a platform-independent, open source, web-accessible system that can be used as a standalone application or integrated with other repository architectures by a wide range of organizations. It provides a complete metadata creation system for analog and digital materials, with services to ingest objects and metadata into a Fedora repository and to export these objects and metadata, individually and in bulk in METS/XML Wrapper. Features include:

- Event-based data model for management and rights documentation
- Capability to customize the look and feel of the metadata input and to add default values to data elements
- Ability to customize and add vocabularies to data elements
- Unicode and CJK vernacular character support
- Mapping and import metadata and digital files from standard and in-house formats

- Export digital object in METS/XML Wrapper

Further information is available here: <http://rucore.libraries.rutgers.edu/open/projects/openwms/>.

(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?

Federal agencies that fund science can maximize the benefit to taxpayers by broadly promoting a national research infrastructure, such as EU governments are demonstrating in their commitment to OpenAIRE, the open access infrastructure for research in Europe, referenced earlier. Federal agencies can educate taxpayers about the availability of research, and on results of taxpayer investment in scientific research. Libraries can also contribute to this effort.

Federal agencies that fund science can minimize the burden and costs for stakeholders by providing a technical and policy infrastructure, with a common platform, and consistent policies and requirements, mandated by federal law. Integration of grants management systems would also be beneficial.

(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?

Any taxpayer-funded research should be covered by these public access policies. From the standpoint of accountability to taxpayers for their investment in research, there is no need to distinguish between types of publication. From the standpoint of researchers' requirements, all categories would be beneficial.

Since a researcher may continue to build on the results of his or her federally funded research throughout his or her career, only those peer-reviewed publications that directly result from that funding should be mandated for inclusion. Downstream publications should be requested but not mandated.

(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?

Studies have shown that access to research results in various intellectual property regimes offers the greatest opportunity for the greatest good.

In "Minerva Unbound: Knowledge Stocks, Knowledge Flows and New Knowledge Production," Lynne Zucker and her colleagues demonstrate that:

Regional growth of new knowledge in nanotechnology, as measured by counts of articles and patents in the open-access digital library NanoBank, is shown to be positively affected both by the size of existing regional stocks of recorded knowledge in all scientific fields, and the extent to which tacit knowledge in all fields flows between institutions of different organizational types. The level of federal funding has a large, robust impact on both publication and patenting. The data provide support for the cumulative advantage model of knowledge production, and for

ongoing efforts to institutionalize channels through which cross-organizational collaboration may be achieved.⁹

In *Open-Access Scholarly Publishing in Economic Perspective*, Malcolm Getz concludes:

... that substantial cost savings to universities are possible with open-access distribution of quality-assured journals by not-for-profit publishers whose rates reflect cost rather than each university's ability to pay. Open-access to quality-assured materials via the Internet will increase the use of the materials and expand the influence of scholarship worldwide.¹⁰

A primary goal of public access is to speed up and enlarge our capacity for discovery and application of new knowledge. Logically, that goal is best enhanced by access as early as possible. At the same time, there will always be legitimate reasons for embargoes. These restrictions should be respected. The most common embargo periods are 6 months and 12 months. Shorter embargoes should be encouraged.

Submitted by:

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⁹ Lynne G. Zucker, Michael R. Darby, Jonathan Furner, et al., "Minerva Unbound: Knowledge Stocks, Knowledge Flows and New Knowledge Production, *Research Policy* 36 (2007): 850.

¹⁰ Malcolm Getz, *Open-Access Scholarly Publishing in Economic Perspective*, Vanderbilt University Department of Economics Working Paper No. 04-W14, <http://www.vanderbilt.edu/Econ/wparchive/workpaper/vu04-w14.pdf>, 2.

Eberhard Voit /
Georgia Tech
Atlanta, GA

Comment 1: While I of course enjoy open access to papers, I am not in favor of making all publications immediately and freely available, because someone has to pay for the publication process, and if it is not the libraries or users, it must be the authors. With an average price tag of between \$1,000 and \$3,000, publishing becomes expensive for larger labs.

Comment 2: There should be a place where secondary results can be published without incurring costs to the authors, who have all the effort and work in the first place.

Comment 3: I find the one-year embargo of some publishers more than fair.

Comment 4: If an author does not have immediate and free access to a paper, s/he usually can obtain copies through inter-library loan or directly from the authors, who are typically happy to send out a PDF.

John Wilbanks

January 10, 2012

Response to Request for Information: Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research

There are two kinds of markets for the access and analysis of peer reviewed publications emerging from federally funded research.

One is the “mental” market, or the size of the readership base. This current market for the results of scientific research is limited, artificially, to those researchers who sit inside wealthy institutions whose libraries can afford to subscribe to the majority of scientific journals. This excludes researchers at many state educational systems, community colleges, middle and high schools, state and local employees, the American taxpayer, and the American entrepreneur. By implementing a robust public access policy for federally funded research outputs, each of these groups will have access to the literature and, if the policy is crafted correctly, the right to begin creating new knowledge and experimenting with new businesses atop it.

This leads to the second kind of market – the economic one. At the moment, there is at best a sputtering startup culture built atop the scholarly literature, with a few text-mining companies here and there, mainly in the life sciences. A small number of publishing houses exploit their gatekeeper function to impose prices on elemental services like abstracting that in the consumer world would cause revolt, and the American venture capital industry invests instead in social media. The lack of robust public access to the literature – and the relentless focus on asserting and controlling copyright – means that economically it remains a content industry and not a knowledge industry. We will not see meaningful job creation in secondary markets as long as the primary secondary use of digital literature is informal file transfer via Twitter (using the #icanhaspdf hashtag).

The scientific enterprise would clearly be better served through some creative destruction. We have replicated the analog production and distribution system digitally, realizing few of the cost benefits, few of the speed benefits, and none of the innovation benefits of the transition. iTunes came out more than a decade ago. Netflix, more than 15 years ago. Content industries are disrupted by technology, and should respond with innovation, creating new jobs that are durable against outsourcing. Yet we have seen none of this in the scholarly publishing industry, which given its enviable almost-monopoly on the outputs, has little incentive in the absence of policy to make the admittedly difficult transition to a knowledge industry.

The intellectual property interests of the stakeholders must be aligned with the scientific goals of the government and taxpayers, which is easily done through the use of open copyright licenses such as those provided by Creative Commons. Open copyright licenses protect the rights of the author or legal copyright owner while providing for conditional access to the public – for example, copying and republishing may be allowed, even for commercial purposes, but attribution back to the author and

original journal, including a link to a free copy of the paper, would be required and if not present the full power of copyright remedy could be brought to bear on the violator.

Open copyright licenses can also be phased in alongside an embargo in a way that both protects the economic interests of publishers and the long term public interest in access to research literature. For example, during an embargo period, no open license might be used, switching to a license like Creative Commons Attribution-Non-Commercial for a second intermediate embargo period, and then eventually decaying to a Creative Commons Attribution license that is fully compliant with community definitions of Open Access. One could easily imagine using real data about economic usage of the literature to set these times in a noncontroversial fashion, creating a truly open corpus of literature both in terms of technical access and legal rights, without an emotional argument unfounded in data or the reality of modern web-based copyright licensing.

The pros of a centralized approach to managing the public access are fairly straightforward. First, a single point of access to the research, with stable and common identifiers, radically decreases the cognitive burden to find and download the research. Second, the centralized approach raises the odds of common standards being applied to link the research to data (as we see in the vastly popular PubMed links to both internal and external data sources). And third, the centralized approach relieves the publishers of the need to perform these infrastructural functions, which should lower economic demands on the industry. However, it is important that a centralized repository be accompanied by open copyright licenses, so that additional copies of the open corpus can be maintained in libraries and research institutions, providing additional security to the preservation of the scholarly record. This mixture of a centralized resource with open licensing and standard technologies mirrors that of the internet itself, which runs on a small set of centralized resources (the domain name system, for example).

Centralization of resources also radically lowers the burdens on the researchers and their host institutions. A single interface to upload to learn, a single interface for libraries to manage, and the comfort of a persistent repository rather than the funding of local repositories at library after library, reduces the burden of compliance not just on the publisher but on the other key stakeholders in the process.

The cons of a centralized approach are also straightforward. It must be funded (and thus can be defunded in a crisis) and it takes a certain amount of control out of the hands of the publisher – but since the goal is to remove access controls, removal of control may in fact be a pro rather than a con.

To encourage interoperable search, discovery, and analysis capability (and the small business, venture-backed job creation that innovation in each of those spaces will bring) the federal government should make a commitment to clear standards in document format, metadata, structured vocabulary and taxonomy, and commit to using its procurement power to only pay for articles that carry the designated metadata. Standards building is a long and cumbersome process, and any standard that doesn't have adoption may be worth less than the (digital) paper on which it is printed. Having a stable customer for

metadata in the person of the government creates a defined and clear market for startup business to serve, and creates potential for top-line economic growth at more established publishers as well.

It is vital as well to ensure that the metadata associated with the research is itself public. While the copyright status of metadata has not been extensively tested in court, there is reason to believe (from cases involving medical procedure codes among others) that at least some metadata, especially vocabularies and ontologies, may carry copyright obligations. The federal government should authorize the use of open copyright licenses such as the Creative Commons licenses on metadata, and preferentially select vendors who use the most open of copyright licenses and tools.

While scholarly articles are the traditional focus, and should be the first order of business in a federal open access policy, book chapters and conference proceedings (and even perhaps more novel forms of communication, like blogs and wikis and social media) should be evaluated for inclusion in the policy. However, careful attention should be paid to the level of effort required to create the work, and different rules might be applied to works that require a bit less effort (a conference poster might be required to be open immediately, no embargo) compared to those that require significant effort (a book chapter might receive a longer embargo than an article).

About me:

I am a Senior Fellow at the Ewing Marion Kauffman Foundation, and a Fellow at Lybba. I am a Senior Fellow at the Kauffman Foundation, the Group D Commons Leader at Sage Bionetworks, and a Research Fellow at Lybba. I've worked at Harvard Law School, MIT's Computer Science and Artificial Intelligence Laboratory, the World Wide Web Consortium, the US House of Representatives, and Creative Commons. I also started a bioinformatics company called Incellico, which is now part of Selventa. I sit on the Board of Directors for Sage Bionetworks, iCommons, and 1DegreeBio, as well as the Advisory Board for Boundless Learning and Genomera. I have been creating and funding jobs since 1999.

12 January 2012

To: Office of Science and Technology Policy

From: Stephen G. Weller, President
sgweller@uci.edu
Botanical Society of America
St. Louis, MO

Re: Request for Information: Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research (FR Doc. 2011-28623)

I write as President of the Botanical Society of America, a non-profit scientific society with nearly 3300 members worldwide, and I am pleased to respond to your 3 November 2011 request for information “on approaches for ensuring long-term stewardship and broad-public access to the peer-reviewed scholarly publications that result from federally funded scientific research”. Your request includes eight specific questions. I respond to three of those questions below, numbers 5, 6, and 8.

(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives?

Encouraging interoperable search, discovery, and analysis capacity first requires wide access both to finished publications and to the data underlying those publications, but it also requires that those data be provided in a standard, machine-readable format. Interoperable search of published work would be facilitated if publishers adopted a single Document Type Definition (DTD), with local specializations as needed, and allowed data mining of the full text of their publications for purposes of search and discovery. Many science and technology publishers have adopted the Journal Publishing Tag Set of the National Library of Medicine and that might form the basis of a universal DTD.

Interoperable search of the data underlying finished publications would be enhanced if standard formats and application programming interfaces (APIs) for automated access were more broadly adopted. Publicly accessible databases provided through the National Center for Biotechnology Information (NCBI) are an essential resource for research in important segments in the life and biomedical sciences, but the development of similar resources for other life science fields is in its infancy. The requirement that all proposals to the National Science Foundation include a data management plan is a step in the right direction, but long-term success will require that Federal agencies, publishers, and scholarly and professional societies work closely together to develop the data and metadata standards, APIs, application software, and institutions to sustain long-term access to data underlying published research. Such an effort will require new financial resources to be invested both in developing new standards and software and in supporting the institutions responsible for maintaining long-term access to the data.

(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?

Many non-profit scientific society publishers are committed to sharing research as broadly as possible. For example, research published in our journal, the *American Journal of Botany*, is currently free to scientists from all developing nations through programs sponsored by the World Health Organization and the United Nations: Access to Global Online Research in Agriculture (AGORA); the Access to Research Initiative (HINARI); and Online Access to Research in the Environment (OARE). All articles published in the *American Journal of Botany* are freely accessible through our web site (www.amjbot.org) 12 months after publication. Authors and funding agencies can also provide access to papers accepted for publication as soon as they are available for online publication by paying a modest fee. Our policies also ensure that authors can distribute their published papers on personal or institutional websites and use them freely in teaching without additional charge. In addition, like many non-profit scientific society publishers, we provide subscriptions to institutional libraries at rates substantially lower than comparable journals published by for-profit. In short, the Botanical Society of America seeks to provide the widest possible public access to the *American Journal of Botany* consistent with obtaining the income necessary to sustain it. Professional librarians recognize that non-profit scientific society publishers publish excellent journals at relatively low cost, make the contents of those journals freely available after periods that allow them to recoup their expenses, and foster the development of new generations of scientists. Federal agencies that fund science can maximize the benefit of public access policies by working closely with non-profit publishers, like the Botanical Society of America, to ensure that policies they adopt reach the same balance, ensuring that the unavoidable costs of peer review, editing, and journal production are minimized, that non-profit publishers are able to recover those costs, and that access to the publications is provided to the widest possible audience.

(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research?

An embargo period of 12 months is appropriate for the *American Journal of Botany*, but we cannot comment on whether an embargo period of 12 months is appropriate for other journals or other fields of science. We began making our content freely available after 12 months beginning in 2005. While institutional subscriptions have continued to decline at approximately 4-5 percent per year, we saw no evidence that the rate of decline changed when we adopted this policy. In contrast, an informal survey of librarians from many institutions suggested that if we reduced our embargo period to 6 months, the decline in institutional subscriptions would threaten the financial viability of the *American Journal of Botany*.

Miami University Libraries at Miami University in Oxford, Ohio would like to thank the White House Office of Science and Technology Policy (OSTP) for extending the opportunity to comment on public access to peer-reviewed scholarly publications resulting from federally funded research.

Public access to federally funded research offers one of the best prospects we have for improving research communication and encouraging commercialization. Therefore, it is important that complete collections of articles resulting from publicly funded research be made immediately freely accessible, so that the public can fully use the information without commercial restriction. This access will help advance the public good by driving discovery, collaboration, research, and advancement. Providing individuals and companies access to this information allows them to build new products and processes spurring economic growth and new jobs across broad sectors of the economy. Increased access leads to increased use and will deliver an accelerated return on taxpayers' investments.

The federal government is in the best position to ensure that publicly funded articles are made permanently accessible and usable, assuming that public access policies are developed with distribution and archive rights in mind. A federal public access policy does not need to rest solely on the federal government, however. Multiple repositories supporting access and use would allow for a more distributed system. Many university libraries, including the Miami University Libraries, have extensive experience and the existing infrastructure in which to collect, describe, and archive such work. Because of libraries' experience organizing and providing access to information, I would encourage you to consider private/public partnerships provided the partner repositories meet conditions for public accessibility, use rights, interoperability, and long-term preservation of these publicly funded articles.

Facilitating broad access to this information is an essential component of our nation's investment in science, the economy, and the future of its citizens. Without a viable public access policy we are not sharing the best available science for community level decision-making, and we are not providing equitable opportunities. All taxpayers have a right to timely access to federally funded research results, not just those who are affiliated with a university.

We thank you again for providing me with the opportunity to comment.

Sincerely,
Judith Sessions
Dean and University Librarian
Miami University, Oxford, OH

and

Jen Waller
Information Services and Special Projects Librarian
Miami University, Oxford, OH

Dear Sir or Madam,

I am writing to express my support for the requirement that government-funded research be released, free of charge, to the public. I also wish to express my disapproval for H.R. 3699 and similar acts that would allow this research to remain locked and proprietary.

The simple fact is that federal agencies that provide monetary support to research activities should require that the full text of the peer-reviewed results be released in an open-access format.

As others have stated more eloquently, the public funds this research, and the public deserves to peruse the results which they have supported. Furthermore, public access allows research results to be disseminated more fully, and with greater speed, especially into sectors outside of the traditional academy. This dissemination allows for advances in medicine and industry that benefit the public at large, and which would otherwise never take place.

Sincerely yours,
Scott McClure, Ph.D.

27 Boulevard Road
Arlington, Mass. 02474

From: Chuck McGuire

Subject: RFI: Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research

Date: January 11, 2012 12:41:35 AM EST

To: publicaccess@ostp.gov

The issue at hand in this conversation, at least as nearly as I can tell is; Should publishers of peer reviewed journals have total control over the results of research that they did not conduct, document, or pay for. In my view, the answer is no. Publicly funded research should be immediately, freely and completely accessible to the public. The price of access to peer-reviewed journals is obscene, and even reprints of particular articles run \$30 to \$40 each, making them inaccessible to lay readers. Many of the journals are not even available anywhere near rural readers. The only fair, rational choice is to require that publicly funded resource be made a public asset.

--

Beagán a rá agus é a rá go maith.
Say little but say it well.

From: Heinrich Mallison
Subject: Re: Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research
Date: January 12, 2012 9:08:06 AM EST

Dear Mike,
many thanks for your Email; let me rephrase:

Dear Science and Technology Policy Office,

open access to information gained from scientific inquiry has increasingly shown itself to be a key advancer of information transfer between researcher themselves, and between researchers and the interested public. This is especially, but not only, true for medical research. The ability of health care professionals and patients to access information speedily and at no cost is one of the greatest goals we can strive to reach. In recent years, we've come closer to it, not least by the National Institutes of Health's demands that taxpayer-funded research be published open access or delayed open access (after one year). In Germany, the German Science Foundation DFG even allows and regularly grants requests for funding for paid open access publishing of research results from DFG funded projects.

Today, no-fee open access publication is viable provided surprisingly small public funding. A good example are Coquina Press and their no-fees open access electronic journal Palaeontologia Electronica (palaeo-electronica.org): the journal has been publishing research results free of charge to readers and authors for 15 years now, with ever increasing site traffic and citations. The entire yearly budget for this journal is less than the typical cost of five author-fee publications in average open-access journals.

The RFI asks, among many other things: "How can policies for archiving publications and making them publically [sic] accessible be used to [...] improve the productivity of the scientific enterprise?" The answer to that is simple: the faster information is accessible, and the easier and less costly it can be accessed, the more will research results be re-tested (which increases accuracy), used to conduct further research, and ultimately be turned into public benefit via new products and methods - again, with the biggest impact in health care. Immediate, no-cost access to the information will thus be the best method to improve productivity.

Paragraph (6) asks: "How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?" The answer is fairly simple: agencies can provide funding for author-fee open access publication. Potentially more cost effective, agencies could also fund open access journals, via an independent foundation so that no direct influence is possible.

Policies that should specifically NOT be adopted are all those that hinder open access. This includes, but is not limited to, the Research Works Act. RWA is a deliberate attack on progress and knowledge transfer in science. The public already pays for the research, and making it pay again for publication is, in my personal opinion, nothing short of highway robbery. All this bill would do is secure and increase the ridiculous profit margins of certain publishing companies, while limiting data access for scientists, medical personnel and citizens alike. Similarly, policies leading to pressure on scientists to conserve money to the detriment of open access publishing, by forbidding the use of research funding to pay for author fees, would play into the hands of certain businesses, but harm both research and the economic and health care gains from it.

Your sincerely,
Heinrich Mallison

Dr. Heinrich Mallison
Research Department
Museum für Naturkunde - Leibniz Institute
for Research on Evolution and Biodiversity
at the Humboldt University Berlin

Fere libenter homines id quod volunt credunt.
Gaius Julius Caesar

To whom it may concern,

This Act is not in the interests of science. It is entirely in the interest of private commerce at the expense of both the professional pursuit of scientific knowledge and (obviously) the public dissemination of the same. We do not do science for our own edification or profit, we do science to further human knowledge and understanding. Elsevier have built a very successful business by enabling communication of science, and now that the maturing of the internet and open access publication have threatened their ability to charge a tariff on that communication, they have reacted destructively. Please do not allow this - the scientific and education communities, and the public in general can only suffer as a result.

Dr. Vivian Allen

Institute for Special Zoology
Friedrich Schiller University Jena

Dear Science and Technology Policy Office,

I'm writing to express my opposition to the Research Works Act. Publicly funded research should be for the public's benefit, not a publisher's. This means, in particular, that everyone should have access to the results of the research. Thank you.

With regards,

David Dreisigmeyer, Ph.D.
Project Coordinator
Department of Engineering
Northern New Mexico College
Española, NM 87532

Esteemed United States Office of Science Technology and Policy,

As a foreign researcher I can only empathize with US scientists, stakeholders, policy-makers and remaining citizens that have access to critical information for their activities curtailed by publishing companies' steep pricing as the former are onerous enough without them.

When one factors in government funding, ostensibly derived from the taxes payed by every American citizen, it becomes a grave injustice to have the access to the published results blocked (not unlike barring access to periodicals in public libraries) especially in fields with a large and important publishing output such as biomedical research. Moreover, the United States can set the example for the rest of the world and as such facilitate the transition in other countries to open access publishing for research funded by the respective governments.

Many thanks for your time,

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Renato Santos, Quaternary Geology research assistant, Universidade do Algarve
<http://dracontes.deviantart.com>

From: Bill Mueller
Subject: **RWA, public access**
Date: January 11, 2012 7:58:11 AM EST
To: publicaccess@ostp.gov

It is only logical that if the public's tax dollars pay for the research, the resulting publication should be freely accessible to the public and other researchers.

Bill Mueller

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Read Bill Mueller's field notes to see what fossils we are finding
<<http://www.texasfinearts.com/Views/2012FieldNotes.htm>>

Hi,

I read that you are still taking comments about this proposed act. One of the things that really worries me is this act will limit students, international colleagues, and those who are not actually in a specific field from being able to engage with the larger scientific community.

Case in point - I am in the IT field, but because I read and enjoy open resource scientific papers, I was recently able to help two master students find the research they need for their dissertations. This may not seem like a big thing on the surface - but can any of us say where these two bright young ladies will go in the future?

Since reading these papers is a hobby, I simply cannot pay the fees to read papers that are not open source. These two students are in the UK, their college is fairly small, and does not have a lot of access to resources outside of the UK and Europe. Access to open source American papers was crucial to both of their projects and contained information they simply could not have paid for, nor would their college have paid for.

Please take a moment to think of the chain reaction this act could cause. Taking public research and then limiting access to only those who can pay for it would create a domino effect; limiting the ability of people in other fields to contribute, creating barriers across the international community, and creating obstacles for students that. We need open sourcing - there is too much at stake to think otherwise.

-Mary Rudig
Austin TX

Attn:
Office of Science and Technology Policy
725 17th Street, Washington, DC 20501

RE: OSTP RFI: Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research

Massachusetts Institute of Technology's comments on Federal Register Document 2011-28623

Claude R. Canizares, Vice President for Research and Associate Provost
Ann J. Wolpert, Director, MIT Libraries
Massachusetts Institute of Technology
Cambridge, MA

The Massachusetts Institute of Technology (MIT) appreciates the opportunity to comment on the merits of Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research (and have also submitted comments in response to Federal Register Document 2011-28621 on Public Access to Digital Data Resulting From Federally Funded Research). Public access to archived publications resulting from research funded by Federal science and technology agencies is a topic of substantial significance to this institution because MIT's mission includes a commitment to generate, disseminate, and preserve knowledge. This commitment carries particular weight when the new knowledge generated at MIT flows from federally funded research.

We address each question from this RFI in turn.

(1) Are there steps agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?

Comment 1. Open access to scientific knowledge in the form of research articles encourages economic growth through generating opportunities to create products and services. In order to maximize the growth of existing markets and develop new markets associated with peer-reviewed publications from federally funded research, the entire corpus of articles that have derived from publicly funded research should be made available for public use and reuse. This means not only being able to read the articles, but being able to create new works from them, and being able to use mechanized tools to analyze them or derive data from them.

While making the articles openly available for reading would speed science, making the articles available for reuse would also enable the development of new services and products. In fact, Victoria University Economist John Houghton's 2010 study concludes that if all the major federal agencies were to make the research they sponsor openly accessible, over 30-year period this would yield \$1B of benefits to the US, approximately 5 times the cost to provide the

archiving. (<http://www.arl.org/sparc/bm~doc/vufrpaa.pdf>)

A study published by the National Bureau of Economic Research supports this analysis with real-world testing of how closed research reduces innovation. In examining genes sequenced by the private company Celera, which were not publicly available, vs. those sequenced through public effort and made publicly available, MIT Professor of Economics Heidi Williams found that closed access reduced “subsequent scientific research and product development outcomes on the order of 30 percent.” (<http://www.nber.org/papers/w16213.pdf>). This study uniquely focused on whether “differences in scientific publications translate into differences in the availability of commercial products” and found “persistent negative effects” on the accumulation of new scientific knowledge from closed research. These negative effects continued even after the limits on access were removed.

Open access to research articles increases scientific productivity by increasing access and citations (see Hajjem et al 2005 as summarized in http://www.keyperspectives.co.uk/openaccessarchive/Journalpublications/American_Scientist_article.pdf), leading to quicker take-up of new ideas. In part, this increase in access and citation is driven by new and unexpected readers that take advantage of openly available research. At MIT, for example, where the faculty’s open access policy has been in place since 2009, despite the small size of the collection (4500 articles) readers routinely and eagerly read and download papers that describe current MIT faculty research results. In contrast, paid-access journals have increasingly constrained readership because of high and rapidly escalating access prices. (At MIT expenditures for journal subscriptions increased 400% from 1986 to 2009, during which time the number of journals to which we subscribed actually declined, and overall inflation increased by just 96%). The closed, subscription-based model shrinks audiences, locking out not only traditional users who are priced out of the market but unanticipated new users as well, such as those not associated with large research universities.

While public access to publicly funded research will stimulate the economy, not all public access policies are created equal in terms of their ability to improve productivity and encourage growth:

Public access policies that call for immediate open access are more powerful than those that allow for delays.

Public access policies that include open reuse rights (not simply ‘read-only’ access) allow the mining of information and encourage the creation of new tools and the use of new tools, thus providing access to key scientific knowledge more quickly, and offering faster application of that knowledge. When there is full open access, including reuse rights, machines can become readers, fostering new layers of connection and innovation that are not possible through human-based processing. We see this at MIT where faculty in many disciplines (e.g. economics, political science, computer science) have found innovative ways to process and analyze information using software tools, providing new insights and new ways of approaching research questions across disciplines, speeding connections and discovery and driving innovation.

- Public access policies that are mandatory will achieve the highest levels of participation, and therefore have the biggest impact on economic growth and scientific innovation. We have seen evidence for this with the NIH policy, where participation went from 4% to 75% following a move to mandatory deposit (according to NIH's Neil Thakur, December 2011).
- Public access policies like the proposed Federal Research Public Access Act (FRPAA), which would extend NIH-like mandates consistently to all federal agencies granting more than \$100 Million in research annually, would expand all of the benefits of public access dramatically. Victoria University Economist John Houghton's research concludes that opening access to all US publicly funded scientific articles would result in an increase in return on investment of at least 5 times. His research shows that "[t]he overall impacts of openly archiving all FRPAA agencies' funded R&D article outputs" would have "likely US national benefits of around 8 times the costs." (Houghton www.arl.org/sparc/bm~doc/vufrpaa.pdf) Supporting this theoretical study is the actual data from the NIH public access policy, which has been shown to be cost effective, absorbing only about .0001 percent of the overall NIH budget.

To generate the most benefit from such public access policies, it will be important to establish standards, avoid unnecessary proliferation of deposit systems and requirements, benefit from the experience of other repository services, and work with existing infrastructure, such as that developed by the NIH in operating PubMedCentral.

(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?

Comment 2. The existing copyright law does not need to be changed in order to accommodate broader public access policies, such as a FRPAA-style mandate for all large federal agencies. For example, Creative Commons licenses (<http://www.creativecommons.org>) allow for the exercise of existing copyrights and are valid and enforceable under existing copyright law, and can be used under public access policies to extend the benefit of openness, by signaling appropriate uses that can be made under copyright law without the delays and complexities of permission-seeking.

CC licenses would improve upon the NIH model, which allows for "fair use" of the articles but does not unambiguously signal permission to create modified versions (derivative works), which is important to fuel innovation. Deploying Creative Commons (CC) licenses for articles made available under public access policies would expand the benefits of openness to allow for more innovation, by allowing for text/data mining and creating new works from existing

works.

To address potential publisher concerns about making publicly funded research immediately available under a CC license, there could be a period during which research articles are available under US copyright law's fair use provisions (as are the articles collected under the existing NIH policy), after which they could be opened up under an appropriate CC license.

3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

Comment 3. There is no adequate substitute for the Federal government providing long-term archives for the research it funds, though Federal archives could be effective whether highly centralized or less centralized. Current private models, on the other hand, have not proved adequate. A 2011 MIT study found that only 22% of MIT's subscribed journal titles are included in one of the top four e-journal archiving projects (Portico, JSTOR, HathiTrust, and CLOCKSS) (MIT only: <https://wikis.mit.edu/confluence/x/enS6B>). Another major research library (Cornell) confirms these findings, estimating that less than 15% of their journal holdings are archived by either Portico or LOCKSS (<http://2cul.org/node/22>).

A decentralized government approach to archiving could work if archives were interoperable. Partnerships between private and public entities might be an effective way to ensure that sufficient repositories are available for all federal agencies, as long as clear standards for access and use were adhered to.

Whether centralized or decentralized, all archives of publicly funded research must be set up to manage and actively serve content over the long term. Decades of digital archiving experience have shown that storing papers out of view for future audiences, will not serve the public over the long term: active, ongoing access and use are critical to successfully maintaining an archive.

(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?

Comment 4. The Digital Repository Infrastructure Vision for European Research offers a new model of confederated repositories whose goal is to "create a cohesive, robust and flexible, pan-European infrastructure for digital repositories." (see: <http://www.driver-repository.eu/>) This kind of network of interoperable repositories could act as a model for US federal agencies. Given American universities' experience with existing archives, including for example MIT's development of the open source repository software DSpace (in partnership with Hewlett-Packard), universities are well positioned to act as partners in developing this kind of infrastructure in the US.

The existence of the PubMed Central International network, including UK PubMed Central

(launched by the British Library in 2007) and Canadian PubMed Central (a partnership of Canadian governmental agencies and the US NLM) also suggests the kind of collaborative infrastructure that could be built. Another example is the Digital Public Library of America, announced in 2010. It is still in its early stages, but grew out of a public-private partnership that included universities, government, public libraries, and foundations. Its goal is to become an “open, distributed network of comprehensive online resources that would draw on the nation’s living heritage from libraries, universities, archives, and museums in order to educate, inform and empower everyone in the current and future generations.”

An important consideration in looking at these examples and possible models is that any archiving system must include some redundancy of access, so that one location is not the only source for an article. Relying on a single proprietary system, for example, creates unacceptable vulnerability. We saw evidence of this clearly decades ago when the nonprofit JSTOR was building its archive of journals. In many cases, JSTOR turned not to the original publishers, but to libraries (including MIT’s) to provide copies of journals to complete the scanning of back issues, since publishers had not been maintaining complete archives of what they had published and could not supply the full back runs.

(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?

Comment 5. Metadata standards are critical to allow for interoperability. Existing standards can support the development of minimum core metadata, including the Dublin Core and the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH, see: <http://www.openarchives.org/pmh/>).

Critically important is the development of controlled identifiers for authors, such as the work being done by the ORCID project (see: <http://orcid.org/>). Standard name identifiers should create much-needed efficiencies in author name disambiguation for research institutions and research funders, for whom connecting particular individuals unambiguously to specific research papers is a critical function that underlies all other tools and services related to use of the research literature.

To maximize the potential for analyzing how publicly funded research is being used, adherence to usage tracking and analytics standards, such as the COUNTER project (<http://www.projectcounter.org/about.html>) and NISO’s SUSHI project for automated harvesting of usage statistics (<http://www.niso.org/workrooms/sushi/>), is essential.

Also significant is the need to require and support metadata that clearly identifies the research sponsors and the grant IDs associated with a paper. Relevant to this need is recent work by

CrossRef (<http://www.crossref.org/>) to add grant identifying information to their collaborative reference linking service.

Metadata can facilitate the analysis and reuse of publications, speeding the acquisition of scientific knowledge, but must be machine readable as well as interoperable to achieve this goal most fully. Use of metadata standards along with an application programming interface (API) that allows for standards-based data exchange will promote the most efficiency in analysis and reuse (see for example JSON <http://www.json.org/>).

Metadata describing article version is also an important tool to support effective public access. Readers need to know whether they are looking at a version that incorporates peer-review changes and whether there are updated versions of an article. Standards for identifying and linking versions are needed, building on recommendations from the NISO Journal Article Versions working group (<http://www.niso.org/publications/rp/RP-8-2008.pdf>) and those of the JISC VERSIONS project and Version Identification Framework (<http://www.jisc.ac.uk/whatwedo/programmes/reppres/vif.aspx>). Tools to expose version information are also needed, with CrossRef's new version-identifying CrossMark tool (<http://www.crossref.org/crossmark/index.html>) providing an important step in that direction.

Metadata is needed not just to describe or provide information. Metadata is an essential tool to enable services related to the publications described. For example, at MIT we are using metadata from CrossRef to enable services in some small but significant ways in our implementation of the faculty's Open Access Policy. We save considerable time and improve accuracy by automatically obtaining bibliographic data on our scholarly articles based on a DOI match.

Using specialized metadata that captures the meaning of content will support implementation of collaborator and expert identification systems like the open-source profiling system, VIVO (<http://vivoweb.org/>). Such "semantic metadata" offers rich, meaning-based terms to index scholarly output. By use of standard vocabularies, inter-institutional networks of information become possible, with improved discovery.

Structured metadata like this will be increasingly important for scholarly articles as they move into new formats that don't allow for mining of full-text, such as video and image formats. For example, JoVE, the Journal of Visualized Experiments, is the first scholarly, peer-reviewed "video journal," a format that for which structured metadata will help with discovery and reuse. Rights information is another area where standardized metadata is necessary to grease the wheels of reuse, indicating to human and machine readers whether and to what extent a work can be modified and built on. By including specific metadata such as Creative Commons or other licensing metadata, we should enable not just discovery of content, but its reuse. As we move forward, metadata (such as citable URIs) will be the key to connecting publications with associated research data, allowing for newly efficient access to data and providing the opportunity for the development of automated tools to find, mine, and use the data. This critical connectivity is missing from our current landscape (see for example results of the PARSE.Insight survey at: <http://www.dlib.org/dlib/january11/smit/01smit.html>) and will provide a foundation for the next level of efficiency and growth in scientific knowledge management.

(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?

Comment 6. Consistency of requirements is the key element that will allow federal agencies to maximize the benefits of their public access policies. Based on our experience supporting the NIH Public Access Policy and the MIT Faculty Open Access Policy, compliance will rise directly with convenience to the author. For this reason, common procedures, requirements, and processes should be established across all funding agencies.

At MIT we have seen direct benefits from enabling tools for automated deposit. We have been using the SWORD protocol (Simple Web-Service Offering Repository Deposit, see: <http://swordapp.org/about/>) to automatically deposit papers from a major commercial publisher into our local repository. This process has afforded dramatic time savings and has tangibly confirmed that enabling automated repository and inter-repository deposit is a critical component of creating efficiencies for authors and publishers, driving compliance rates and therefore impact.

Looking ahead, public access policies should consider leveraging existing protocols such as SWORD, and engaging with open source tools and open architecture solutions. The goals should be to promote the benefits and availability of publicly funded research, make such research readily and persistently accessible, and provide platforms for use and reuse.

(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?

Comment 7. Public Access policies should reasonably include all outputs that result from publicly funded research including articles, book chapters, conference proceedings, multimedia, and future forms of scholarly communication not yet normalized.

The approach taken at MIT is that if a research article has been produced for the purpose of contributing to research and scholarship and is made available for publication at no cost and with the assumption it will be shared with other researchers, the faculty's Open Access Policy applies. The MIT Faculty Open Access Policy covers all "scholarly articles," defined as "articles that describe the fruits of [faculty] research...that they give to the world for the sake of inquiry and knowledge without expectation of payment. Such articles are typically presented in peer-reviewed scholarly journals and conference proceedings." The same approach would appropriately be applied to federal agency public access policies, in order to incorporate all relevant publicly funded scholarly articles under public access policies.

If other forms of scholarly output, such as scholarly monographs or text books, incorporate knowledge acquired by the author pursuant to federal funding, policy conditions may need to account for author effort, timeliness, and market differences.

(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?

Comment 8. Immediate access benefits the public most fully. Experience with funder-mandated embargos of 6 months or less (as with the Howard Hughes Medical Institute's policy) suggests that publishers can sustain their publishing activities under these conditions. We note that the Open Access Policy adopted by MIT's faculty views immediate access as the appropriate goal, and that the policy does not support delays of any length in sharing the author's final manuscript version.

The experience of arXiv (<http://www.arxiv.org>) has demonstrated that open access to scholarly articles in high-energy physics and related disciplines prior to formal publication does not affect journal subscriptions. The American Physical Society has repeatedly and publicly confirmed that they have no data associating subscription cancellations with open access to the high-energy physics literature. Embargoes of 12 months or less have been adopted by hundreds of journals, such as those supported by Highwire Press (<http://highwire.stanford.edu/lists/freart.dtl>), and by research funders worldwide (see: <http://roarmap.eprints.org>).

Similarly, the Royal Society has learned that open access to back content does not result in significant revenue loss. The Royal Society has determined that less than one half of one percent of their overall publishing revenue is attributable to content older than 12 months. There is likewise no evidence that any publisher has been harmed by the NIH Public Access Policy, even during a significant economic downturn.

The full array of market conditions that may influence journal cancellations must be included in any analysis that purports to show a correlation between journal cancellations and open access to a portion of journal articles. Factors that are determinative at MIT include changing faculty research directions, budget support for the library, journal prices and compounding journal price increases, cost per use, terms and conditions of use, and increased competition from new journals.

Closing comments:

MIT wishes to thank the Office of Science Technology and Policy for this opportunity to comment. MIT's mission, like that of other US research universities, is to generate, disseminate, and preserve knowledge -- -- and through its research to serve as an engine for economic growth.

MIT's research has the potential to translate directly into growth in the regional and national economy. A study by the Kauffman Foundation finds that companies started by MIT alumni generate revenues that are comparable to the 17th-largest economy in the world (See:

<http://web.mit.edu/newsoffice/2009/kauffman-study-0217.html>). At the time of the study (released in 2009), 6,900 MIT Alumni companies with worldwide sales of approximately \$164 billion were found to be located in Massachusetts, representing 26 percent of the sales of all Massachusetts companies. Those in California generated another \$134 billion in worldwide sales. This study documents the dramatic and “critical role universities play not only in fostering innovation and entrepreneurial growth, but in stimulating the much-needed recovery in regional and global economies.” Open access to research results has the potential to further enhance the economic impact of federally funded research.

Other countries are increasingly aware of the national advantage and improved return on investment created by expanded access to their publicly funded research. These advantages have been documented in studies of potential improved return on investment in the UK, the Netherlands, Australia, and Denmark as well as the United States (see

<http://www.cfses.com/documents/wp23.pdf> ;

<http://www.jisc.ac.uk/publications/documents/economicpublishingmodelsfinalreport.aspx>; and

<http://www.arl.org/sparc/bm~doc/vufrpaa.pdf>)

The ability of research universities to continue to contribute to the welfare of the nation and the interests of the states and local communities in which we reside is fundamentally connected to the open availability of the research results produced by MIT and by the country’s large and small research universities. We appreciate the Office of Science and Technology and Policy’s interest in this connection between public access to research and public benefit, and we thank the Office of Science and Technology and Policy for this opportunity to comment on a critical aspect of the research cycle.

Ann J Wolpert

Director

MIT Libraries

<http://libraries.mit.edu>

As a taxpayer and provider of information to researchers, please, please, please do not tamper with the open access policy. I see everyday the need for access to published research that will aid US citizens and citizens of the world. The giant publishers have selected a business model that serves only them based on my taxes. We do not need to fund their poor business model. We taxpayers are entitled to access to research published from our tax supported grants. This makes no sense except as another example of lobbyists determining who gets access to our taxes. The public access policy is one of the best pieces of legislation I have seen. Please do not tamper with it.

Susan Orlando
4 Springhill Road
Wayland, MA 01778



Response: To Office of Science and Technology Policy

Request for Information: Public Access to Peer-Reviewed Scholarly, Publications Resulting From Federally Funded Research

January 11, 2012

On behalf of the public and private academic and research libraries of New York I urge all federal policy makers to embrace and extend public access to scholarship resulting from federally funded research.

Despite the relentlessly rising costs of published research and the current budgetary constraints on library collections, I will refrain from making an economic argument in favor of open access. As moving as that argument may be, it is greatly overshadowed by the case for justice, and the future of scholarship and innovation in the United States.

As a first principle, the taxpaying public has a right to expect access to the results of research for which they paid. The matter is that simple. As a taxpayer has the right to drive on public roads, so should he have the right to read the research he made possible. Note that the published research is already available to the public, so this is not akin to suggesting a citizen be permitted to drive a tank because his taxes contributed to the military budget.

Regarding scholarship, the citizen has no barriers to the work provided he pays a second time – once in addition to the original federal investment. A corollary to the current standard would be to charge taxpayers a membership fee for the privilege of visiting the local public library. That practice would not stand.

Yet it is not merely in the interest of justice to provide access to scholarly publications resulting from federal funding. It is also vitally important to the competitiveness of our nation.

Living in the information age, we must acknowledge that information itself is the raw material of progress – it is the great commodity of our age. Here historical analogies are apt.

During the transportation revolution of the nineteenth century, access to a railroad often determined the life or death of a community. Through most of the

NYSHEI represents the public and private academic and research libraries of New York

twentieth century, access to highways, communications, and power grids, spurred economic growth. The richness of our infrastructure and the open access Americans enjoyed helped make our nation an economic superpower beyond any measure the world had ever known. As our economy changes it is vitally important that we marshal our resources to continue making the great resources of the United States available to as many citizens as possible.

Today, as we labor to make high-speed internet access available to all, as wireless networks proliferate, it is incongruous to think that we may actually limit the knowledge that can flow over those networks.

Access to publications resulting from publically funded research is the right of every taxpayer. It is also critical to innovation, entrepreneurialism, and America's standing in the world.

Jason Kramer
Executive Director

The New York State Higher Education Initiative represents the public and private college and university libraries of New York, as well as the libraries of a number of public and private research institutions.

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From: Heather Etchevers

Subject: Response to Request for Information - FR Doc. 2011-28623

Date: January 11, 2012 11:48:20 AM EST

To: publicaccess@ostp.gov

Submitted by Heather Etchevers, Ph.D. – Biomedical clinical research scientist writing in a personal capacity, employed by the French National Institutes of Health (Institut National de la Santé et de la Recherche Biomédicale). U.S. citizen.

I am unashamedly basing my response on that of my colleague Dr. Cameron Neylon, from the U.K., but have changed a number of items to reflect my own convictions and experience.

Preamble

Thank you for the opportunity to respond to this request for information. The intellectual property that is generated through publicly funded research takes many forms. It includes patents, the scholarly communications of researchers (including peer reviewed papers), as well as trade secrets, and expertise. The funder of this IP is the taxpayer, through the action of government. Federal funders pay in large part for the direct costs of research, as well as the indirect costs including, but not limited to, investigator salaries, subscription to scholarly journals, and the provision of infrastructure. That the original ownership of this IP is vested in the government is recognised in the Bayh-Doyle act which explicitly transfers those rights to the research institutions and in response places an obligation on the institutions to maximise the benefits arising from that research.

The government chooses to invest in the generation of this intellectual property for a variety of reasons, including wealth generation, the support of innovation, the creation of a skilled workforce, evidence to support policy making, and improved health outcomes. That is, the government invests in research to support outcomes, not to generate IP *per se*. Thus the appropriate debate is not to argue about the final disposition of the IP itself, but how to best support the services that take that IP and generate the outcomes desired by government and the wider community.

By the current focus on the final disposition of IP, a situation currently exists in which different stakeholders argue about who made what contribution. The IP is either divided to the point where it is useless, or concentrated in places where it never actually gets exploited. If instead we focus on the delivery of services that support the generation of outcomes, we will have a framework that recognises the full range of contributions to the scholarly communications process, allows us to optimise that process on a case by case basis, and ultimately enables the U.S.

tax dollar to make the U.S. a more economically successful and a better place to live.

Response

(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?

Over the last decade, there has been an increase in the massive and demonstrated demand from the general public for access to peer-reviewed papers, particularly for access to validated biomedical research. A second crucial market for traditional papers is small and medium enterprise. Estimates of the loss to the U.S. economy from the current lack of comprehensive access to peer reviewed papers by SMEs are around US\$16 B (<http://osc.hul.harvard.edu/stp-rfi-response-january-2012>).

Education at levels from primary through the postgraduate can also benefit from access to current research. In the hands of the right teachers, availability of primary research in domains of interest to our youth and their educators will enable critical thinking on current issues (as opposed to the decades-old ones that make it into scientific textbooks) and the potential blooming of innovative and relevant solutions by this future skilled workforce as it comes of age.

The question is how to demonstrate the sustainability of markets in which the costs of the services required to produce peer reviewed papers can be supported. The incremental cost of providing immediate access upon publication to peer reviewed research communications is at worst zero. The incremental cost of making a publication more widely available once the sunk costs involved in its preparation and peer review have been covered is zero. The infrastructure exists, both in the form of journal websites, and other repositories, to serve this content.

Open Access publishers, such as the Public Library of Science and BioMedCentral, have demonstrated that it is financially viable to make peer reviewed research freely available **via charging for the service of publication up front**. The charges levied by PLoS and BMC are in fact less than those charged by subscription based publishers for vastly inferior “public access” services. For instance, the American Chemical Society charges up to \$3500 for authors to obtain the right to place a copy of the paper in an institutional or

disciplinary repository, but limits the rights to commercial use (including for instance use in research by a biotechnology startup or for teaching in an institution which charges fees). I published a few years ago in an Oxford University Press journal using their Open Access option (which I was glad they offered) - but that option alone cost me \$3000 on top of the page charges (see <http://www.oxfordjournals.org/oxfordopen/charges.html>). By contrast the charge made by PLoS for publication in PLoS ONE is \$1350. This provides the service of peer review, publication, archival, and places the final, peer reviewed and typeset, version of the paper on the web for the use of any person or organisation for any purposes, thus maximising the potential for that research to reach the people who can use it to generate specific outcomes.

The debate over where the IP is finally located, in which **a publicly funded author has to purchase a limited right to use their own work, having donated their copyright to the publisher**, is ultimately sterile. The debate should be focussed on the provision of publication services, the best mechanisms for paying for those services and ensuring a competitive market, and the value for money that is provided for the public investment. It is noteworthy in this context that a number of new entrants to this market, who have essentially copied the PLoS ONE model, are charging exactly the same fee, suggesting that there is still not a fully functional market and that there is a significant margin for costs to be reduced further.

Nevertheless, once the charge for the services attached to publication have been levied, it is important both for the public and the scientific enterprise to have access to the published work as easily and readily accessible.

(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?

It is crucial that **all** service providers, including publishers, research institutions, and researchers themselves receive appropriate recompense for their contributions, intellectual and otherwise. We must enable markets that support sustainable business models for the provision of these services as well as providing competition that ensures **a fair price is being paid by the taxpayer for these services** and encourages innovation. Many of the critical contributions to the process do not generate any intellectual property as I understand the term.

I have gone through the final submitted version, after peer review, of the ten most recent peer-reviewed papers on which I was the corresponding (and therefore most responsible) author. I have examined the text and illustrations of these, which were subsequently accepted for publication in this form, for any intellectual property that was contributed by the publishers during the peer review process. I have found none.

In my view the only relevant intellectual property here is copyright. The expression of our results and ideas in text or in images was not contributed to these documents by the publishers. The final published versions of these papers do have a small contribution of intellectual property from the publishers: the typesetting and layout in some cases, but these are not relevant to the substance of the research itself. Indeed, many for-profit publishers explicitly permit the "self-archiving" of manuscripts in the pre-typeset format, that can be made freely and openly available, for example on the PubMedCentral website, or on other institutional websites. However, none of these publishers to my knowledge are willing to place a link to the free, self-archived version on the same webpage as the version to which they assert they have made a crucial contribution, which requires payment on a per-article basis.

The publishers for each of these papers have indeed provided a range of helpful services, without which the paper would not have been published or would not be visible, including the infrastructure, management of the peer review process, archiving, and deposition with appropriate indexing services. These important services are clearly ones for which **a fair price should be paid to the service provider**. It is therefore the services that we require to purchase and the most effective and appropriate mechanism by which to purchase them, that should be the point of discussion, not the disposition of intellectual property.

Once the costs of preparing and reviewing a research output and making that output available online have been met, there is no economic benefit or reduced cost achieved by reducing access to that output. There is also no gain in paying the full costs for a service that places an output online but then limits access to that output.

(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

The preference for a distributed or a centralized approach is likely to differ between disciplines, types of research output, and indeed across national borders. Government and federal agencies can best ensure the infrastructure that can support the fullest range of publication, discovery, archival, and integration services by a mix of services, and technical and human infrastructure, provided not only by government but also by commercial entities, and not-for-profits, some of which are centralised, some of which are distributed. Economies of scale mean that it will be more cost-effective for some elements of this to be centralised and done up-front by federal agencies (e.g. long-term preservation and archiving as undertaken by the Library of Congress), whereas in other cases a patchwork of private service providers will be appropriate (specialist discovery services for specific communities or interest groups).

If a service-based model is adopted, in which a fair price for the costs of providing review and publication services is paid up front, guaranteeing that any interested party can access and re-use the published research output, then government will be free to archive and manage such outputs where appropriate. This will not interfere with the freedom to act of any other interested public or private stakeholder, providing greatest flexibility for all. I believe that **long-term stewardship can be guaranteed by contracts that private publishers would pass with the U.S. government in order to publish federally funded research**: to make their archives directly available to a Federal agency, and a reversion of their IP to the government, in case of financial insolvency.

Concretely, this would require government-supported researchers to continue to disseminate all the results of their work with publishers that have made an engagement to provide said open-access service in exchange for a fee-up-front, which cost can be taken into budgetary account in the research funding that is distributed by said government. Such a requirement can be enforced at the level of the research funding contract.

(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?

There are a range of such models ranging from ArXiv, through relatively traditional publishers like PLoS and BMC, to new and emerging forms of low cost publication that disaggregate the traditional role of the scholarly publisher into a menu of services which can be selected from as desired. The role of government and federal funding agencies is to **make a clear statement of expectations as to the service level expected of the researcher and their institution as a condition of funding**.

I am personally very pleased with the evolution of MEDLINE over the years and the increasing use and interoperability of PubMed as it links to publishers' websites as well as to the PubMedCentral repository when possible. Other countries have started to set up similar institutional repositories - links could be added to these. ResearchGATE (<http://www.self-archiving.me/>), which is promoted by the American scientific honors society Sigma Xi, is another example. It might be harder to make links to finer-grained self-archiving methods, not to mention difficult to police broken links over time, but perhaps registration with MyNCBI could accord the right to the registrant to make a comment on any individual article, in which they submit such a link to a personal website or other repositories. I do not know how things work in other scientific disciplines, with the exception of arXiv in theoretical physics and mathematics, but I think PubMed could be a model to follow for chemistry or ecology, for example.

(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?

Federal agencies should take advice on the adoption of standards only when and where they have widespread adoption and traction (e.g. the PubMed model). The funding of specific targeted developments to support standards and interoperability development is appropriate. Consideration should be given at all times to aligning research standards with standards of wider relevance (e.g. consumer web standards) where appropriate and possible, as these are likely to be better funded. There are however risks that the development of such standards can take directions not well suited to the research community.

Standards adopted by federal agencies should be open in the sense of having:

- a) Clear documentation that enables third parties to adhere to and interoperate with the standard.
- b) Working implementations of the standard that can be examined and reverse engineered by interested parties.
- c) Defined and accessible processes for the development and ongoing support of the standard.

I think in particular of the tag fields that are associated with references in

MEDLINE for importing into bibliographic managers such as Mendeley, EndNote and Zotero. The standard is clear, and are used by the private sector to everyone's benefit.

(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?

Federal agencies, consistent with the Paperwork Reduction Act and guidance from the Office of Management and Budgets should adopt a “write once - use many” approach. Where possible, the reporting burden for federally funded research should be discharged once by researchers for the communication of each research output. This means in turn that services purchased in the communication of that research should be sufficient to provide for any downstream use of that communication that does not involve a marginal cost.

Thus, for instance, researchers should **not** be expected to write two independent documents, the peer-reviewed paper, and a further public report, to support public access policies. Reporting on the outcomes of federally funded research should depend, as far as possible, on existing previous communications.

(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?

Yes. All research outputs should be covered by coherent federal policies that focus on ensuring that global outcomes of the public investment in research are maximised. The focus purely on research articles is damaging and limiting to the development of effective communication and thus exploitation. I have written a number of peer-reviewed book chapters, some of which are not visible because not listed in PubMed, and that could be valuable to the public and the research community. Self-archiving is a partial solution, but visibility is still an issue. If public access policies covered other peer-reviewed productions such as these, then that would level the playing field.

Still, scholarly journal articles are the true currency of scientific communication, and if a priority list must be made, they are at the top.

(8) What is the appropriate embargo period after publication before the public is

granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?

Once the misleading focus on intellectual property is discarded in favour of a service based analysis it is clear that there is no justification for any length of embargo. Embargoes seek to **ensure a private gain through creating an artificial scarcity** by reducing access for a limited period of time. If a fair price is paid for the service of publication then the publisher has received full recompense in advance of publication and no further artificial monopoly rights are required. As noted above the costs of providing such services are no higher than is currently paid through subscription costs. With appropriate competition the costs might indeed become lower.

From the perspective of exploiting the public investment in research embargoes are also not justifiable. Technical exploitation, commercial development, and the saving of lives all depend on having the best and most up-to-date information to hand. Once a decision has been taken to publish a specific research result it is crucial that all of those who could benefit have access, whether they are private citizens with sick family members, small business owners and entrepreneurs, not-for-profit community support organisations, or major businesses.

Given the current environment of intellectual property law, it may be appropriate under some circumstances for the researcher or their institution to **delay publication** to ensure that the research will be fully exploited. However there is no benefit to either the researcher, their institution, or the federal funding agency in reducing access once the research is published. Further it is clear that reducing access, whether to specific domains, communities, or for specific times, cannot improve the opportunities for exploitation of the research. It can only reduce them.

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COMMENTS on Request for Information: Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research

January 11, 2012

Submitted by Rebecca Kennison, Director, Center for Digital Research and Scholarship, Columbia University (e-mail: rkennison@columbia.edu)

On behalf of Columbia University Libraries/Information Services

New York, New York

Comment 1

The United States and its businesses compete in a world in which substantive investments abroad have been made to make research publicly available. Europe in particular is investing heavily not only in governmentally funded research repositories but also in the development of shared infrastructures throughout the European Union through the establishment of the European Research Area, the focus of which is on publicly shared research as a primary means to eliminate duplication of research efforts and lower the R&D costs to innovation. The European Commission report “Europe 2020 Flagship Initiative Innovation Union” (found at http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication_en.pdf) makes the explicit point several times that part of the European strategy to achieve market success is free access to publicly funded research and data.

An indication of the wealth of services and industries based on access to a large publishing corpus can be best seen through the innovative tools, platforms, and services that large companies — for example, technology giants such as IBM and Microsoft, media companies such as the Tribune Company and Thomson Reuters, and publishers such as Reed Elsevier — have been able to develop from their large (but mostly proprietary) corpora. Opening up published research to broader public access and use will allow start-ups and entrepreneurial small businesses to likewise have access to this wealth of information and to more easily create collaborative partnerships that could result in more jobs, less costly R&D, and more innovation. Just one example of a company built on freely available information is Google, whose remarkable growth and financial success are based entirely on access to freely available information that Google could then monetize.

A tip of the iceberg in innovation can also be seen in the numerous “apps” that have been created by individuals and businesses using publicly available information and

data, products such as Twitter mash-ups, weather apps, transportation apps, and apps that utilize Flickr or Wikipedia content that are then often funded by advertisements or individual purchases. Programmer challenges such as the Sunlight Labs' Apps for America 2's Data.gov Challenge (<http://sunlightlabs.com/contests/appsforamerica2/>) provide a taste of what innovations can be encouraged when text, images, multimedia, and data can be mined and repurposed at will, thus lowering the barrier to entry for an individual or small group to create products that only a few years ago were solely the purview of large companies with considerable capital.

Likewise, tax dollars can be better utilized through providing machine-readable research that can be sorted and analyzed through tools being developed or that could be developed, such as BioText from the University of California at Berkeley (<http://biosearch.berkeley.edu/>) or the suite of tools being created by the National Centre for Text Mining in the United Kingdom (<http://www.nactem.ac.uk/software.php>), initiatives only possible because of the increasingly large corpora available through publicly funded and governmentally encouraged repositories in various countries. The explosion of biomedical analysis tools already being built on top of data using (particularly) PubMed and the full text within PubMed Central and its offshoots in the UK and Canada show as well the promise of open information to spur innovation.

Open availability to research outputs and data also allows for development of projects that encourage participation from citizens and students alike, from "citizen science" projects (such as Galaxy Zoo [<http://www.galaxyzoo.org/>] and NASA's Ice Hunters [<http://blogs.discovery.com/friendly-citizen-science/2011/06/be-an-ice-hunter-for-nasa.html>]) to cultural heritage efforts (such as the Library of Congress' Flickr project [http://www.loc.gov/rr/print/flickr_pilot.html], which in turn inspired the creation of Flickr's Commons [<http://www.flickr.com/commons/>]). The outcome of such projects is a more informed and more engaged citizenry that contributes directly to advancing knowledge and building new services (both private and public).

Many forms of access to published works will open opportunities for economic growth and expanded productivity. Access should not be technologically limited, but should meet the demand for machine-readability and human interface. Further, open access to scholarly publications is already fostering new business models. Some aggregators of databases of full-text journals continue to include journals that are also available to the public online without restriction, and libraries and other parties continue to purchase those databases. For example, EBSCO long has been a leader in the development of databases of scholarly journals that it markets to libraries and other purchasers. Many of the journals in the EBSCO database are freely available to the public in full directly from publishers through their web sites or other means. Nevertheless, EBSCO continues to find value in including such journals in their commercially marketed databases and continues to build its business, earning revenues and fostering economic activity by selling enhanced and

federated access to these freely available journals. Under EBSCO's standard terms, it does not pay a royalty (or pays a reduced royalty) for inclusion of open-access materials in the database, and we know from our own experience with academic journals based at Columbia University that many journal editors are willing to forgo the royalties in exchange for the added readership that can come through access by way of EBSCO and other aggregators. The open accessibility of the journals, therefore, does not hinder business prospects, but instead promotes opportunities for new business models and for additional public access to the scholarly publications.

Increasing the availability of open access to research also has important consequences for the economic and social implications of higher education. Under conventional publishing systems, many of the studies that result from federal funding are available only through the purchase of subscriptions or databases available from commercial suppliers. The escalating cost of those publications is well documented. A recent study affirms lower costs to most libraries if journals are made open access (<http://www.bioone.org/doi/pdf/10.1641/B570709>). The growing expense of purchasing journals is exacerbating the so-called "digital divide" that is separating the persons in this country who have access to information from those who do not. Only the largest universities and libraries typically have the budget to acquire the vast range of publications that are necessary to support the information needs of researchers and students and to foster the next generation of knowledge. One can compare university budgets in any city, state, or community to find obvious unevenness in the ability of some colleges and universities to acquire the scholarly literature, leaving it available only to researchers who have the advantage of being at universities with a strong funding base. This disparity in access to information in turn leads to a disparity in educational opportunity and differences in career opportunities for graduates of many of our institutions of higher learning. Perhaps most pointedly, Columbia and other research libraries must now offer grants to subsidize the ability of researchers to come to the library and use collections that are not available online (http://library.columbia.edu/indiv/spcol/research_awards.html). The fact that materials are not online not only constrains access, but also compounds the expense of doing research.

Further, the increasing cost of many of the subscriptions and databases from some publishers inevitably leads to one of two results: The institution may reduce expenditures for other materials or cancel that particular purchase, leading to further loss of information access; or the increased costs of information access are passed along to students in the form of increased fees or escalating tuition. We are well aware of the challenges associated with increases in university tuition and the implications for the ability of students to enjoy the opportunities and economic prosperity that can come from a university education. Assuring open access to the scholarly literature can help to level the accessibility of information resources by students at all colleges and universities throughout the country. Open access can also help ameliorate the rising cost of education and help keep these costs in check.

Comment 2

Policies related to open access of scientific research may have implications for three different areas of intellectual property: copyright, patent, and trademark. This response will address those implications separately.

Copyright Law.

Under the structure of current copyright law, most journal articles and other publications that result from research are protectable under copyright law. Copyright protection is, however, applicable only to the expression in the work and not to the facts. Thus, the facts, data, findings, and conclusions that result from scientific research are not themselves protectable by copyright. Any new policy related to open access of literature that includes such elements should not affect that fundamental premise of copyright law. However, the narrative text and other expression in the publication are ordinarily protectable by copyright law. Some publishers have conventionally required that the author transfer or assign the copyright in full to the publisher. The movement toward open access of such literature has led to a reconsideration of such policies by many authors and publishers. Many publishers today voluntarily add some flexibility to their standard practices, permitting authors to make at least a pre-publication version of their article available on a web site, in a repository, or by some other means openly available to the public. On the other hand, some publishers have added flexibility to their terms of publication only to the limited extent necessary to comply with legal requirements for public access, such as if the work is funded through the National Institutes of Health (NIH).

Despite these developments, nothing in the movement toward open access of research literature has in any way altered the fact that the work is protectable under copyright law. Nothing in any of these developments has affected the terms under which the public or universities may use the work under fair use or other copyright exception. Nothing about the progression toward open access undercuts the ability of a publisher to hold the rights it needs to build an effective business model for scholarly publishing. The most significant, recent change has been a heightened awareness among authors that in fact copyright applies to their work and that they have choices with respect to the terms on which they will agree with a publisher for the publication and other future uses of the work. Similarly, publishers also have gained a greater appreciation for the fact that they do not need all rights associated with the copyright in order to meet their business objectives. Indeed, some publishers are offering an open-access alternative for journal articles (see, for example, <http://authorservices.wiley.com/bauthor/onlineopen.asp>). The result is actually a revitalized understanding of copyright as a means for the sharing of rights and furthering simultaneously the interests of publishers and authors alike. While some of these changes have been spearheaded by the legal requirement with respect to research funded by the NIH, almost all of the change that has occurred

with respect to copyright has been made through the voluntary actions of authors and publishers as they continue to explore the best terms on which to make new work available to readers and researchers.

Patent Law.

Many articles include descriptions of scientific studies and findings that may themselves be patentable. With that fact in mind, many standards and expectations about open-access policies include either a required or an optional embargo period. A pre-publication embargo is an opportunity for the researcher to identify the patentable elements of the work and to begin the process of pursuing a patent application before the work is published. The act of publishing the patentable findings (whether the publication is made by the journal publisher or by the author through open access) has important implications for the patent process.

First, once the findings are made public, they may then be treated as “prior art” and be used to determine whether another invention that is the subject of another person’s application is in fact novel under patent law. The difficulty of locating and identifying prior art is well documented as a burden on innovation and as an impediment on the patent examination process (http://dotank.nyls.edu/communitypatent/CPI_P2P_YearTwo_lo.pdf).

Second, a publication can serve to bar the patentability of the author’s own invention. For example, if the inventor is responsible for the act of publishing the findings, as may be the case when a scientific paper becomes open access, then that act of publication has the potential to bar the ability of that inventor to secure a patent on the invention. To alleviate this harsh consequence, U.S. law does not make a complete bar on patentability effective until twelve months after the date of publication. If the objective is to further the interests of inventors and encourage patents, then an embargo before formal publication may be warranted. Any further embargo following publication is not relevant to the bar on patentability. If the objective is to clarify the record of invention and to facilitate more accurate review of patent applications and prior art by the U.S. Patent and Trademark Office, then early publication is most desirable. Any embargo would interfere with the scientific record of invention. Indeed, some inventors prefer to make their works open access immediately in order to take advantage of establishing the findings as “prior art” and thereby blocking someone else from claiming to have made the same invention and to secure prior rights under the patent system. Not all inventors desire patent protection or take steps to assure that their inventions are legally secured. For example, some inventors of medical devices or treatments prefer open availability of their works in order to serve the public interest. A policy on open access should not prohibit that approach to patents.

Trademark Law.

Many publishers have a strong interest in protecting their trademarks, and many of them may find that their trademarks are in fact one of their most important and valuable assets. Many authors strive to place their articles with certain journals

specifically for the reputation that goes with the brand. The ability for an author to cite his or her work as having been published in a well-known leading scientific journal is often an important mark of prestige and an important representation of the quality of the research. The name associated with the journal is sometimes one of the more valuable assets in the scientific communication system. This point is affirmed in at least one large-scale study of academic authors and readers in the scientific disciplines

(http://www.peerproject.eu/fileadmin/media/reports/PEER_D4_final_report_29SEP11.pdf). A similar dynamic also occurs with the publication of many monographs and conference proceedings. The ability for a researcher to specify that his or her work has been published by a prestigious university press or has been published in the proceedings of a major conference is again often a mark of distinction and speaks to the quality of the scientific research. Those virtues associated with the work are identified by the trademark name of the journal or of the press.

Most discussions about open access of scientific literature have included an expectation or requirement that the open-access version of the work will include a full citation and often an Internet link to the work in its final form. That citation embodies the name of the journal or publisher and hence carries over and affirms the strong trademark strength of those names. Therefore, an open-access system that assures that the open-access version of the work has all of those intrinsic qualities is a system that will best strengthen the trademark interests of the publisher of the final work. We are concerned that a system that leads to multiple different versions of the publication can actually have negative implications for the value of the publisher's brand. In fact, allowing open access of journal articles has been shown to increase citations (for example, see the studies at http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=4755635 and <http://www.istl.org/10-winter/article2.html>), thus potentially strengthening the prestige and trademark value of the journal's name. Therefore, in order to assure the full strength and to protect the interests of the trademark owner, we believe that the open-access version of the publication should be as close as possible to the final published version. Ideally, the published version and the open-access version should be identical. Identical versions, we contend, would be in the best interests of the trademark owner, the publisher, and the author, as well as in the best interests of readers, researchers, and students who will use this material in the future.

Comment 3

We are certain that many interested parties will submit comments for consideration related to the prospect of the federal government being responsible for maintaining a centralized repository of research publications or at least assuring access to those publications wherever they may be held. Within this discussion, we do not want to overlook the legal options that the federal government currently has available to it under existing law in order to encourage and facilitate the creation and provision of

access to such a repository. Under Section 407 of the U.S. Copyright Act, the owner of the copyright or of the exclusive right of publication in a work published in the United States shall deposit copies of such work with the U.S. Copyright Office. That duty of making the deposit would in almost all instances lie with the author or the publisher of the scholarly work. If the title to the copyright — or if the exclusive right of publication — has been transferred to the publisher, then the publisher has a duty to make the deposit. Otherwise, the duty to make the deposit lies with the author.

This duty of “legal deposit” is not a condition to copyright protection, but it is a long-standing requirement of the law in the United States and in most countries of the world in order to build a resource of the cultural, literary, and scientific works of the national heritage. Legal deposit also serves the purpose of documenting the exact publication in the event of future disputes. The primary purpose of legal deposit, however, is to build a national library or other collection of published works that reflect the cultural and scientific heritage of the country. Strengthening compliance with legal deposit consistent with Section 407 could serve many of the objectives of the proposed federal repository of scientific publications. The Copyright Office could receive the copies and arrange with the Library of Congress or other governmental agency to keep and retain the materials. The publications could also be made openly accessible either in accordance with legislative action by Congress or in accordance with the conditions of the research grant provided by the federal agency. Even without public accessibility of the content of the materials, maintaining the repository alone would serve two important objectives: It would assure the existence of the materials and increase the likelihood that they would be preserved to meet future needs; and the repository could offer a searchable database of the metadata of the publications, allowing researchers to discover their existence and then search for the particular items elsewhere. Naturally, facilitating public accessibility of the full content of the materials is strongly preferred in order to meet the public interest in assuring the availability of research output resulting from federal grants.

Enhanced use of the legal deposit system to develop the database of federally funded work would also have important benefits for the copyright owners of each work. Published works may be deposited with the U.S. Copyright Office apart from a formal registration of the copyright. However, the practical reality is that deposit compliance and copyright registration are often paired together. When a copyright owner registers a claim of copyright in the work, the process requires deposit of the copies; those copies satisfy the legal deposit requirement. By enhancing the use of the legal deposit system in order to meet the goals of the public access repository, the system would in turn be encouraging registrations of the claims to copyright in the works. Registration of copyright has important legal benefits for the copyright owner. Registration creates a presumption of ownership, and it allows for a copyright owner to seek statutory damages and recovery of attorneys’ fees in the event of litigation. To the extent that this method of developing the repository leads to more copyright registrations, it will in turn strengthen the legal position of the

copyright owner and counterbalance some of the concerns that copyright owners may have about making their works publicly available.

The power of a centrally supported repository and database to rapidly advance science has been long evidenced by the public availability of the database now known as PubMed even before the creation of the full-text PubMed Central repository. Multiple repositories maintained by publishers, institutions, societies, and other third parties could play a similar role, but would need to meet conditions that allow for indexing, public access, reuse, interoperability, and preservation. Such repositories would need to be certified as “trusted repositories” that fulfill all designated criteria, including the uniform adoption of standards such as the National Library of Medicine (NLM)’s widely used Journal Publishing DTD and the proposed Open Text Mining Interface and a requirement that publishers follow the standards currently in place for PubMed Central and make available for access and use not only the PDF of the article but also the XML that they almost all already generate.

No matter what the repository decision, dark archiving solutions (such as LOCKSS/CLOCKSS [<http://www.lockss.org/lockss/Home>] or Portico [<http://www.portico.org/digital-preservation/>]) are not adequate, even if 100% participation were mandated. (Currently such participation is optional, and few publishers contribute content. A recent study conducted by Columbia and Cornell Universities showed that only 15% of their journals were being archived by LOCKSS and Portico combined [see <http://2cul.org/sites/default/files/2CULLOCKSSFinalReport.pdf>]). Public access to materials ensures the demand for investment in migration and ongoing preservation. Conversely, materials in dark archives may one day be discovered to be unusable and unrecoverable and therefore useless to future generations of researchers.

Comment 4

Existing publisher archives often do not permit the levels and types of access that public-private partnerships could leverage to full advantage, but glimmers of the possibilities of such access are available in some collaborations that have involved researchers and publishers opening up their results to use and reuse. One example is the coordination in 2003 of the World Health Organization’s Multicentre Collaborative Network for Severe Acute Respiratory Syndrome that involved thirteen labs in ten countries sharing their research with each other in a way that spurred the highly efficient discovery of the cause of SARS and informed governmental solutions to contain the epidemic (see <http://www.sarsreference.com/sarsref/virol.htm>). Similarly, providing accessibility and interoperability to long-term archives of scientific literature might be a role for

collaborative efforts by scholarly and professional societies, universities, and federal agencies acting in concert.

The authors of the article “Discovery Is Never by Chance: Designing for (Un)Serendipity” (<http://dx.doi.org/10.1145/1640233.1640279>), written by a team of academic and commercial collaborators, make the point that some of the most exciting and innovative discoveries could be made by allowing computers to assist with the process of discovery and scientific serendipity. Broad and deep human- and machine-readable access to research outputs will allow continued and rapid development of businesses focused on serendipitous discovery across disciplines and the creation of a whole range of services built on semantic technology (so-called Web 3.0) — whether, as the recent Semantic Technology Conference highlighted (<http://semtech2011.semanticweb.com/>), those developments are in healthcare, finance, publishing, marketing and advertising, emergency response, life sciences, consumer applications, the emerging field of sentiment analysis, or other areas.

Comment 5

Interoperability of search, discovery, and analysis across repositories requires consistent metadata that is machine-readable and machine-interpretable, especially concerning object-specific rights for downloading, use, and reuse of the research. Within the context of the goal of interoperability among discipline-specific archives and repositories, metadata should be seen as the means for enabling the specific objectives outlined by the Office of Science and Technology Policy’s Request for Information rather than merely a description of the specific research article. Alongside the descriptive metadata (e.g., title, abstract, author, keywords) necessary for discovery and identification, administrative metadata must be included that outlines the proper management of the resource, such as when and how the object was created, the file type and other technical information, who can access the file and what can be done with it and other rights information, and the preservation information needed to archive and preserve the file.

Any baseline standard for metadata should begin with Dublin Core (<http://dublincore.org/>), but to fulfill the requirements for true interoperability, the elements of Dublin Core would need to be expanded in strategic ways (e.g., Qualified Dublin Core, Dublin Core Application Profiles), particularly to enable greater specificity for expressing intellectual property rights information and to supply both machine- and human-understandable context for each published resource. Important elements of any metadata model should include controlled vocabulary that makes explicit statements about reuse, attribution for funding organizations and grant identification, and descriptions of the resources that enable relationships to be determined semantically, such as the Resource Description Framework (RDF) and Web Ontology Language (OWL).

Existing metadata standards can be leveraged to inform a broader metadata specification for robust search, discovery, and analysis of research published through funding by federal agencies. In particular, the standards established by Dublin Core, the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) (<http://www.openarchives.org/pmh/>), the DataCite Metadata Schema (<http://schema.datacite.org/>), and the Europeana Semantic Elements (<http://www.europeana.eu/schemas/ese/>) could form the basis for a schema developed by agencies already dedicated to improving metadata interoperability, such as the National Information Standards Organization (NISO) and the Library of Congress. Other elements of such a standard might be controlled identifiers, such as the research identification system being developed by the Open Researcher and Contributor ID (ORCID) project and the institutional identifier system known as I², currently under discussion by NISO. Also of importance in any such standard would be metadata that provides for usage tracking and analytics across various repositories, such as the Standardized Usage Statistics Harvesting Initiative (SUSHI) schema (<http://www.niso.org/schemas/sushi>). The last of these elements would prove especially useful for federal agencies and the researchers they fund to understand the impact and reach of their work.

As the metadata standards for use in interoperable repositories are being developed, it is important that the metadata standard describing data not be developed separately from those describing publications. The publication standard will of necessity need to support analysis of published texts as data objects, and data that are considered integral to the publication will need to be associated with the publication in a clear manner. Critical to the success of any interoperable repository system will be the possibility of building bridges between related publications and the underlying data that support them in meaningful and machine-navigable ways (e.g., via vocabularies for semantic relationships and unique identifiers).

No matter what metadata schema and standards are adopted, these need to be coupled with Application Programming Interfaces (APIs) for standards-based data exchange, for example via JavaScript Object Notation (JSON) and downloadable XML full-text in a consistent format, such as that provided by the NLM Journals DTD that most publishers already use.

Comment 6

If an agency requires public access to publications that result from government funding, the specifics of the policy could, without clear guidance and coordination among the agencies, vary greatly; those variables could affect the success of a repository to meet its public service mission. We would like to suggest that a repository, whether hosted by the federal government or by an institution or publisher (as long as that repository has been certified as “trusted”), could maximize its benefits for the public through partnerships with the many different publishers

of the content. We anticipate that the technologies for developments related to the creation and searchability of such repositories will change routinely for the indefinite future.

The most effective policy would be to maximize access to the content by setting standards and requirements for deposit of the content, while at the same time maintaining flexibility to accommodate new technologies. For example, different publishers currently make their content available on different technological platforms that use diverse mark-up and search interfaces. An effective federal policy should not dictate the technology or the platform. Instead, the policy should stipulate that publications maintained by governmental agencies, publishers, universities, or other organizations that may be part of the effort of allowing access to federally funded research should use platforms that allow for interoperability (including protocols for easy deposit of publications into a variety of repositories), uniform indexing practices, and federated search results. Also, the policy should set clear objectives related to preservation of the content, metadata standards for the individual publications (including clear identification of the grant and agency that funded the research), and other such requirements. The publishers, universities, agencies, and other participants in the effort should then have the flexibility to use the latest available technological means for meeting those objectives. Overall, good policy that serves the objective of maximizing the benefit of public access to scientific publications should be relatively specific about the research and technological standards, while at the same time not being confined to specific technological tools that may become obsolete in the future.

Comment 7

Much of the discussion about open-access policies for scientific publications has centered on peer-reviewed journal articles. We would encourage policy makers to apply their policies beyond simply those works in a way that respects discipline-specific practice. Not all research publications that result from federal grants are in fact peer reviewed through the same methodologies, but these publications should nevertheless be included as valid research output. For example, while pre-publication peer review may be standard practice in the sciences, peer review in a conventional structured manner is not customarily undertaken with regard to publications in law journals. Further, many publications other than journal articles that result from federal research funding could and should be subject to open-access availability in the same way journal articles are and for the same reason, that the public has the right to access publications of whatever genre that arise from public funding of that research. For example, for many researchers in the fields of engineering and computer science, the most important results of their research often appear only in conference proceedings, rather than in journals. Technical reports, research reports, monographs, and contributions to edited volumes all count as primary literature and should be subjected to the same requirement as

journal articles, with the caveat outlined below that there needs to be a mechanism in place to determine that the version of record is the only version subject to the deposit requirement.

Regardless of the type of publication, a policy calling for open access to the scientific literature should, at a minimum, include the standard that open access is mandatory only for the final version of the work as determined by the author. For example, for some researchers, conference proceedings are widely distributed and many of them are made publicly available online. An author of a contribution to such a proceeding expects that the work will be published and made available to all researchers in his or her field and to the general public. By contrast, in other disciplines, the paper that appears in a conference proceeding sometimes has only limited circulation, often only to attendees at the conference. The author may have delivered that paper at a conference specifically with the objective of gaining the benefit of comments from colleagues in order to further revise the paper for wider publication in some other venue. A paper appearing under those circumstances may not have the benefit of a clear indication from the author that the paper is ready for public accessibility. That paper, therefore, should not be made subject to a requirement of public access through the collective repository. Clear guidance as to depositing and reporting the results of research in its final forms, whatever the genre, should come from the federal agency requiring the deposit.

Comment 8

Publishers have long argued that a lengthy embargo is necessary to support their business, as subscribers would no longer pay for material that is freely available after a short period of time. This argument, however, is based on speculation rather than on fact. Subscribers, in particular academic libraries, do not as a matter of course drop journals because the content is freely available. Instead, they continue to subscribe to the journal as the publication of record. As an example, the Cornell-hosted repository arXiv (<http://arxiv.org/>), founded in 1991, has become the discipline repository of choice for those working in the field of physics and now increasingly in mathematics, computer science, quantitative biology, quantitative finance, and statistics. Despite arXiv's popularity, physics journals remain alive and well; in fact, the number of physics journals has actually grown, rather than declined, over the past two decades that arXiv has been in existence, from 380 journals in 1991 to 597 in 2011 (see <http://academic.research.microsoft.com/Journal/15655/physics>).

Further, even a very short embargo period (six months or less) has been shown by those willing to try it to not have an effect on subscriptions. For example, the American Society for Cell Biology's *Molecular Biology of the Cell* has deposited content with PubMed Central since the repository's inception in 2001 with an embargo of only two months, to no financial ill effect (see

<http://ascb.org/index.cfm?navid=10&id=1968&tcode=nws3>). For the past decade, Rockefeller University Press has likewise released content from its journals no later than six months after publication and has nevertheless enjoyed robust subscription numbers; in fact, the executive director of the press, Michael Rossner, opined in 2010 that “[c]harging for information in only the first six months after publication is a clear-cut way to know how valuable it is” — and suggested that those who needed to lock up their content longer than that are perhaps selling products no one wants or needs (<http://jcb.rupress.org/content/early/2010/04/07/jcb.201003068>; see also <http://www.rupress.org/site/misc/philosophy.xhtml>).

Embargoes of any length only apply, however, to those who wish to retain a business model that relies on subscriptions for revenue. Increasingly, immediate open access is seen as a valid business model. In addition to an explosion of open-access publishers (foremost among them the Public Library of Science [PLoS]) that have proven profitable, the same model has been adopted over the past two years by a number of commercial publishers as part of their business portfolio: SpringerOpen (June 2010), SAGE Open (April 2011), Wiley Open Access (2011), several Elsevier journals (launched in 2010-2011), such as *International Journal of Surgery Case Reports* (<http://www.casereports.com/>) and *Results in Physics* (<http://www.journals.elsevier.com/results-in-physics/#description>), and so on.

Business model innovation that accommodates public access is happening already; there is no reason to back away from federal public access policies merely because some publishers are unwilling to explore new models and revenue streams and cling instead to the hope of an unchanged status quo. Innovative publishers will be successful publishers.

From: Ewan McNay
Subject: **Comment on open access**
Date: January 11, 2012 12:10:11 PM EST
To: publicaccess@ostp.gov

Dr. Ewan McNay
Behavioral Neuroscience, University at Albany
Albany, NY 12222

1. First, thanks for seeking comment on this issue; it's refreshing and welcome to see open access to the results of taxpayer-funded research being discussed.
2. I'm a researcher working on diabetes, Alzheimer's disease, and brain function. My work has been, and is currently, funded by both federal (NIH) grants and private, charity-derived grants.
3. Open, free, citizen access to the results of scientific research is both (i) essential to the goal of an informed citizenry and (ii) the only appropriate result for taxpayer-funded work.
4. In the case of my own work, having public access allows for improved individual healthcare, leads to preventative action that will increase public health and reduce care costs, and permits further research to build upon this work.
5. The interests of for-profit publishers should be very much secondary to the interests of the public and of researchers.
6. In particular, the current mandate to deposit work in the PubMed system is appropriate, working well, and a great step forward; please do NOT support or sign any legislation that would reverse this much-needed advance. The current 'Research Works Act' would be a large step backward without any positive effect that would dramatically impede scientific advances.

With thanks,

Ewan

From: Monica Berger

**Subject: Public Access to Peer-Reviewed Scholarly Publications
Resulting From Federally Funded Research**

Date: January 11, 2012 12:41:49 PM EST

Public access to scientific publications is critical to the public as well as to scholars and scientists.

Our taxpayer dollars should not be used to increase the profitability of private corporations such as Elsevier. Instead, we should be increasing support for important government agencies that support the open dissemination of knowledge such as the National Library of Medicine.

Monica Berger

Associate Professor

Technical Services/Electronic Resources Librarian

Ursula C. Schwerin Library

New York City College of Technology, CUNY

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University of Pittsburgh

EXECUTIVE DIRECTOR

Martin Frank

Submitted electronically to: publicaccess@ostp.gov

January 11, 2012

Re: FR Doc. 2011-28623

Dear Sir or Madam,

The American Physiological Society (APS) appreciates the opportunity to respond to the Office of Science and Technology Policy's November 3, 2011 "Request for Information" (RFI) regarding "**Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research.**"

The APS is a not-for-profit scholarly association founded in 1887 to promote the advancement of physiology. Today the APS has nearly 11,000 members who are scientists involved in physiological research and the teaching of physiology at colleges, universities, and medical schools and in industry, government, and independent research institutions. The APS publishes peer reviewed journals; sponsors scientific meetings and conferences; and provides professional development opportunities for its members as well as educational and mentoring programs to identify, encourage, and train future physiologists. For its efforts in the latter areas, the APS was awarded the 2003 Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring.

The implementation of a public access policy across federal agencies would affect APS members as authors, editors, and readers of the APS journals and as beneficiaries of the Society's programs. Publishing peer-reviewed journals is the primary revenue stream of the APS. Our publications program enables the Society to undertake a number of worthwhile activities designed to advance physiological science and promote the education and training of students interested in the field.

The APS publishes 14 journals that provide venues where research findings are validated through peer review and disseminated to other scientists. In 2011, 6,828 research manuscripts were peer reviewed by APS journals, and 2,969 of those manuscripts were ultimately published. The oldest APS journal is the *American Journal of Physiology*, founded in 1898, and its newest journal is *Physiological Genomics*, founded in 1999. The Society regards itself as responsible for the integrity and accessibility of the research it publishes. Since 1996, the Society has published its journals online with the assistance of HighWire Press.

The journals of the APS include:

- ***American Journal of Physiology (AJP)*** was founded in 1898. Since 1977, the *AJP* has been published in both a consolidated edition and as the following individual journals addressing these focused research areas:

- ***AJP-Cell Physiology***
- ***AJP-Heart and Circulatory Physiology***
- ***AJP-Regulatory, Integrative and Comparative Physiology***
- ***AJP-Renal Physiology***
- ***AJP-Endocrinology and Metabolism***
- ***AJP-Gastrointestinal and Liver Physiology***
- ***AJP-Lung Cellular and Molecular Physiology***
- ***Physiological Reviews*** (Founded 1921)
- ***Journal of Neurophysiology*** (Founded 1938)
- ***Journal of Applied Physiology*** (Founded 1948)
- ***Physiology*** (Founded 1986)
- ***Advances in Physiology Education*** (Founded 1989)
- ***Physiological Genomics*** (Founded 1999)

The APS partners with Wiley to publish *Comprehensive Physiology*. This is an online updatable version of the [Handbook of Physiology](#), a book series started by the APS in the mid-1950s. In addition, the APS partners with Springer to publish monographs on the science and the history of physiology.

The APS supports public access to the scholarly literature. In 2000, the APS made online access to the entire content of its journals freely available 12 months after publication through the journal websites. In 2002, the APS initiated free online journal access for all members. In 2004, the APS scanned and rendered searchable all journal content published between 1898 and 1996, and this, too, is provided free to members. The APS provides free journal access to scientists in developing countries through the HINARI, AGORA, and OARE programs. The APS provides patients access to articles of interest through our website (www.the-aps.org). The APS also works with DeepDyve to provide reader access to individual journal articles. APS insures the recoverability and archiving of its journal content through CLOCKSS, of which we are a founding member.

As a scholarly publisher, our goal is to expand access to the latest breakthroughs in the scientific research and developments in academic thought. The main purpose of a scholarly journal is to publish articles that analyze and interpret original research or experimentation in order to make such information available to the global research community. We are uniquely positioned to help the federal government in expanding public access to publications that describe and interpret federally funded research, ensuring the long-term stewardship of these publications, and supporting innovation and economic development derived from scholarly discovery.

In fact, publishers have been investing significantly in support of public access. The Scientific, Technology, Engineering and Mathematics (STEM) publishing community has been working to expand accessibility, improve interoperability and promote innovation. Our investments have created digital platforms with the latest and continually evolving Web capabilities, and provided researchers with faster and more robust delivery of scholarly information, including new ways to present data and scientific articles. We have improved interoperability through new metadata standards and pilot projects, which are driving innovation and providing for better information discovery and expanded use of research results. These investments are necessary and ongoing to ensure that the quality of the online platform is equivalent to the quality of the content. We have voluntarily created programs, including Research4Life, patientINFORM, and the Emergency Access Initiative, to enable people outside the

traditional circles of scholarly research to access critically important information when and where they need it.

The core publisher activities of supporting peer review¹, ensuring the continued integrity and reliability of the scholarly record, formatting this content to make it accessible to users worldwide and preserving the scholarly record for future generations do not come without costs and ongoing investment. These activities are threatened by access policies that do not take these essential costs into account. In considering policies that could potentially expand public access to research results, it is critically important that any new policy does not damage the private institutions on which the Federal Government and its scientific enterprise depends. As a society dedicated to scientific education and integrity, the APS provides through its publications a unique qualitative contribution to the scientific literature that is not reproducible. This contribution is provided in a highly effective and efficient manner, in part due to the fact that the APS is responsible to its membership and not to shareholders.

A federal agency public access policy that is sustainable in the long-term and maximizes benefits to researchers and the public at large should function as a balanced public-private partnership to enhance access and interoperability; adequately protect fundamental intellectual property rights; and respect proprietary contributions of added-value to ensure sustained private investment in innovation. This approach meets the needs of the scientific community by relying on evidence-based assessments and providing access to taxpayer-funded research results through both public and private channels.

The America COMPETES Act, which established a public access policy for research funded by the National Science Foundation (NSF), provides a constructive model that can be replicated by other federal agencies. This is to be contrasted with the NIH policy, which has the potential to significantly damage a well-functioning scientific discovery and innovation system of communication, reduce economic benefits and employment, and undermine intellectual property. Efforts to promote public access policies should be carefully analyzed in light of their potential long-term impacts on all stakeholders.

We support the view that the Federal Government should be guided by “principles of transparency, participation and collaboration” as noted in the Transparency and Open Government Memorandum and Open Government Directive and stand ready to work in collaboration with all partners to ensure the continued success, vibrancy, and innovation of the U.S. scientific community.

Below are the responses of APS to the questions raised in the RFI:

- (1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

¹ The majority of manuscripts submitted to a given scientific journal do not make it through to publication. Moreover, the majority of those that are ultimately published will first undergo revisions as a result of the peer review process. This means that publishers must organize and coordinate the review of far more manuscripts than they will ever publish. The review process offers the additional benefit of providing valuable feedback to scientist whether their manuscripts are rejected or accepted. By filtering and validating content for its scientific quality and ethical integrity, publishers serve as globally recognized gatekeepers of the scientific record.

The primary way that the government can achieve greater accessibility for peer-reviewed publications is to work in a collaborative manner with all stakeholders to develop an approach that balances competing interests, ensures the rights of copyright owners, and provides for continued growth and innovation in scientific communication. It is critical that agencies avoid any action or policy change that would detract from a well-functioning, privately-funded publishing system that is driving innovation and growing existing and new markets that support the scientific enterprise. Public access government mandates run counter to openness and collaboration, and carry additional and significant costs for the U.S. economy and the scientific enterprise. Indeed, such moves would lessen access, as they would threaten publishers' ability and willingness to improve availability of their works. Significant value added by the publishing industry could be eliminated if revenue channels necessary for publishers to reinvest in their businesses and innovations continue to be threatened by government mandated access policies that provide free access to publishers' works and enable piracy and unauthorized reuse.

This question suggests that increased access could "maximize U.S. economic growth and improve the productivity of the American scientific enterprise." To the best of our knowledge, virtually every scientist who needs or wants access to APS research publications already has it through their institutional library. As such, there is no unmet demand for free access to our journals. Instead, increased "free" access would benefit scientists and the pharmaceutical industry in other nations at the expense of our journals.² While this might be desirable in some instances and could serve to enhance international cooperation, it is not necessarily beneficial to the U.S. economy as even our friendly competitors will gladly take our research findings for free.³

(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?

It is critical that the federal government not adopt embargo periods or mandates which compromise the private sector's intellectual property rights. The government should respect the rights of copyright holders and provide fair compensation if necessary. APS and other scholarly publishers expect the federal government to protect and abide by publishers' constitutional rights. Not only shouldn't the federal government compromise publishers'

² According to NIH's PubMedCentral, two-thirds of its users are from other countries. Letter from Susan Cornell, J.D., NIH Freedom of Information Act (FOIA) Officer, to Allan Adler, Vice President for Legal and Government Affairs, Association of American Publishers (May 19, 2011).

³ House Energy and Commerce Committee Subcommittee on Health Chairman Joe Pitts, in a letter to NIH Director Francis Collins, M.D., Ph.D., expressed concern that "[th]e NIH Public Access Policy may undermine the competitiveness of the STM publishing industry." <http://www.pspcentral.org/documents/LettertoNIH111011.pdf> In that letter, he sought additional information on the NIH Public Access Policy, PubMedCentral, and "its impact on the science, technology and medical publishing fields," including any evidence that NIH has "to support [its] claim... that PMC is 'accelerating scientific discovery in the biomedical sciences.'"

intellectual property, but it also should take a proactive role to discourage and prevent third parties from engaging in piracy and the unauthorized dissemination of copyrighted works.

(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

The APS and our fellow publishers are committed to promoting interoperability, search, development of analytic tools, and other scientific and commercial opportunities. This has produced many new developments during the past 20 years as publishers sought to introduce new technologies to meet researchers' demands for faster and more user-friendly delivery of scholarly information. For example, over the past decade publishers developed the Digital Object Identifier (DOI), a unique code for each piece of content in a scholarly publication.⁴ In partnership with stakeholders, publishers continue to innovate in the creation and standardization of metadata that make it easier for scientists and the public to access the latest research. Publishers collaborated with librarians and database providers to establish COUNTER (Counting Online Usage of NeTworked Electronic Resources)⁵ which has produced an international set of standards and protocols governing the recording and exchange of online usage data. This enables libraries to better understand how their digital collections are being used and it allows publishers to better understand the usage patterns of their digital content. Additionally, Internet search engines, abstracting services and other tools do an excellent job of ensuring the discoverability of research. These innovations have flourished without mandates from the government. As long as publishing remains an economically viable and competitive industry, publishers will continue developing innovative products and services.

The 2009 Scholarly Publishing Roundtable Committee, convened by the House of Representatives Committee on Science and Technology in coordination with OSTP, reviewed the question of centralization carefully. In its *Report and Recommendation from the Scholarly Publishing Roundtable*, it said, "Decentralization is critical to achieving [interoperability], especially with respect to interdisciplinary research. . . . [T]he standards and tools adopted by NIH, which effectively support interoperability within PubMed Central, do not provide broad interoperability with external databases, which are growing in number and size." The APS recommends that the Federal Government seek to leverage the private sector's rapidly evolving expertise, technologies, products and services in order to efficiently and effectively improve the quality and scope of services available to the public.

⁴ CrossRef, a not-for-profit group founded by publishers in 2002, maintains 50 million items. Almost 1000 publishers participate and assign DOIs to published content items. Development of the CrossRef service has resulted in seamless navigation of the research literature by users so that researchers using the bibliography in one article can link from a reference to the full text of the referenced article.

⁵ COUNTER (www.projectCOUNTER.org) is a nonprofit devoted to the continued improvement of online usage statistics and usage-based metrics. The COUNTER Codes of Practice provide an international set of standards and protocols governing the recording and exchange of online usage data to enable librarians and publishers to better understand information usage.

(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?

In 2005, APS and 56 other not-for-profit scientific publishers offered a “Linking Proposal” to NIH designed to provide seamless links from PubMed Central to the journals’ websites. NIH was already linking out to the journal articles from PubMed (Medline) and doing so for PubMed Central would be an extension of this successful effort. This would have enabled readers to access the full text of any article funded by NIH (and in many instances, the full text of all articles published in the journal, irrespective of funding source). This proposal would provide the public with free access to all published articles funded by the NIH; provide access to the final, copy-edited articles; address publishers’ copyright concerns; satisfy current law; and comply with copyright law by ensuring that an article cannot be posted before the journals’ embargo period is over. It would also have been cost effective, since the NIH would not have had to create PubMed Central, educate grantees about compliance and copyright, or monitor for compliance. Despite its many advantages, and despite subsequent offers from publishers to consider ways to satisfy NIH’s need for a repository of all NIH funded works (i.e. to help NIH populate a “dark archive” for internal NIH use only), NIH rejected the publishers’ Proposal.

A proposal similar to the one above remains a viable option for OSTP to consider and it is encouraged to consider a mechanism by which these publications are linked to the annual and final research reports submitted to Federal agencies by grantees and contractors.

(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?

The APS is dedicated to the widest possible dissemination and discoverability of the Society’s publications that analyze and interpret physiological research. The APS works with colleagues in the publishing community to insure dissemination and discoverability. Often times, Federal agencies are not aware of existing technologies and solutions in the marketplace, resulting in unnecessary spending and a misallocation of taxpayer dollars. It is critical for Federal agencies to make certain that they are working in collaboration with stakeholders to advance innovation in areas such as metadata and standards.

There are several models for collaboration on standards and persistent identifiers to enhance the discoverability of publications that analyze and interpret government-funded research and to promote interoperability among the funding agencies, publishers and any third party databases and platforms. Rather than duplicating the effort of publishers in delivering scientific content to the end user that is based on government-funded research, where federal agencies can significantly enhance the dissemination of the scientific literature is in developing standards that ensure robust distribution of metadata and interoperability. Federal agencies should also work with publishers and other stakeholders who have expertise in developing and

promulgating metadata to ensure standardization across disciplines and to establish best practices.

(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?

Federal agencies should seek to complement the efforts of publishers rather than seeking to displace them. While federal agencies invest in the research, they rely upon research institutions to conduct the research, publishers to ensure that articles are vetted, and entrepreneurial efforts to commercialize the results. The way to maximize our nation's investment in science is to aggregate abstracts, make them searchable by the relevant metadata, and then provide links to the websites of the journals that published them. Another option would be for agencies to also create a publicly accessible database of the progress reports that grantees and contractors are required to file. This has the advantage of providing information about all federally-funded research using reports that the government owns. However, it has the disadvantage that these reports have not been independently vetted.

There is presently no government-wide policy regarding public access to research reports. Some science agencies provide public access to all of their unclassified research reports; some provide access to a fraction of their reports; others do very little. Those agencies that provide comprehensive access include the following:

- Department of Defense
- Department of Energy
- Environmental Protection Agency
- National Aeronautics and Space Administration
- National Science Foundation

There are already two portals available for government wide dissemination of research reports. These are the [National Technical Information System](#) and [Science.gov](#). It should therefore be a relatively easy matter for all the science agencies to make all of their research reports publicly available. They have the reports, and they have the technology, and by making them available, the public has access to the results of federal funded research.

(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?

The APS invests in these other types of content along with its publishing partners Springer and Wiley. The APS recruits the author, commissions the content and invests in the development of the project. As with any kind of content published by a nongovernmental entity at its own initiative, government-mandated access to books, proceedings or other such materials represents an expropriation of private property and should not be included under the public access policy. Similarly, contrary to the NIH policy, review articles published in research journals and in review journals also should not be included in the public access policy because they are invited interpretive articles which do not contain research funded by the government.

(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?

Different fields of science have different patterns of usage and citation. There is no uniform optimal embargo period across all scientific disciplines. While a 12 month embargo might work reasonably well for most journals in the research areas funded by NIH, it is unlikely that the same can be said for research funded by NSF, NASA, USDA, USGS, etc.

Each field of research has its own particular "Cited Half-Life," which provides an indicator as to the long-term value of source items in a single journal publication. According to Thomson Reuters, the Cited Half-Life represents "the number of years, going back from the current year, that account for 50% of the total citations received by the cited journal in the current year." Some fields such as molecular/genomic research may have a short Cited Half-Life of 1-3 years while physiological research has a longer shelf life and therefore a longer Cited Half-Life of 7-10 years. For investigators working in the physiological sciences and other areas with longer Cited Half-Lives, rapid public access may compromise the viability of the journal because subscribers will cancel.

The NIH Public Access Policy initially called for a 6-month embargo, but society publishers urged the NIH to allow for a 12-month embargo because of our concern that a shorter period might jeopardize the ability of our journals to sustain subscription revenue. A 2006 Publishing Research Consortium (PRC) commissioned study was conducted to gain insight into librarians' subscription or cancellation behavior. This study found that decisions are influenced by factors such as price, embargo period, article version and reliability of access.⁶ With a twelve-month access delay, assuming only 40% of a journal's content would be available for free, a large proportion (44%) of librarians in the study said they would opt for free content to portions of the journal over a paid subscription. When more than 40% of a journal's manuscripts are available freely under open access, the librarians expressed an even greater preference for the free option over journal subscriptions. Since subscriptions account for approximately 80% of revenue for many journal publishers including APS, cancelled subscriptions represent a significant threat to the publishing enterprise.

This study helps to explain the impact of the NIH Public Access Policy on the APS and its publications program. Since the implementation of the NIH plan in 2008, the APS has lost 10% of its subscribers. The Policy requires that NIH funded articles be deposited in PubMed Central and made freely available 12 months after publication on the NIH platform even as the same articles become freely accessible on the APS platform at HighWire Press (HW) under our own access policy. A comparative analysis of full-text article downloads demonstrated that the availability of articles in PMC reduces downloads of the same articles from our journal site by over 15% as compared to articles that do not appear in PMC. This provides evidence that readers are accessing these articles from PMC rather than from the Society's journal site. As

⁶ Publishing Research Consortium Report "Self-Archiving and Journal Subscriptions: Co-existence or Competition" (July 2006). Accessible at http://www.publishingresearch.org/documents/Self-archiving_report.pdf.

suggested by the PRC study described above, this reduction in downloads may be a factor in an institutions' decisions whether to cancel their subscription to one or more of the APS journals. While the 10% decline in our subscriptions since 2008 may not have been caused solely by the NIH policy, it is likely a contributing factor since approximately 50% of the articles published by APS are based upon NIH funded research.

If the government truly believes that peer review is important, it must find a way to sustain peer review. There are two options to accomplish this. The government could establish access policies that do not compete with publishers or undermine their subscription base. In the alternative, the government could pay for the full cost of peer review, journal hosting, etc. through article processing fees. The obvious problem with the latter approach is that it would reduce the funding available for the research itself.

APS appreciates the opportunity to submit these comments and the Society stands ready to work in partnership with the Federal Government and its research-funding agencies toward our shared goals of increasing the dissemination of research discoveries, improving access to published scholarly works, and advancing science and the U.S. economy.

Sincerely yours,



Joey P. Granger, Ph.D.
President



Martin Frank, Ph.D.
Executive Director

Subject: Research Works Act (HR 3699)

Date: January 11, 2012 1:07:11 PM EST

To: publicaccess@ostp.gov

Dear Sir or Madame,

As a young scientist whom has been pursuing health-related research (cancer, now cardiovascular disease) for over a decade, I implore you to resist publisher's claims and develop policies whereby research communities and the public at large get increased, free access to peer-reviewed publications that are the result of federally-funded research. We as tax payers have already paid for the research, the idea that we need to pay to see the results if patently ridiculous. Furthermore, labs around the country spend their precious research dollars gaining access to these journals and their articles when the federal grants should be going to bench work, not to journals to distribute information that should already be freely available. Smaller libraries at second and third tier research universities often can't even access many of these journals and they have to pick and choose their subscriptions carefully. If the government wants to charge people to see the results of their tax-funded research, then fine-at least let the government take the money and funnel it back into research rather than let greedy publishers get it for the nominal service they provide. After all, citizens have already paid for the research through their taxes, so why should access to the results be a money making endeavor by another party that has contributes nothing to the cost or the research?

If you as a congress person wish for the U.S. to retain its position in science and math and remain competitive in global markets and healthcare, then give researchers, students, teachers, physicians, nurses, libraries and citizens the means, which OPEN ACCESS provides, to educate and inform themselves.

Sincerely,

Joshua Wythe

--

Joshua Wythe, Ph.D.
Research Scientist
Benoit G. Bruneau Laboratory
University of California San Francisco
Gladstone Institute of Cardiovascular Disease

Boston Library Consortium
10 Milk Street, Suite 354
Boston, MA 02109

January 11, 2012

To: Office of Science and Technology Policy
Executive Office of the President
725 17th St. Room 5228
Washington, DC 20502

Re: Boston Library Consortium response to the White House RFI on
Public Access to Peer-Reviewed Scholarly Publications Resulting from
Federally Funded Research

The Boston Library Consortium (BLC), a consortium of 17 academic and research libraries, is pleased to respond to the Request for Information (RFI): Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research issued by the Office of Science and Technology.

The Boston Library Consortium members—Boston College, Boston University, Brandeis University, Marine Biological Laboratory/Woods Hole Oceanographic Institute, Massachusetts Institute of Technology, Northeastern University, Massachusetts State Library, Tufts University, University of Connecticut, Universities of Massachusetts Amherst, Boston, Dartmouth, Lowell and the Medical School, University of New Hampshire, Wellesley College, and Williams College—collaborate on two intertwined areas of great importance to all members: sharing resources and moving scholarly communication toward an open access environment to foster learning and research.

The Boston Library Consortium fully subscribes to the principle that taxpayers are entitled to access the results of publicly-funded research, research funded by their tax dollars, immediately and that

taxpayers are entitled to fully reuse those results. With its diversity in membership, the inability of a number of its members to support scientific research adequately, and the need to access this information to educate the next generation of scientific researchers and ensure that we continue to be competitive in the global scientific research arena, the BLC experiences first-hand the need to move to broader public access for taxpayer-supported research.

The Boston Library Consortium will address questions 1 and 3 because of their key importance to the Consortium. In response to Question 1, the BLC addresses access and in Question 3, permanent stewardship.

Question (1)

Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?

Comment 1

By releasing immediately federally funded scientific research results and ensuring that these results are freely accessible, researchers will have the ability to work with the most current results and data. Immediate access encourages innovation and entrepreneurship because it creates opportunities for more users, not only at different sized institutions, but also differently funded academic institutions and companies, to build new products and services.

Open access “levels the playing field”. For example, within the Boston

Library Consortium (BLC), there is significant diversity among institutions. Members consist of public and private institutions and liberal arts colleges and universities. Unequal budgets for funding science journals eliminate access to taxpayer-funded research in proprietary journals for a significant number of BLC institutions, limiting the research their students and faculty can accomplish. Science journal subscriptions are continuously being reduced for budgetary reasons and the aggregate number available within the consortium shrinks.

The relative costs and benefits of policies for archiving publications and making them publicly accessible can be analyzed by looking at the outcome of the NIH's public access policy. NIH policy costs about \$3.5 - \$4.0 million annually (out of a \$30 billion budget), that is, only about 1/100th of 1 percent of the overall budget. A government-wide policy can be implemented in a cost-effective manner by building on existing infrastructure and utilizing the investments already made by the NIH with the annual operation of PubMed Central.

To maximize U.S. economic growth and improve the productivity of the American scientific enterprise, full open access is needed along with rights to re-use fully in a digital environment. Any restrictions on use of the scientific data produced by taxpayer-funded research means that only a fraction of the value of the research is realizable.

Question (3)

(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

Comment 3

The need for permanent stewardship and accessibility of taxpayer-funded research articles is a key concern of the Boston Library Consortium. The federal government is the appropriate entity to provide permanent stewardship of these articles in order to ensure that they are and remain permanently accessible and useable. Any public access policies must give the federal government adequate rights to archive and distribute.

The public will benefit most if interoperability and search are centralized and developed by the federal government so that standardization can be assured. PubMed Central provides an excellent example of this. The fact that PMC encompasses data storage and uses a common format in the repository means that that user can quickly search the entire collection. The single, standards-based repository allows PMC to integrate its literature with a variety of other information resources. Any future policies for permanent stewardship should leverage the approach and types of services of PMC.

NIH has led the way, and a government-wide policy can be implemented in a cost-effective manner by building on existing infrastructure and utilizing the investments already made by the NIH with the annual operation of PubMed Central.

The Boston Library Consortium supports permanent stewardship and accessibility of taxpayer-funded research by the federal government, rather than the private sector, because there is an intrinsic conflict between the requirements of long-term stewardship and the requirements of for-profit entities to show positive short term financial results. BLC libraries are purchasers of and subscribers to content from vendors, and members are aware that vendor arrangements for archiving are often very basic and content is not

actively checked. There is an overall lack of e-journal publisher participation in third-party preservation programs; for example, a recent study showed that less than 15% of Cornell e-journal holdings are preserved through the combined services of LOCKSS and Portico.

Providing the government with a copy for deposit in a dark-only archive is not a realistic solution; there is little support, even from academic institutions that understand the value of preservation, for storage without access. In addition, without regular access or use, the accuracy of the archival copy cannot be ensured. There must be a commitment like the one PMC makes to provide permanent access to all of its content—to deal with changing technology and the subsequent impact of obsolete formats as well as to ensure the accessibility and viability of the archive by allowing free access which assures consistent and active use of the archived material.

The federal government has the most experience addressing and meeting a broad mandate to serve the public and based on PMC, the experience in determining standards and formats that support interoperability and implementing them.

From: Melissa Trevvett, Executive Director
Boston Library Consortium

Melissa Trevvett Executive Director Boston Library Consortium
Ph: [617-262-6244](tel:617-262-6244) Fax: [617-262-0163](tel:617-262-0163) 10 Milk St., Suite 354 Boston MA
02108-4600 www.blc.org

Maximilian Haeussler, PhD
Post-Doctoral Scholar in text mining and genome analysis
CBSE, University of California at Santa Cruz
Santa Cruz, CA

Comment 1

As soon as scientific results are openly available, research groups like the one where I work and IT companies will use the opportunity to digitize, index, analyze, reformat the information in them and make them better accessible, as Google has done it with the Internet. Closed-access publications cannot be mined by companies like Google as all scientific publishers have made it illegal to download articles and analyze them in a new way. Open-access articles (less than 10% of all articles) are accessible and can be easily archived by anyone. The size of the data is ridiculously small these days, it all fits onto a single blue ray disc, which otherwise stores only a single Hollywood blockbuster. The size of the data for analysis is not problem, any library can do that.

Without open-access, any data mining is impossible. My example: Nature Publishing Group, which manage less than 5% of biomedical articles, has today sent me a quote on \$85.000, for merely allowing me to run my software on their articles (the access is already being paid in millions of dollars by the UC library system). \$85.000 that is just for one single research group. There is no law that allows me to run analysis software on research articles, so I will not do it with Nature articles. There are hundreds of closed-access publishers like this.

I tried previously to mass-download research articles from publisher websites, which is really easy. Blackwell Ltd called my University IT department and threatened them to shut down my internet connection. I have no way of exercising any pressure on Blackwell to search cancer journal articles for mutations. They have not interest in mutations.

Laws to allow data mining or laws to mandate open-access don't cost a lot to taxpayers, as publishers will just be paid by the publishing researchers instead of the libraries of the readers. I am convinced that the creative power of the many people and companies that will analyze open articles will be welcomed in the end even by closed-access publishers, as it will attract more readers and ways to analyse the data in these articles. In addition, libraries will be easily able to archive these articles by just downloading them from the publishers' websites.

Comment 2

I know that Springer, Elsevier and Nature Publications, among the biggest publishers, all outsource typesetting and sometimes printing to India. These are mundane tasks and require no special protection or justify why publishers claim intellectual property.

Publishers have not contributed any significant intellectual input. Taxpayers fund the scientists, scientists produced the research and scientists act as peer-referees for publishers. Publishers only select articles based on the referees. There is no reason to overly protect publishers, as they only do the correction, layout and printing of articles.

Comment 3

I don't think that the government should get involved with building search engines or develop analytical tools. For articles that are available as open-access data, companies, libraries and Universities will start building search engines. With PubmedCentral, this has already happened. UKPMC has taken their content and added new searches. It will take more time to see what other innovative ideas emerge based on open-access articles.

For older articles that are not published as open content, it would be great if individual researchers were allowed to analyze them and aggregate statistics. A federal agency like the NIH or the national library could keep a version (PDF) of all of these articles on a computer system (it only requires a standard computer and standard harddisks these days) and researchers could apply for access. This would make it possible for me to find all articles that relate to a given cancer mutation. This type of indexing service is currently impossible, as closed-access publishers do not provide access to the fulltext of the articles or charge a prohibitive price, to discourage any indexing. In my particular case the price was \$85.000 for less than 5% of all biomedical articles, for just one research group. These prices make it impossible to ever come up with new ways of analysing or indexing research articles.

Comment 4

I don't know of any innovative search or analysis functions of existing closed-access publisher archives. Elsevier has started sending their full content to interested researchers like me, but we are still at their mercy and they can cancel the project at any time. No other publisher that I know of is giving access to closed-access

content.

Comment 5

I do not believe in the value of expensive mandatory core metadata as research changes so quickly. Each discipline has very different requirements, cancer journals need cell line data, developmental biologists are more interested in species. Google Websearch works very well without any core metadata. Once access to articles is available in an open-access form, the different disciplines can think about the metadata that they need and can often extract them from the fulltext of the articles with software. CiteSeerX and Arxiv is are good examples of how this worked in computer science and in physics.

Comment 6

More common open-access would lower library costs extremely. But publishing has a price and publishing costs should be an accepted part of federal research budgets. My impression is that it is likely that the initial cost of publishing for a researcher will be higher than what some open-access publishers (e.g. PLOS) are charging at the moment.

Comment 7

Conference proceedings replace journal articles in many disciplines (e.g. computer science, engineering), so yes, conference proceedings should be covered.

Many book chapters, not all, include a significant contribution of the publishers. Layout, color figures are designed by professional artists. These book chapters are used by students and do not serve the same purpose as scientific articles, they make information more accessible but do not report the original research. They should not be covered by open-access provisions.

Comment 8

I do not see a justification why taxpayer-funded research would be published as closed-access to subscribing University libraries and only be available to taxpayers after a 1 year period.

If I can help with anything else or more details on how my text mining of closed-access publications is impossible, please don't hesitate to contact me.

**Subject: RFI: Public Access to Peer-Reviewed Scholarly Publications
Resulting From Federally Funded Research**

Date: January 11, 2012 2:43:09 PM EST

Dear Science and Technology Policy Office,

Thank you for extending the deadline for comments on Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research. The Research Works Act has only very recently come to the notice of scientists, and it is because of this extraordinary proposal that it is now apparent to us that we need to reaffirm what we thought was settled: that OF COURSE scientific work funded by the public should be freely accessible to the public. I do not understand how this can even be a matter for discussion. The public pays: the public should benefit in every way possible.

The language in the RWA is highly misleading, attributing to publishers far more input into the scientific process than they really have. The truth is that scientists (often funded by public money provide the underlying research, the writing and the figure preparation that result in a manuscript submitted for publication. Other scientists then provide the editorial services and (contra publishers' claims, as can be easily verified) the peer review. Publishers' contributions are limited essentially to typesetting, the provision of web hosting, and sometimes a very limited amount of compensation for senior editors only (usually not the handling editors who actually deal with authors' works). The notion that such a minor contribution should suffice to hand publishers, rather than the public, the right to determine how, where and under what regime the resulting works are disseminated, is ludicrous. It would be laughable if it were not so iniquitous.

Sincerely,

Martin Sander

Professor Dr. P. Martin Sander
Professor of Vertebrate Paleontology
Division of Paleontology
Steinmann Institute
University of Bonn

From: Meghan Duffy
Subject: **RFI: Public Access to Peer-Reviewed Scholarly Publications
Resulting From Federally Funded Research**
Date: January 11, 2012 2:43:31 PM EST
To: publicaccess@ostp.gov

Dear Science and Technology Policy Office,

Thank you for extending the deadline for comments on the Research Works Act. I only recently became aware of this act, and am very glad to have the opportunity to comment. As a scientist, I know that the free exchange of information is crucial. As a citizen, I know that I frequently would like access to articles that are not available to the general public, when looking for information to enable me to make informed decisions (e.g., regarding my own medical care).

The argument from the publishers that they add substantial value to the study via peer-review and copy-editing is simply wrong. Most handling editors and peer reviewers provide their services to the journals for free. Moreover, most of us do so while being paid off of public funds (e.g., via my salary at a public institution). Thus, the additional value provided by peer review (which I believe is important) actually serves as further argument AGAINST the Research Works Act.

Thus, the publishers contributions are quite minor, and this Act serves only to benefit them, at a great cost to society as a whole.

Sincerely,
Meghan Duffy

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Meghan Duffy, Ph.D.  
Assistant Professor  
School of Biology  
Georgia Institute of Technology

**From:** Timothy Bogart  
**Subject:** Access to Federally funded research  
**Date:** January 11, 2012 2:43:55 PM EST  
**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

I hope that there is a typo here specifying inputs by 1/2/2012 as the date for input is 1/12/2012 for the corresponding discussion on data.

So if in fact you are still open to comments:

What tax payers pay for is by definition owned by the taxpayer. Legislation limiting access to the publications beyond that logically required by legitimate privacy or security concerns is dangerous and and worse.

--

"Don't tell me the sky is the limit when there are footprints on the moon" --  
*Sawyer Rosenstein*

**Subject: Comment on RFI: Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research**

**Date:** January 11, 2012 3:53:53 PM EST

I am writing to express my comments on this RFI, and my concern with proposed legislation in this regard.

(1) Are there steps that agencies could take ...

Just as the NIH supports PubMed, which contains abstracts of scholarly works, it could also expand such a database to include whole text. The NIH Manuscript Submission system is a start but PubMed could be expanded to include whole text of all manuscripts and be searchable, just like Google Scholar. This is currently not possible with PubMed. Manuscripts not currently included under Manuscript submission could be included by payment of licensing fees by PubMed to the publishers, but be free to the users. It will improve efficiency of information retrieval and research.

(2) What specific steps can be taken ...

Intellectual property rights of publishers should be a minor consideration because the overwhelming majority of the IP in any scientific work belongs to researchers and unreimbursed peer reviewers.

(3) What are the pros and cons ...

The overwhelming majority of published research in the US comes from federally funded sources, so it is only right that a Federal agency maintains custody and provides open access to the results of this research.

(4) Are there models or new ideas ...

There could be partnerships with private companies to build these databases, with the cost being borne by NIH or other federal agency, but the content must be freely available.

(5) What steps can be taken by Federal agencies...

(6) How can Federal agencies that fund science maximize the benefit ...

The Federal agencies and scientists and tax-payers have no obligations to commercial publishers. Open access will benefit everyone else.

(7) Besides scholarly journal articles, ...

(8) What is the appropriate embargo period ...

6 months. This is an appropriate amount of time because its too long for researchers in the field to wait to know about published research (so they and their institutions libraries will still pay for journal subscriptions). But beyond that there is no justification for keeping research results from the public at large.

Proposed legislation such as the Research Works Act (HR 3699) is detrimental to the interests of scientists, tax-payers, scientific and economic productivity, and the intention of America COMPETES Reauthorization Act of 2010 passed by Congress. HR 3699 seeks to benefit only large commercial publishers by preventing open access to tax-payer funded research, by misleadingly classifying it as "private sector research" only because it happens to be published by a commercial publisher. It is misleading because all of the true intellectual property in such publications comes from scientists (largely federally funded) and unpaid peer reviewers (also supported by public funds), while the publisher adds very little value, mainly marketing and name recognition.

Sincerely,  
Vishy Iyer

--

Associate Professor  
Molecular Genetics and Microbiology  
University of Texas at Austin  
1 University Station A4800  
Austin, TX 78712-1095  
phone: (512)232-7833 fax: (512)232-3472



Office of Science and Technology Policy (OSTP)  
[publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

January 11, 2012

On behalf of the University of North Carolina at Chapel Hill Libraries, I submit the following response to the request for information regarding "Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research."

We believe that free, open access to published research results is of overwhelming benefit to society. It should be the right of taxpayers to freely access findings from federally funded research paid for by tax dollars. Specific recommendations as requested in the ROI follow, with numbering referring to that document.

**#1: Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publicly accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies?**

There is ample evidence that free public access to research results removes barriers and spurs innovation, to the benefit of society and the economy. The editor-in-chief of PLoS Computational Biology told recently of a ground-breaking manuscript he had received. The author was a 15-year-old high school student who had used a "test" login obtained from a vendor to access resources at a nearby university library. While not all stories may be so dramatic, the story illustrates the potential for students, faculty, and others to make transformational discoveries when the cost barrier of access to taxpayer-funded research is removed.

Open access has already led to new products and approaches within the publishing and information industries. To support these trends, federal agencies need to follow the lead of NIH and ensure that all federally sponsored research is publicly accessible free of charge. The best way to accomplish this is via agency-supported repositories like PubMedCentral. It is alarming to note that the recently introduced Research Works Act (HR 3699) would undermine this successful effort, and thereby substantially weaken our nation's capacity to assert leadership in science and innovation worldwide. We would be better served by policies that encourage both commercial and not-for-profit to adopt new business models that provide revenue without stifling overall scientific communication.

There is already evidence that some publishers are doing exactly that. The number of "gold" open access journals has grown rapidly, numbering 7,311 at the end of November, 2011 ([http://oad.simmons.edu/oadwiki/OA\\_by\\_the\\_numbers](http://oad.simmons.edu/oadwiki/OA_by_the_numbers)). This is a clear market indicator. Examples of new products and services that have built upon publicly accessible scholarship include GoPubMed (<http://www.gopubmed.org/>) and Google Scholar (<http://scholar.google.com/>). Such tools and products add value by abstracting, mining, synthesizing, and otherwise using freely available content.

Publishers who embrace the open access model, such as BioMed Central and Public Library of Science, have developed viable business models in order to make content freely available to all. Traditional publishers have adapted their business models too, using hybrid and author-pay options that protect their revenue base while achieving widespread public access. However, these latter approaches simply shift the cost from the publisher to the author, and in many cases are unaffordable by authors. Federal agencies should support these approaches by encouraging grantees to include open access publishing costs in their grant budgets. Such a policy identifies and supports publication costs as essential to the completion of the research process.

The economic benefit to society from such efforts is hard to calculate but could be enormous. There is ample evidence that freely accessible articles have considerably more use than fee-based articles. Reputable studies detail widespread economic and social benefits to society of free and open access to the world's peer-reviewed research and counter critiques from publishers (see, e.g., John Houghton and Charles Oppenheim, "The economic implications of alternative publishing models", *Prometheus*, March 2010, <http://dx.doi.org/10.1080/08109021003676359>).

One thing that federal agencies must do is expand on the current requirement to deposit articles in a publicly accessible repository like PubMedCentral. While institutions and publishers may also wish to serve as repositories, it is in the public's best interest for the federal government to guarantee permanent access to research articles either via its own repositories or by requiring others to maintain policies and standards for interoperability, accessibility, and permanent free access.

Scientific research is increasingly interdisciplinary. Productivity and benefit to society is enhanced by collaborations among organizations, public and private, that are engaged in translational research and development. (One example from North Carolina's Research Triangle Park is the Hamner Institute, of which a major unit is the Institute for Drug Safety Science.) This is a national priority as reflected in the Clinical and Translational Science Awards Program of NIH. These collaborations are not well served by the current cost model from most STM publishers, who charge high license fees typically based on institutional affiliation. This means that collaborators working side by side but with different affiliations, cannot access the same content. Our library has seen ample evidence of this via requests for access to our collections that we cannot honor. Public access for free, regardless of affiliation, helps promote such collaborations that can lead to new discoveries that improve the public's health. Free public archives of scholarship is equally important. The "translation" process often involves developing new commercial products via collaborative efforts and agencies such as the Hamner Institute. It also involves workforce training that leads to more jobs for skilled workers.

**#2: What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

As librarians we recognize the need to balance the right of content creators with the rights of the general public that can benefit from the results of their research, as supported by the Copyright Act. However, the balance shifts when the research is taxpayer supported. We support the recent position at Harvard calling for all research funders to require the use of open licenses ([http://cyber.law.harvard.edu/files/OCL\\_for\\_Foundations\\_REPORT.pdf](http://cyber.law.harvard.edu/files/OCL_for_Foundations_REPORT.pdf)). One open license, the Creative Commons Attribution license (CC-BY) is a good model that maintains this balance by allowing

works to be available and usable with proper attribution to the author. It fully protects the author's intellectual property rights and fair use, which we believe is essential.

The current NIH policy also serves as a good model when considering this question. Authors now sign publication agreements with publishers retaining the author rights that allow them to deposit their articles in the NIH repository, PubMedCentral, while assigning other rights to the publishers.

**#3: What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

PubMedCentral functions as a successful example of a centralized federal public access repository. It accomplishes the important functions of free, permanent access, long term preservation, and interoperability. Central repositories like PubMedCentral have these advantages:

- Systematic and comprehensive collection, less risk of inadvertent omissions;
- Consistency in collection policy and consistency in how the policy is applied to the work;
- A single source for researchers to find works rather than needing federated search tools to link multiple sources;
- Interdisciplinary searching for materials may be easier;
- Administration costs are likely to be lower. (NLM reports that PubMedCentral costs less than 1/100th of one percent of NIH's operating budget to run).

Central federal repositories signal a role for the federal government that is increasingly important now that most research publications are digital, not print. The role of research libraries to provide long term access to print content is not easily transferred to the digital world in which those libraries rarely actually own the digital content, but merely license it. However, it still should be a goal to achieve redundancy in digital repositories, whether they are maintained by libraries, publishers, scholarly societies, consortia, or others.

There are advantages to decentralized repositories, too. Redundancy is needed to guarantee permanent access to needed content. Separate repositories allow for focusing on different disciplines and circles of interest. Such repositories can be designed to meet the needs of the specific types of materials likely to be collected for a specific discipline. In the long run, society will be best served by the federal government taking a leadership role and working collaboratively with local partners.

**#4: Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

Public/private partnerships that take advantage of existing publisher archives should be encouraged as long as they are "trusted" repositories that meet all the conditions for public accessibility, use rights, interoperability, and the long-term preservation of publicly funded articles. Emphasis should be given to the fact that no publisher or any other single stakeholder be the single point of preservation and access for these articles.

Research universities and their associated libraries have extensive experience in preservation, archive infrastructure, and access. In fact, the best public-private partnership model (specifically Federal-university) is the successful ArXiv.org that provides open access to 727,246 e-prints in the fields of physics, mathematics, computer science, quantitative biology, quantitative finance, and statistics. Another emerging model is the HathiTrust, “a partnership of major research institutions and libraries working to ensure that the cultural record is preserved and accessible long into the future.” The Triangle Research Libraries Network (UNC-Chapel Hill, Duke, NC State, and NCCU) are community partners in this effort.

**#5: What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?**

Open metadata is key to facilitating the wide dissemination and use of scholarly works, including those funded by federal research dollars. While services that promote discovery and re-use of scholarly work increasingly use the full text of these works in their operation, metadata is still an essential part of the resource sharing ecosystem. Structured metadata provides necessary context that supplements the information in textual works, and is critical in discovery and re-use of datasets, images, video, and other types of scholarly work that are not textual in nature.

There is significant evidence that open sharing of metadata facilitates use of research and digital content. The Europeana project recently issued a white paper that lays out a business case for its metadata to be issued under an open license, which can be found at <http://www.scribd.com/doc/73652620/Europeana-White-Paper-2>. The Library of Congress’ posting of a sampling of their photographic holdings, with metadata, on Flickr (in addition to launching the Flickr Commons) significantly increased user interaction with this material. In the first day, Library of Congress images on the Flickr Commons received 1.1 million page views, and in the first week they received 3.6 million page views (<http://blogs.loc.gov/loc/2008/01/flickr-followup/>, [http://www.loc.gov/rr/print/flickr\\_report\\_final.pdf](http://www.loc.gov/rr/print/flickr_report_final.pdf)). On a smaller scale, North Carolina State University recently found that more robust metadata for a collection of photographs increased use of the material fourfold (<https://staff.lib.ncsu.edu/confluence/display/MNC/Evaluating+the+effectiveness+of+manual+metadata+enhancements+for+digital+images>).

To achieve these benefits, federal agencies, publishers, and scholarly and professional societies should provide specific incentives in terms of grant dollars or other methods for those initiatives that explicitly re-use or build on previous work for which open metadata is available, support the creation and/or growth of both institutional and disciplinary repositories, and support the creation and maintenance of registries for the identification of repositories that have open metadata and peer-reviewed content resulting from federally-funded research.

Many early metadata and content sharing efforts, such as the Flickr Commons experiments at Library of Congress, relied on “push” methods that required those responsible for the metadata and content to actively place selected material in individual external systems to enable their discovery and use in those environments. To be sustainable, the sharing of metadata and content beyond institutional and

project borders must in contrast be done via a “pull” model, where all structured metadata and content from a given repository is made available in standard formats via standard technical protocols to any service that wishes to reuse it. This level of openness will allow web-scale escalation of discovery and re-use of federally funded scholarly work. Federal agencies, publishers, and scholarly and professional societies should enact policies and support networks for the open sharing of metadata about peer-reviewed publications resulting from federally funded scientific research via pull methods, to enable this scaling up of metadata sharing. Granting agencies should introduce specific requirements for the creation and dissemination of open metadata. Federal agencies, publishers, granting agencies, and scholarly and professional societies should actively work with and publicly support others’ work with standards bodies to develop and maintain protocols for the open sharing of data.

The metadata and content shared via these methods will support specific actions that will promote the re-use of federally funded research and significantly contribute to the creation of new knowledge. These might include:

- Identification by researchers of studies related to theirs, for purposes of replication, refutation, or enhancement;
- Location of other work done on top of a specific data set of interest;
- Creation of domain-specific repositories of research work, like ArXiv.org;
- tracking of the progression of specific scholarly or scientific ideas over time;
- Integration of geospatial data from federal sources into new research and creative work;
- Improved quantification of the impact of federally funded research

There are a number of mature metadata standards for the description of scholarly papers and research data, for example, the Data Documentation Initiative (DDI) in the social sciences. These standards typically encompass the collection of metadata that support the specific actions named above. These metadata elements include standard bibliographic metadata such as title, author, and subject; funding details; data collection/generation methodology; relationships to published work and other data sets; and domain-specific data relevant to the type of research done.

There are also a number of emerging standards in this area, many of which are aimed at sharing metadata and content on top of core web standards. One primary example of this is experimental work at Johns Hopkins University to use the Open Archives Initiative Object Reuse and Exchange protocol (OAI-ORE) to facilitate the formal publishing of research findings in journals while simultaneously archiving these papers and the raw data generated by the research (<https://wiki.library.jhu.edu/display/DATAPUB/Home>, [http://www.openarchives.org/ore/meetings/hopkins/presentations/Tim\\_DiLauro\\_ORE.pdf](http://www.openarchives.org/ore/meetings/hopkins/presentations/Tim_DiLauro_ORE.pdf)).

#### **#6: How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

Federal agencies that fund science can maximize public benefit by mandating that all publicly funded research results (using the final, peer-reviewed, edited copy) are available free of charge to the public on federally managed and supported repositories. We have several years of experience using PubMedCentral as such a repository. This experience can guide us to improvements going forward. A few suggestions include:

- Making the deposit of articles easier and clearer, whether it is the author or publisher who does it, to ease the burden of compliance;
- Working with institutions and consortia to facilitate interoperability between article repositories and emerging research management systems like VIVO (<http://www.vivoweb.org> - “an interdisciplinary national network of scientists that will facilitate discovery and collaboration across the country”). These systems foster research collaboration and community engagement based on scientists’ published research output. The University of North Carolina system web portal, REACH-NC (<http://www.reachnc.org>) “enables users to find experts and assets within the state’s higher education and research institutions”. It can be used, for example, to help a local community find a consultant on water quality based on a search of faculty publications and grant awards. The publication part of this portal is obtained from multiple sources including PubMedCentral. Streamlining and expanding this data to include all research publications based on federally funded research would maximize the benefit both to the university and to communities throughout the state and beyond.

**RFI #8: What is the appropriate embargo period after publication before the public is granted free access to the full content of peer reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

The most desirable result is for scholarly publications to be available immediately, with no embargo period. Over 60% of journals already endorse immediate “green” access to the author’s final copy (<http://highwire.stanford.edu/lists/freart.dtl>). Immediate access supports the overall goals of public access by making research results available while they are timely and potentially most useful. For example, at our institution, we have highly visible research programs supporting global health improvements worldwide. A study led by UNC faculty member Dr. Myron Cohen, finding that treatment with anti-retroviral drugs prevents the spread of AIDS, was recently named by *Science* as its “Breakthrough of the Year” <http://www.sciencemag.org/content/334/6063/1628.full>. Such groundbreaking science has widespread relevance in the U.S. and globally. We also have a successful translational research institute that brings our research directly to communities throughout our state and beyond where it can maximize benefits as quickly as possible (<http://tracs.unc.edu>). Such programs receive significant federal research support and their positive impact on society is impeded by embargo periods limiting free access to published research results.

Some faculty have told us that they will publish only in “gold” open access journals because they want their research to be available immediately in developing countries and other places where cost is a barrier to accessing needed information. We have first-hand evidence of critical health information needs that could be addressed by free online access to journal articles in such settings. In a recent encounter, doctors in Uganda needed the latest information about treating complications from kerosene ingestion, a common problem in communities that use paraffin for home cooking. They could not afford to purchase scientific journals to get this information. There are many other countries where, despite widespread poverty, they are not eligible for subsidized journal access through programs like HINARI (WHO). The same needs exist in poor communities throughout the U.S. Open access is not just good for developed countries with large funded research enterprises; it can provide lifesaving assistance around the world and leverage U.S. funded research where it can have maximum impact.

Embargo periods stand in the way of fully realizing the benefits of these and similar programs in which the federal government is heavily invested. If embargo periods are needed to protect publisher profits they should provide data demonstrating this need. Libraries with large research collections will continue to subscribe to the top journals as long as their content is high quality and serves their users' needs. At our institution this is the case despite having suffered major budget cuts in recent years. Embargo periods may be considered important to protect the original work of authors. However, the Creative Commons license (<http://creativecommons.org/>) has gained widespread acceptance. It provides a model for others to reuse and build upon one's original work as long as attribution is given to the original author.

Sincerely,



Sarah C. Michalak  
University Librarian and Associate Provost for University  
Libraries

**From:** Marcelo Magnasco  
**Subject:** HR 3699 and "added value" to federally-funded research.  
**Date:** January 11, 2012 4:46:03 PM EST  
**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

The recent uproar over HR 3699, which particularly affects me since Rep. Maloney is my own representative, has led me to try to put some real numbers on the costs involved, to show how inappropriate it is to give sole control over the dissemination of research results to the editorial house.

Basic cost analysis of one of my research papers, of which I publish approximately 3 per year.

Borne by by institution (Rockefeller University):  
My salary, benefits, cost of upkeep of my laboratory and other installations and other subsidies by my employer (Rockefeller University): 100'000\$  
100'000\$.

Borne by my funding agencies (National Science Foundation/National Institutes of Health):  
Salary of postdoctoral fellows and students involved in the project, supplies/reagents/computers used: 100'000\$  
100'000\$

(These two include the advertisement costs for the paper (i.e. exposition of the research in international conferences and seminars etc.). )

Borned by their respective institutions:  
3 hours of an academic journal editor's time: 600\$.  
12 hours of referee's time: 1800\$.

2400\$.

Costs of the editorial house:  
Amortized cost of the software tracking submission and reviewers, etc: probably <10\$ per paper.  
Copyediting, formatting, color separation, etc: <2000\$/paper (extremely generous estimate given that self-publishing books costs in the dollar per page range and require mere hours from the author)

Here the fixed costs on a per-paper basis end. The next costs have to do with dissemination, and thus with how many libraries subscribe to the journal.

(Note that these costs are charged to the author in the form of page charges and figure layout charges.)

Cost of printing and shipping: <10\$ per paper per library (charged to the library)  
Cost of electronic archival and bandwidth <10\$ per year per paper (charged to the libraries and electronic subscribers many times over)

Therefore it costs next to 200'000\$ to create the research behind each one of my papers and to pay for the writing of it, borne roughly equally between the Federal government and my research institution. It costs about 2500\$ for the scholarly side of peer review, and maybe another 2500\$ for the one-time productions costs that editorial houses add as "added value", which is usually charged to the author upfront. The other costs are to disseminate to the subscribers, who actually pay for the service.

Why would total control over the copyright and dissemination of the work be given to a company that is adding 2'500\$ worth of value to a 200'000\$ proposition? In which way does allowing the federal government to disseminate (from their servers which they pay for) the PDF of the work after 1 year, or 6 months, of initial publication impinge on the publishing house's recouping their 2500\$? (Which they do up front, I repeat).

---

Marcelo Magnasco  
Professor and Head,  
Mathematical Physics Lab <http://sur.rockefeller.edu/Plone>  
The Rockefeller University [magnasco@rockefeller.edu](mailto:magnasco@rockefeller.edu)

**From:** Dean Reinke  
**Subject:** public access to peer-reviewed scholarly publications  
**Date:** January 11, 2012 4:51:09 PM EST  
**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

Name/Email Dean reinke

Affiliation/Organization public citizen

City, State Minneapolis, MN

Comment 1

I am a stroke survivor and read dozens of extracts trying to figure out what is occurring in the research world. With no access to full documentation it is impossible to determine if scientists are even going down the correct route. Researchers should not be in charge of deciding whether or not their research should be accessible. All of it should be open. Patients are definitely more than laboratory rats and should be treated with intelligent respect.

Ted Wackler,

Deputy Chief of Staff.

[FR Doc. 2011-28623 Filed 11-3-11; 8:45 am]

BILLING CODE P

**From:** Gronostajski, Richard  
**Subject:** **Keep open access policy**  
**Date:** January 11, 2012 4:51:14 PM EST  
**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

As a research scientist, I strongly encourage the continuation of open access policies so that NIH-funded research becomes freely available to all researchers. The people paid for this research so they should have free access to the results.

Sincerely,

Richard M. Gronostajski  
Professor, Dept. of Biochemistry, State University of New York at Buffalo  
Member, Developmental Genomics Group; Director, Western New York Stem Cell Culture and Analysis Center (WNYSTEM)  
Adjunct Professor, Department of Molecular and Cellular Biology; Associate Member, Cell Stress and Biophysical Therapies CCSG  
Professor, Cell and Molecular Biology Graduate Program, Roswell Park Cancer Institute

Mailing address: New York State Center of Excellence in Bioinformatics and Life Sciences, 701 Ellicott St., B3-303, Buffalo, NY 14203

Webpage: <http://buffalo.edu/~rgron>

Education is not the filling of a pail, it is the igniting of a fire. (Attrib. William Butler Yeats)  
Question Authority!

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January 12, 2012

Re: FR Doc. 2011-28623

On behalf of the Professional and Scholarly Publishing Division of the Association of American Publishers ("AAP/PSP") and the DC Principles Coalition for Free Access to Science ("Coalition"), we are pleased to respond to the Office of Science and Technology Policy's ("OSTP") November 3, 2011 Request for Information ("RFI") regarding "Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research."

Scholarly and professional publishers create the vast majority of materials used in the U.S. by scholars and professionals in science, medicine, technology, business, law, reference, social science and the humanities, and they include the worldwide disseminators, archivists, and shapers of the public record on scientific research via print and electronic means. They include non-profit professional societies, commercial publishers and university presses that produce books, journals, computer software, databases and electronic products in virtually all areas of human inquiry and activity.

Collectively, members of AAP/PSP and the Coalition represent tens of thousands of publishing employees, professional individuals, editors and authors throughout the country who regularly contribute to the advancement of American science, learning, culture and innovation. They comprise the bulk of an \$8 billion commercial and non-profit publishing industry that contributes significantly to the U.S. economy and enhances the U.S. balance of trade by at least \$3.5 billion annually.

The primary goal of the peer-reviewed publishing activity undertaken by our members is to broadly disseminate, provide access, and offer a high-quality and user-friendly environment in which to discover, analyze, and link to the latest breakthroughs and developments in scientific and other scholarly research. In particular, publishers of scientific journals have, for more than 100 years, played an integral role in building and documenting the unrivalled U.S. scientific research enterprise, and their continuing innovation and investment in high-quality publication of scientific research makes them uniquely positioned to help the Federal Government expand public access to publications that report on the results of federally-funded scientific research; ensure the long-term stewardship of such publications; and, support the innovation and economic development that is derived from scientific discovery.

However, as a threshold matter in contemplating how publishers might work cooperatively with the Federal Government to advance its abilities to provide greater public access to the results of federally-funded research, it has become necessary for publishers to pointedly remind the Federal Government that their “peer-reviewed scholarly publications” that report, describe, explain, analyze or comment on federally-funded research do NOT “result from” such research in any sense that can legally justify the assertion of Federal Government control over the contents or distribution of such publications. Although federal funding may facilitate or otherwise contribute to the research processes and discoveries that are the subjects of peer-reviewed articles published in scientific journals or other scholarly publications, the creation of the articles themselves – as well as the creation of the publications containing them – are separate creative acts. Activities including certifying quality control; improving accessibility; ensuring integrity, reliability, and provenance; enabling discovery; promoting global dissemination and collaboration; standardizing outputs; and preserving the scholarly record for future generations are not funded by or otherwise attributable to the Federal Government. Instead, such articles and publications are literary works that are subject to the rights of copyright ownership that belong to their authors or their authors’ exclusive licensees, which are typically the publishers who have provided significant added-value to the work through extensive pre-publication editing and style processes that include peer review.

Unfortunately, the Federal Government’s use of terminology that characterizes scientific journals, their constituent articles, and other “scholarly publications” as “the results of” or “resulting from” federally-funded research has been a fundamental premise for making its case to assert claims to control or, at least, exercise some authority over these materials in conflict with the rights and interests of their authors and publishers. Through sheer repetition, variations of such characterizations have recently shaped the official discussion of key policy issues involved in seeking to expand “public access to the results of federally-funded research”

by creating the perception that federal taxpayers and, thus, the Federal Government have somehow paid for the creation of such publications and thereby obtained rights of free public access to them. This premise undermines the publishing community's desire and ability to work cooperatively with the Federal Government to achieve expanded public access, and it must be addressed by OSTP if such cooperation is to become a part of the development and implementation of appropriate public access policies based on the response to the RFI.

It is with this view that the attached comments and recommendations have been submitted on behalf of AAP/PSP and the Coalition in the hope that they will help to facilitate the successful development of a sustainable, effective and fair public access policy that is consistent with the Administration's "Open Government" framework<sup>1</sup> and embodies a spirit of collaboration in recognition of the intellectual property rights and private investments of publishers as key stakeholders in these matters.

### **Summary of Comments and Recommendations**

Scholarly publishers have long served as integral hubs of the America's research enterprise, validating research through the peer review process, producing a reliable scientific record, and facilitating scholarly communication through dissemination and preservation of scientific literature. Contrary to the premise of this RFI, these publications are not funded by research grants, but provide an independent analysis and interpretation of those results. Nonetheless, the mission of the publishing industry is to expand the availability and utility of research findings, by providing materials that analyze and interpret the latest developments in social and scientific research, and they will continue to partner with all stakeholders, including federal agencies, to ensure broad access to cutting-edge discoveries.

Publishers have a solid record of providing long-term stewardship and broad public availability of publications that report on, analyze and interpret federally-funded research. In the digital age, publishers have invested significantly in activities that have enhanced public access, particularly for the scientific, technological, engineering social science, and medical communities: expanding accessibility, improving interoperability and fuelling innovation. Their investments have created digital platforms with the latest and continually evolving Web capabilities, providing researchers with faster and more robust delivery of scholarly information, new ways to present data and research findings and links that enable information to be found and navigated with ease. They have improved interoperability through new metadata standards and pilot projects, which are driving innovation and providing for better information discovery and expanded use of research results. They have voluntarily created

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<sup>1</sup> As articulated in Memorandum for the Heads of Executive Departments and Agencies on Transparency and Open Government (January 21, 2009), available at [http://www.whitehouse.gov/the\\_press\\_office/TransparencyandOpenGovernment](http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment) and Memorandum for the Heads of Executive Departments and Agencies on Open Government Directive available at <http://www.whitehouse.gov/open/documents/open-government-directive>

programs, including Research4Life, patientINFORM and the Emergency Access Initiative, to enable people outside the traditional circles of scholarly research to have access to critically important information when and where they need it.

Publisher activities and investments over the last 15 years have contributed to U.S. economic growth directly through the high-skilled workers they employ, as well as through the dissemination of knowledge that leads to innovations beneficial to the safety and health of all Americans. The core publisher activities of improving the quality of an author's work by supporting peer review and performing technical editing; ensuring the continued integrity and reliability of the scholarly record and certifying the provenance of ideas through peer-reviewed journals; enhancing the global accessibility of this material for a variety of uses to specialist and non-specialist audiences; enabling the discovery of knowledge through innovative web-based platforms, tools and interlinked content; promoting online collaboration through social networking tools; enabling the global dissemination of information in standardized formats; and preserving the scholarly record for future generations entail significant costs and ongoing investment. These activities are threatened by public access policies that do not take these costs into account. In considering policies that could potentially expand public access to research results, it is critically important that any new policy does not damage the private institutions on which the Federal Government and its scientific enterprise depend. In particular, AAP/PSP and the Coalition oppose government mandates requiring that private-sector publications be made available online without the copyright owner's authorization and compensation. Such unnecessary and harmful mandates jeopardize the sustainability of the U.S. professional and scholarly publishing enterprise which is considered by the vast majority of scientific researchers to be first-rate and which helps ensure U.S. leadership in research and knowledge-based innovation. Sustainable partnership with publishers is the best way to continue supporting the U.S. economy, a robust peer-review publishing system, and the productivity of the scientific enterprise.

The America COMPETES Reauthorization Act of 2010 calls upon OSTP to coordinate agency policies related to the dissemination and long-term stewardship of the results of federally funded unclassified research. We strongly support this goal, as well as the guiding principles of transparency, participation and collaboration that President Obama and OMB Director Orszag articulated at the outset of this Administration. The America COMPETES Act of 2007 provides a constructive model of a public access policy in its directive to the National Science Foundation (NSF)<sup>2</sup> that could serve as a basis for further collaboration between the federal agency, researchers, and other stakeholders. In contrast, the NIH "public access" policy, which has been authorized through the Congressional appropriations process without consideration by Congressional committees with subject matter jurisdiction, has the potential to significantly damage a well-functioning and innovative system of scientific communication, reduce

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<sup>2</sup> Section 7010, "Reporting of Research Results," described by the conferees as "requiring NSF to make available to the public in electronic form final project reports and citations to NSF-funded research." The conferees further noted that they "intend for NSF to provide to the public a readily accessible summary of the outcomes of NSF-sponsored research projects. In addition to citations to journal publications, the conferees intend for NSF to make available research project summaries, not including any proprietary or otherwise sensitive information.

economic benefits and employment, and undermine intellectual property rights. Each of these models should be carefully analyzed to be sure its long-term impact on all stakeholders is fully understood, with appropriate consideration of the different needs and practices of different scientific disciplines.<sup>3</sup>

A federal agency public access policy that is sustainable in the long-term and maximizes benefits to researchers and the public at large must function as a balanced public-private partnership to enhance access and interoperability, adequately protect fundamental intellectual property rights guaranteed under the Constitution, and respect proprietary contributions of added-value to ensure sustained private investment in innovation. This approach meets the needs of the research community in particular by relying on evidence-based assessments and providing access to taxpayer-funded research results through both public and private channels.

### **Responses to specific questions**

**(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

U.S. publishers serve a robust, innovative market for peer-reviewed publications around the world that has led to multiple opportunities for access to and analysis of research across a broad array of social and scientific disciplines. These publications are not the result of research, but rather describe, explain or report on such research. They thus represent significant value beyond whatever initial investment in research the Federal Government provides. Their role in interpreting, analyzing and validating research results therefore adds increased knowledge and utility of research, whether federally funded or otherwise.

Since the mid 1990s, publishing industry investments in the dramatic digital revolution in the sciences have increased the utility of published resources even more, increasing productivity, expanding availability, and increasing the economic impact of scientific discovery. The results of the end-to-end digitization of publishing systems are robust digital platforms with the latest and evolving Web capabilities that can support the Federal Government's effort to link policymakers, researchers and the public. Rapid innovation in the journal publishing industry has dramatically improved functionality and efficiency for doctors and researchers, who can now perform complex searches of journals, immediately retrieve and print full text articles, link instantly to other cited articles, export text to other databases and programs and receive e-mail alerts when new journal issues are released. Voluntary cross-publisher initiatives such as

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<sup>3</sup> See, for example, data presented in response to Question 8 regarding journal use in Psychology and Mathematics.

CrossRef,<sup>4</sup> developed without government funding, have continued the trend of investments that benefit researchers.

These investments have helped to grow the economy and improve the productivity of the scientific enterprise. The portion of time scientific researchers spent analyzing, as opposed to gathering, information increased dramatically from 2001-2005. Compared to the print-only era, scientists now read 25% more articles per year from almost twice as many journals, and they do so using a smaller portion of their time.<sup>5</sup> The system is already working to provide needed access and improve productivity. This dynamic yields major benefits in research and funding effectiveness. Existing publisher activities also support U.S. economic growth through technology and innovation.

Publishers are willing and able to work with all stakeholders to address existing or future gaps in access. Agencies should identify specific needs of particular user groups that are not already being met and collaborate with publishers and other stakeholders to meet those needs most effectively. Researchers, the general public, funders, stakeholder groups such as patients and doctors and others each have different information requirements. To make it easier to locate and use research information, publishers have and continue to make substantial investments in efforts to improve and expand access to information. These include:

- Identifying and addressing access gaps for particular groups with a need for information, through initiatives that provide direct access to communities with these needs. Such initiatives include patientINFORM,<sup>6</sup> the Emergency Access Initiative,<sup>7</sup> Research4Life,<sup>8</sup> DeepDyve rentals,<sup>9</sup> and special access programs for public libraries, journalists and high schools.
- Creating, supporting and maintaining robust hardware and software infrastructures to distribute and archive science research literature, and updating those tools as the needs and expectations of authors and users of journal literature change over time.
- Enabling researchers to interact with the literature and data in new ways, including enabling data manipulation and supporting the dissemination of supplemental

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<sup>4</sup> CrossRef ([www.crossref.org](http://www.crossref.org)), a not-for-profit group founded by publishers in 2002, addresses a research community need for citation-linking and standardization of identifying metadata. Almost 1000 publishers participate and have assigned digital object identifiers (DOIs) to more than 50 million published content items. Development of the CrossRef service has resulted in seamless navigation of the research literature by users so that researchers using the bibliography in one article can link from a reference to the full text of the referenced article.

<sup>5</sup> Outsell's Buyer Market Database, Dr. Carol Tenopir (2008)

<sup>6</sup> patientINFORM (<http://www.patientinform.com/>) provides patients and their caregivers with free or reduced-price access to relevant journal articles.

<sup>7</sup> The Emergency Access Initiative (EAI) is collaboration between NIH, libraries, and publishers to provide temporary free access to full text articles from major biomedicine titles to healthcare professionals, librarians, and the public affected by disasters.

<sup>8</sup> Research4Life ([www.research4life.org](http://www.research4life.org)) is the collective name for four programs that provide developing countries with free or low cost access to academic and professional peer-reviewed content online.

<sup>9</sup> DeepDyve ([www.deepdyve.com](http://www.deepdyve.com)) aggregates published information and makes it available through low cost rental to improve access for users who are "unaffiliated" with a large institution and therefore lack easy and affordable access to authoritative sources of information.

information such as video, interactive three-dimensional visualizations and software tools that enhance understanding of research results.

- Verifying references and creating, managing and maintaining online links, providing coding for digital dissemination, integrating machine-readable tags, supporting reference linking and indexing, and otherwise enriching the content, design and functionality of online publications.
- Encouraging and supporting the development of interoperable, industry-standard tools for citation and other purposes, such as “persistent identifiers” (that is, the articles’ unique identifiers for researchers to ensure that they are using and citing the authoritative version of the article).
- Enhancing the discoverability of research results through arrangements with third-party vendors that push relevant research information to the appropriate research communities through a combination of traditional tools and emerging technologies, such as abstracting and indexing services, citation databases, table-of-contents alerting services, podcasts, RSS feeds, press communications and sponsorship of scientific and technical conferences, seminars and symposia.

In addition to working in collaboration with publishers to identify access gaps, agencies could work proactively to broaden access to materials that analyze and interpret research for scientists and the public without appropriating private, copyrighted content. Options include:

- Working to develop standards for data and meta-data to make research more readily searchable and discoverable: publishers are already working in partnership to develop standardized information and collections through initiatives like CrossRef;
- Working with researchers and other stakeholders to create appropriate policies to make the Federal agency-collected and maintained outputs of taxpayer-funded research, such as grant reports and research progress reports, freely available to the public;<sup>10</sup>
- Making funds available to support payment for open access to published articles. Several research funders already do this (Howard Hughes Medical Institute, The Wellcome Trust, Max-Planck Institutes); and,
- Licensing content from publishers to make available to specific audiences. Publishers license content to customers of many kinds, and can generally customize those licenses to meet specific or specialized user needs, including those of government agencies, and have the ability to ensure the availability of their content with existing infrastructure.

The primary way that the government can achieve greater accessibility for peer-reviewed publications is to work in a collaborative manner with all stakeholders to develop an approach

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<sup>10</sup> This would ensure readability to the broadest audience. NSF is already pursuing such a policy: <http://www.nsf.gov/pubs/policydocs/porfags.jsp>

that balances competing interests, ensures the rights of copyright owners, and provides for continued growth and innovation in scientific communication. It is critical that agencies avoid any action or policy change that would detract from a well-functioning, privately-funded publishing ecosystem that is driving innovation and growing existing and new markets that support the scientific enterprise. Public access government mandates run counter to openness and collaboration, and have significant costs to the U.S. economy and the scientific enterprise. Indeed, such moves would lessen access, as they would threaten publishers' ability and willingness to improve availability of their works. Significant value added by the publishing industry could be eliminated if revenue channels necessary for publishers to reinvest in their businesses and innovations continue to be threatened by government mandated access policies that provide free access to publishers' works and enable piracy and unauthorized reuse.

The NIH public access policy provides a cautionary tale about the risks of government mandates requiring access to manuscripts of peer-reviewed science journal articles. Although the mandate is still relatively young and needs to be analyzed more fully, our members report declining sales and usage since the mandate went into effect. AAP/PSP and the Coalition join others<sup>11</sup> in the concern that the NIH policy may undermine U.S. competitiveness and negatively impact U.S. jobs. It is critical that the government carefully analyze the full impact of the NIH policy on all stakeholders before expanding it to any other agencies. There has not been any comprehensive study of its impact on members of the general public, its assumed beneficiaries, or on journal publishers whose work, reputation and expertise it exploits.

It is not clear how much the public is benefiting from this mandate. In surveys, researchers do not rate access as a significant problem<sup>12</sup> and, while it is difficult to get usage data from NIH, the scant public data available indicates that the mandate may be benefiting individuals outside of the U.S. (including those who are otherwise customers or competitors of U.S. enterprises) more than Americans. For example, two-thirds of PubMedCentral's users are based outside the U.S., which undermines critical export opportunities for an \$8 billion publishing industry that employs tens of thousands of Americans.

At the same time, indications of harm are just emerging, and substantial evidence may not be available until it is too late. The NIH free access mandate has been in existence for less than three years. Taking into account the one-year embargo, there has been very little time for the full impact on publishers to be felt. However, there is no doubt that it is difficult for publishers to compete with free access, as would be the case for any business or industry; moreover, there

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<sup>11</sup> House Energy and Commerce Committee Subcommittee on Health Chairman Joe Pitts sent a [letter to Francis Collins, NIH Director](#) expressing concern that the NIH Public Access Policy undermines the competitiveness of STM journal publishers, and seeking additional information on the NIH Public Access Policy, PubMedCentral, and its impact on the science, technology and medical publishing fields.

<sup>12</sup> Access to journal articles is only 14th on researchers' lists of concerns, behind lack of funding (1st) and too much bureaucracy (5th), according to survey results reported in "Access by UK small and medium-sized enterprises to professional and academic information," Mark Ware Consulting Ltd for Publishers Research Consortium (April 2009)

are a number of factors that point to likely harm. If we wait for the tipping point where publishers start failing, it will be too late to reverse unwise policies.

In 2006, the Publishing Research Consortium (PRC) commissioned a study of how decision-making factors such as price, embargo period, article version and reliability of access would affect librarians' subscription or cancellation behavior.<sup>13</sup> With a twelve-month access delay, assuming only 40% of a journal's content would be available for free, a large proportion (44%) of librarians in the study said they would opt for free content to portions of the journal over a paid subscription. When more than 40% of a journal's manuscripts are available freely on open access, the librarians expressed an even greater preference for the free option over journal subscriptions. As subscriptions account for approximately 90% of revenue for many journal publishers, cancelled subscriptions represent a significant threat to the publishing enterprise. The results of the PRC study are worthy of serious consideration, given the importance of subscriptions to sustaining publishing's essential role in ensuring the integrity, dissemination and preservation of the world's scientific, technical and medical information.

**(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

Strong intellectual property protections underpin sustained investment in innovation, and we appreciate OSTP's acknowledgement that policies must not undermine these protections. Copyright is an essential ingredient in promoting creativity, innovation and the continued integrity and reliability of the scholarly record. Any agency policy must take as its starting point the goal to adequately protect fundamental intellectual property rights, respect value-adding publisher contributions, and uphold long-established principles of government information policy to ensure continued incentives for creativity and investment. In the publishing industry, copyright has provided an incentive for investments in new technologies and publishing models that meet the needs of today's digitally-based users, as well as continued peer review and infrastructure needed to publish and distribute scientific communication. As the technology for disseminating works has changed and increased, so have the investments publishers have made to meet new user demands. Therefore, the need for investment incentives has become even more crucial for the publishing industry.

To preserve these investment incentives, Federal policy must provide for full copyright owner authorization and compensation for access to these works. A sustainable approach would support the continued operation of various models of publishing to ensure access to innovation

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<sup>13</sup> Publishing Research Consortium Report "Self-Archiving and Journal Subscriptions: Co-existence or Competition" (July 2006). Accessible at [http://www.publishingresearch.org.uk/documents/Self-archiving\\_report.pdf](http://www.publishingresearch.org.uk/documents/Self-archiving_report.pdf).

and researchers' ability to publish in the venue of their choice. Federal policy should also take specific steps to ensure that copyrighted materials are protected from unauthorized dissemination and piracy. An unintended consequence of the NIH Public Access Policy as it affects publishers' and authors' rights appears to be an increase in the rise of piracy of U.S. scientific and scholarly journal articles globally. The NIH policy puts the onus on rightsholders to police violations of intellectual property enabled by PubMedCentral (PMC). Chinese companies have been acquiring electronic copies of copyrighted U.S. scientific journal articles from government and university libraries and reselling them through online websites to legitimate producers' primary customers. U.S. publishers and scientific societies are facing annual losses of \$80-100 million as a result of this expanding theft and have been working closely with the Office of the U.S. Trade Representative and U.S. Department of Commerce to address this egregious problem.<sup>14</sup> Chinese pirate companies may also be mining full text articles from NIH websites and reselling these articles to their subscribers.<sup>15</sup> Unfortunately, these Chinese entities are now relying on a U.S. government website to facilitate the theft of U.S. intellectual property.

Alternatives to the NIH policy are available to disseminate federally-funded research findings without undermining Constitutionally-protected intellectual property rights and harming American competitiveness. As noted earlier, peer-reviewed publications are intellectual property analyzing and interpreting scientific discoveries and go far beyond simply providing the results of research. The goal stated in the America COMPETES Act, improving "*the dissemination and long-term stewardship of the results of unclassified research, including digital data and peer-reviewed scholarly publications, supported wholly, or in part, by funding from the Federal science agencies,*" can be better achieved through open access to final research reports, which are required under the Federal Acquisition Regulations. The reports summarize the research results, not all of which necessarily end up in any peer-reviewed publication. This solution could lead to standardization of the information reported,<sup>16</sup> as well as rapid and broad dissemination of the government-funded materials even before publication of a peer reviewed article, all while preserving intellectual property. In fact, the original America COMPETES Act contains a mandate for the National Science Foundation to publish all research reports, and the Department of Energy already has such a policy. By providing for some form of research report to be published, rather than asserting a type of eminent domain over the peer-reviewed journal article, the government could ensure access to the results of federally-funded research without undermining intellectual property and the incentives for investment in scholarly communication.

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<sup>14</sup> 2009 U.S.-China Joint Commission on Commerce and Trade (JCCT) Factsheet. Available at <http://www.ustr.gov/about-us/press-office/fact-sheets/2009/october/us-china-joint-commission-commerce-and-trade>

<sup>15</sup> One example is available here <http://l6.omcg.net/>

<sup>16</sup> Some agencies may want to establish a template for certain kinds of reports so as to facilitate various kinds of aggregate meta-analysis.

**(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

Publishers are committed to promoting interoperability, search, development of analytic tools, and other scientific and commercial opportunities.<sup>17</sup> A competitive publishing environment of not-for-profit and for-profit organizations – all of whom must receive a return on investment to survive – has led to robust technology development in scholarly publishing during the past 20 years. This sector of the publishing community, which includes professional associations, commercial publishers and university presses, moved quickly and decisively to introduce new technologies that meet researchers' demands for faster and more user-friendly delivery of scholarly information. For example, over the past decade publishers developed the Digital Object Identifier (DOI), a unique code for each piece of content in a scholarly publication.<sup>18</sup> In partnership with stakeholders, publishers are continuing to innovate in the creation and standardization of metadata to make it easier for researchers and the public to find and use scientific research information. Publishers collaborated with librarians and database providers to establish COUNTER (Counting Online Usage of NeTworked Electronic Resources)<sup>19</sup> which has produced an international set of standards and protocols governing the recording and exchange of online usage data. This enables libraries to better understand how the digital collections are being used and it allows publishers to better understand the usage patterns of their digital content. Additionally, Internet search engines, abstracting services and other tools do an excellent job of ensuring the discoverability of research, and innovations in this area are happening every day without government interference. There is no reason to doubt that the publishing industry will continue providing innovative products and services, unless the sustainability of private-sector publishing is undermined by harmful policies.

Centralized government-controlled custody of publications carries significant risks to the scientific enterprise, impedes innovation and is potentially unsustainable. Long-term stewardship of content carries significant costs that are already being borne by the private sector. In an era of dwindling federal resources, central federal repositories are duplicative and an unnecessary expense and recurring burden that may not be viable for long-term stewardship. Federal agencies are not always aware of existing technologies and solutions in the marketplace, resulting in unnecessary spending and a misallocation of taxpayer dollars—

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<sup>17</sup> See question 5

<sup>18</sup> CrossRef, a not-for-profit group founded by publishers in 2002, maintains 50 million items. Almost 1000 publishers participate and assign DOIs to published content items. Development of the CrossRef service has resulted in seamless navigation of the research literature by users so that researchers using the bibliography in one article can link from a reference to the full text of the referenced article.

<sup>19</sup> COUNTER ([www.projectCOUNTER.org](http://www.projectCOUNTER.org)) is a nonprofit devoted to the continued improvement of online usage statistics and usage-based metrics. The COUNTER Codes of Practice provide an international set of standards and protocols governing the recording and exchange of online usage data to enable librarians and publishers to better understand information usage.

particularly when the Government duplicates and competes with products and services provided by the private sector. For example, the NIH did not proactively seek collaboration with journal publishers as it developed its procedures and policies for the deposit of NIH-funded researchers' manuscripts into its central repository. Consequently, NIH created an unnecessary separate archive and tagging system at considerable expense and with minimal interoperability with existing data repositories.

The 2009 Scholarly Publishing Roundtable Committee, convened by the House of Representatives Committee on Science and Technology in coordination with OSTP, reviewed the question of centralization carefully. In its *Report and Recommendation from the Scholarly Publishing Roundtable*, it said, "Decentralization is critical to achieving this goal, [i.e. interoperability] especially with respect to interdisciplinary research...the standards and tools adopted by NIH, which effectively support interoperability within PubMed Central, do not provide broad interoperability with external databases, which are growing in number and size."

Centralized management unnecessarily picks winners and losers, being necessarily limited to articles with federally-connected authorship and providing a top-down infrastructure and architecture. With multiple sources of scholarly publications, many of which analyze and interpret research that is not funded by the government, partnerships among stakeholders are essential for achieving effective access to literature that represents the latest scholarly discoveries. In addition, a centralized, governmental approach will minimize scientific and commercial opportunities by reducing potential traffic to innovative new applications that facilitate the work of researchers. Instead, AAP/PSP and the Coalition strongly encourage collaboration with industry and recommend that the Federal Government leverage the private sector's rapidly evolving expertise, technologies, products and services in order to efficiently and effectively improve the quality and scope of services available to the public.

**(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

Publishers are actively working with federal research agencies and other stakeholders to develop and implement multiple collaborative projects that will enhance the public access, utility and preservation of materials that report on and analyze and interpret federally-funded research. These include providing access to progress reports, scholarly publications or additional data for use by both the research community and the general public. With decades of experience innovating, providing long-term archives and promoting interoperability in response to evolving technology and user needs, publishers are uniquely positioned to partner with the federal government to expand accessibility and interoperability while ensuring long-term stewardship of the scholarly record. Such collaborations and innovations require continued funding for the value-added work of publishing.

Examples of successful public-private partnerships that are underway abound, but the projects below provide examples of the type of collaboration that has the most promise to achieve the desired results. Some additional examples are provided in response to Question 5, focusing particularly on interoperability and metadata.

- **Linking to/from research reports.** A trial project linking DOE reports on the science.gov site with related publications on the Wiley Online Library is underway, and similar trial projects are under discussion between DOE-OSTI and ACS and Elsevier. The American Mathematical Society is working on a project to enable better linkages between its abstracting services, federal grant reports and published articles. Such projects would result in interoperability between funder and publisher content, ensuring access and better reporting on the results of funding.
- **NSF pilot projects.** Several pilot project examples offered by publishers to NSF are being considered as a basis for continuing discussions on collaborative efforts between NSF and the scientific publishing community. These projects include the development of standards and persistent identifiers to enhance the discoverability of NSF-funded research results and to promote interoperability among the NSF, publisher and any third party databases and platforms. AAP/PSP and the Coalition are hopeful that these can provide a sustainable way forward to leverage publisher content and expertise to improve access and interoperability.
- **Sponsored access to published research.** Scholarly publishers are committed to the widest possible dissemination of and access to the content they publish. A pilot project could investigate the viability of dedicated funding to sustainably support open access to peer-reviewed material upon publication. Such an approach would provide access while continuing to support the important value-added contributions of publishers.

Ongoing collaboration has the potential to significantly advance the achievement of joint objectives related to the dissemination and long-term stewardship of research results, regardless of how the original research was funded.

**(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?**

Publishers are dedicated to the widest possible dissemination and discoverability of publications that analyze and interpret research. Federal agencies are not always aware of existing technologies and solutions in the marketplace, resulting in unnecessary spending and a misallocation of taxpayer dollars. Agencies should make certain that they are working in

collaboration with stakeholders to advance innovation in areas such as metadata and standards. As noted above, partnerships with industry are already underway to determine, develop, and include appropriate metadata in publications. Voluntary private-public collaboration is the best way to promote innovation and prevent federal duplication and competition with products and services provided by the private sector that are so critical to the U.S. economy.

There are several models for collaboration on standards and persistent identifiers to enhance the discoverability of publications that analyze and interpret government-funded research and to promote interoperability among the funding agencies, publishers and any third party databases and platforms. Federal agencies should work to standardize and facilitate metadata connected with publications that analyze and interpret government-funded research. Publishers are already collaborating with agencies to create a pilot initiative to clearly indicate the funding agency responsible for the research described and analyzed in a scholarly publication or an associated dataset, expanding the availability of information by linking grant awards to a variety of access options on the publishers' site. Working with the publishing community to gather and link this information will save agencies considerable effort and expense compared with producing or maintaining such information or services on agency websites. In searching for a particular author, name ambiguity and attribution are persistent, critical problems embedded in the scholarly research ecosystem. The Open Researcher & Contributor ID (ORCID) project ([www.orcid.org](http://www.orcid.org)) is a successful public-private partnership with 275 participating organizations,<sup>20</sup> funded by \$2M in loans from publishing partners and building on successful investments by publishers in the past. A pilot demonstration began earlier this year and is on schedule, and institutional IDs will be addressed in a second stage. Finally, agencies should build on partnerships that already exist to promote the identification, discoverability and archiving of data, including Datacite ([www.datacite.org](http://www.datacite.org)) and the NISO/NFAIS Working Group on Supplementary Journal Information ([www.niso.org](http://www.niso.org)).

Private-public partnerships could also be used to develop discovery tools to facilitate journal content mining, dark archive access, and improvements in data management. For example, for many years publishers have produced and archived data-specific journals, and they are maintaining and updating such data sets with DOIs and semantic tagging. There are also many examples of pilot projects on data management.<sup>21</sup> In addition, new content mining projects could be developed as collaborations between publishers and federal funders. Publishers are already working on projects to mine journal and book content<sup>22</sup> and it might be helpful for federal funders to develop a content mining demonstrator to illustrate the value of content

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<sup>20</sup> 15% from publishing, 40% from academia and 15% from industry

<sup>21</sup> These include an NSF project under consideration (IOS-1127112) on data management in the biosciences that involves a partnership with a publisher in the field of plant biology; discipline-specific archive (Dryad.org) for biology data which allows authors to archive data used in peer-reviewed articles for a nominal fee; American Astronomical Society (AAS) is pursuing the establishment of a universal astronomy-specific data repository based on the Dryad model, by engaging all major publishers of astronomical journals; etc.

<sup>22</sup> The Publishers Research Consortium recently completed [a study](#) on article-level content mining based on a broad survey of ongoing or planned activities among nearly 30 STM publishers or associations.

mining to the broader scientific community. Federal agencies should work with publishers and other stakeholders who have expertise in developing and promulgating metadata to ensure standardization across disciplines and share best practices.

**(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

Government should take reasonable steps to maximize public access to the results of federally-funded research in which federal taxpayers invest. However, that federal investment is in the research, not the independent publication of the results. Publishers invest in the peer-reviewed literature and other publications, adding significant value that contributes to scientific advancement and the U.S. economy. Research-funding U.S. agencies should not compete with publishers, devalue their intellectual property, or require them to provide their products for free public access.

An excellent mechanism to ensure public access to materials that analyze and interpret research funded by the taxpayer is already partially implemented. By law every federally funded research project is required to provide a detailed final report. Some science funding agencies, such as the Department of Energy, make these reports freely available via the Web. At DOE, every final report is published online in the Information Bridge portal. In some ways, these reports are superior to the journal article in achieving the goal of public access to federally-funded research results. They are often available earlier than any journal article, if there even is one, and contain significantly more detail and information than the peer-reviewed literature. They report on both positive and negative results, and contain additional process details that are not available elsewhere. These reports are an underutilized resource that the taxpayer has directly paid for, as opposed to journal articles, and are available for all projects as required by the Federal Acquisition Regulation. Developing a sustainable, appropriate, government wide policy regarding public access to these required final research reports would solve the access problem.

Other agencies such as NSF are exploring alternate means of providing public access to researcher-supplied reports. NSF instituted "Project Outcomes Report for the General Public (POR)" in response to Section 7010 of the America COMPETES Act, which required that "all final project reports and citations of published research documents resulting from research funded in whole, or in part, by the Foundation, are made available to the public in a timely manner and in electronic form through the Foundation's Website." For several years, publishers have proposed working with authors to develop short abstracts for a lay audience to accompany each research report, and the NSF project is a step in the right direction.

Additionally, agencies should support voluntary efforts to enable people outside the traditional circles of scholarly research to access the full peer-reviewed version of record when necessary. These include collaborations between publishers and NIH such as the Emergency Access

Initiative, international collaborations such as Research4Life, and collaborative private-sector initiatives such as patientINFORM, which are expanding access and advancing research without mandates. Other voluntary approaches could be to allow researchers to fund immediate open access to published articles where such options are available. Such approaches would ensure the sustainability of the publishing enterprise and researcher choice.

In short, agencies should seek productive and mutually beneficial projects and partnerships that ensure greater availability of both taxpayer-funded research directly from the government and peer-reviewed, value-added publisher content. For example, publishers are ready to partner with Federal agencies to provide easy links between progress reports detailing research results, perhaps including lay summaries, and the peer-reviewed version of record, including complete access to the abstract or summary. Such projects would result in interoperability between funding agencies and publisher content, ensuring more timely and complete availability of scientific communication related to federally-funded research, as well as better reporting on the results of taxpayer funding for research. Together with existing infrastructure such as the Department of Commerce NTIS and the Department of Energy's science.gov site, and linked with metadata initiatives mentioned above, the posting of research reports provides a cost-effective model to expand access.

**(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

Like scholarly journals and the articles they contain, peer-reviewed publications in the form of book chapters or conference proceedings, cannot be considered the "result of" federally-funded research in any sense that would justify the assertion of control over their content or distribution by the Federal Government based on its funding of the research involved. Such publications may describe, explain, analyze and interpret federally-funded research, but they have been produced for publication through extensive pre-publication screening, editing, and style processes, including peer review, that are arranged, conducted and funded by the publisher, not the Federal Government. In short, it is inaccurate to refer to such publications, whether peer-reviewed or not, as the "result" of federally-funded research in order to justify any assertion of Federal Government authority over their content or distribution.

Publications add value to the researcher and scientific community and therefore should not be taken without the copyright owner's permission and appropriate compensation. Publishers invest in these other types of content used by researchers, often by conceptualizing the project, commissioning the content and investing heavily in its development. Government-mandated access to books, proceedings or other such materials published by a nongovernmental entity at its own initiative and expense is an expropriation of private property. As discussed in other sections of this submission, the Federal Government should work in collaboration with publishers and other stakeholders to develop public access policies that will support scientific advancement and innovation to benefit scholarship and economic progress, regardless of the

form the publication may take.

**(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

For accepted and peer-reviewed author manuscripts and final, published journal articles, both of which publishers have heavily invested in, publishers should be able to determine the distribution models, including the time, if any, at which the final peer-reviewed manuscript or final published article are made freely available. As noted earlier, peer-reviewed papers are not the direct result of the expenditure of taxpayer funds; instead, they result from significant publisher investments. The ability to recoup those investments incentivizes and enables innovation, infrastructure development (including archives and metadata), and further publishing. For example, rapid innovation in the publishing industry has dramatically improved functionality and efficiency for doctors and researchers, who can now perform complex searches of journals, immediately retrieve and print full text articles, link instantly to other cited articles, export text to other databases and programs and receive e-mail alerts when new journal issues are released. Publisher investments in innovation and digitization have significantly improved productivity in science and science education and advanced interoperability and interdisciplinary research.

Any embargo period is a dramatic shortening of the period of copyright protection afforded all publishers, and likely to significantly impact publishers' ability to add value and innovate. There is, therefore, no "appropriate" mandatory embargo period. Additionally, a "one-size fits all" approach fails to recognize the diversity of scholarly publication and practices within different research communities, disciplines, and even sub-fields. A 2000 study published by the Special Libraries Association found that, for the life sciences, 60% of an article's lifetime usage takes place in the first year after publication.<sup>23</sup> That leaves 40% of the value of an article lost when it is made freely available to the public at twelve months. On the other hand, the American Psychological Association has noted that, for its journals, only 15% of the value of an article is recouped after the first year. An analysis of the mathematics literature in 2009 by the American Mathematical Society found that only 10% of the citations in the literature were to articles published in the previous three years combined.<sup>24</sup>

In short, even with embargo periods, access mandates risk significant harm to the scientific enterprise and the peer-reviewed publishing process on which it depends. A study of journal publishing in the humanities and social sciences concludes that, given the comparatively long

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<sup>23</sup> *Towards Electronic Journals* by Carol Tenopir and Donald King; Special Libraries Association; pp 188-189.

<sup>24</sup> See page 28 of the [final report](#) of a February 2011 MSRI Workshop on Mathematics Journals.

life of articles in those fields, the imposition of embargo periods that are being adopted for biomedical journals could threaten the sustainability of humanities and social science journals.<sup>25</sup> Similarly, a 2006 Publishing Research Consortium (PRC) study found that librarians reported a significant likelihood of cancelling scientific journal subscriptions if the content is available for free, even with embargo periods.<sup>26</sup> Given the importance of subscriptions to sustaining journal publishing and publishers' essential role in ensuring the integrity, dissemination and preservation of the world's scientific, technical and medical information, there is no appropriate embargo period to justify an access mandate.

## **Conclusion**

When considering its directive to coordinate federal agencies' role in ensuring public access to the results of federally-funded research, OSTP should recognize the continued value of publisher activities, the copyright guarantees they have under U.S. and international law, and the history of innovation enabled by the ability of content providers to seek and receive a return on their investments. Federal agencies must take care to avoid undermining the critical infrastructure that supports scholarly communication. Any government-imposed mandate will face particular difficulties in adjusting to the rapid pace of change in the publishing industry. Journal publishers specifically have spurred scientific and technological innovation for decades through numerous industry-led changes in media, as well as production and delivery mechanisms. Additionally, not-for-profit and commercial journal publishers invest hundreds of millions of dollars every year in the peer review, editing, disseminating and archiving of scholarly and scientific articles, as well as in creating unique journal brands and identities on which researchers and funders alike rely to make critically important personal and professional judgments. Public access policies should not eliminate or hinder the ability of publishers to recoup these costs.

Any approach to improving public access should firmly support the transparency, participation and collaboration pillars of an effective and open government. This can be a model similar to the NSF approach, as enacted in the America COMPETES Act, whereby federal agencies provide specific content for public review, or it can take a broader approach of publishing the final research reports that taxpayers already fund as part of any project of federally-funded research. It should not include an expropriation of intellectual property that is independently produced to describe, explain, analyze and document that research for the public record.

AAP/PSP, the Coalition, and their members stand ready to work in partnership with the Federal Government and its research-funding agencies toward shared goals of increasing the

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<sup>25</sup> "The Future of Scholarly Journals Publishing Among Social Science and Humanities Associations," Report on a study funded by a Planning Grant from the Andrew W. Mellon Foundation (February 2009), available at: <http://www.nhalliance.org/bm~doc/hssreport.pdf>

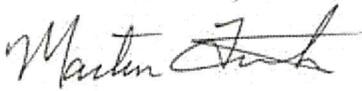
<sup>26</sup> Publishing Research Consortium Report "Self-Archiving and Journal Subscriptions: Co-existence or Competition" (July 2006). Accessible at [http://www.publishingresearch.org.uk/documents/Self-archiving\\_report.pdf](http://www.publishingresearch.org.uk/documents/Self-archiving_report.pdf).

dissemination of research discoveries, improving access to published scholarly works, and advancing science and the U.S. economy.

Sincerely,

A handwritten signature in blue ink that reads "Allan Adler". The signature is fluid and cursive.

**Allan Adler**  
VP, Legal & Governmental Affairs  
Association of American Publishers, Inc.

A handwritten signature in black ink that reads "Martin Frank". The signature is cursive and somewhat stylized.

**Martin Frank, Ph.D.**  
Executive Director  
American Physiological Society

Feedbacks on specific questions:

**(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research?**

Yes, please continue to maintain request of open access for all publications generated from federal funded research. Open communication and open access to research findings contribute to the intellectual growth of the scientific community but also the general population.

**(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

Federal agencies should provide fundings for open access families of journals, such as BMC, Frontiers, PLOS. These open access journals will be the only journals able to survive the evolution/revolution of technology and the new culture of open access to information over the internet. They are not limited to elitarian groups, and the only limitation that scientists have to publish in these journals is that publication costs are responsibilities of the authors.

I believe traditional publication methods will disapper and the attempt of limiting open access to scientific publications is a naive way of corporations to limit their current losses. But this is a lost battle already. More and more scientists choose to publish in open access journals, and benefit the community.

Paola

Paola Sebastiani  
Professor of Biostatistics  
Department of Biostatistics  
Boston University

We at The Rockefeller University Press (RUP) strongly support the release of scholarly journal content to the public after a short period under subscription access control. As a biomedical research publisher, we understand that much of our content is generated through publicly funded research, that the peer review process is performed in large part by publicly funded individuals, and that a significant portion of subscription revenue is obtained from publicly funded institutions. As a result, RUP and several other scientific publishers feel an obligation to give back to the public and thus release their content after a short period under subscription control. But other publishers are reluctant to do so, and the government has been forced to mandate content release with the NIH Public Access Policy. We continue to support the government's efforts to make the results of publicly funded research available to the public after a short delay.

We have released the content of our three biomedical research journals to the public six months after publication since January, 2001, and our subscription revenues have grown since then. We are not aware of any data indicating that subscription revenues of biomedical research journal publishers have been directly and negatively affected by the NIH mandate.

All of the content in our journals is released to the public, regardless of funding source, and we think all funding agencies should mandate this level of public access for primary research journal articles. For biomedical research, we think six months is a reasonable embargo before release to the public. This provides sufficient time for publishers to sell content of immediate value to the research community. Publishers that focus on less-urgent content can recoup costs through other business models, such as an author-pays system.

We view PubMed Central as a good model for the dissemination of research articles by a Federal agency. The administrators of PubMed Central work closely with publishers to facilitate submission and display of articles. They honor individual publishers' embargoes up to the mandated maximum 12-month delay, they are willing to host and display the final published version of journal content if it is provided by a publisher, and they keep the content updated with corrections and retractions. The PubMed Central model could be used for the development of a central repository for all primary journal articles resulting from federally funded research. Although centralization is not necessary for discoverability, we believe that it is vital to ensure long-term accessibility to the archived content.

Another benefit of centralization is that it imposes standardization of metadata. The National Library of Medicine has already created a document type definition (DTD) for journal articles that enables extensive tagging of metadata. This type of standardization expedites the discovery, display, and analysis of content fed into the central repository from a wide variety of publisher platforms.

Mike Rossner, Ph.D.  
Executive Director  
The Rockefeller University Press

*Excerpts taken from comments submitted on January 20, 2010, to the Office of Science and Technology Policy Public Access Policy Forum. These comments are the opinion of the author and do not necessarily reflect the position of The Rockefeller University.*

**To: Office of Science and Technology Policy ([digitaldata@ostp.gov](mailto:digitaldata@ostp.gov))**  
**From: Public Library of Science (PLOS)**  
**Email: [dokubo@plos.org](mailto:dokubo@plos.org)**  
**Subject: Response to the OSTP RFI on Public Access to Digital Data**

Date: January 11, 2012

The Public Library of Science (PLOS) welcomes this opportunity to respond to the Office of Science and Technology Policy's Request for Information (RFI) on the topic of Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research. PLOS is a nonprofit publisher and advocacy organization with a mission to accelerate progress in science and medicine by leading a transformation in research communication.

PLOS was founded in 2000 by three scientists: Harold Varmus, President of Memorial Sloan-Kettering Cancer Center in New York; Patrick Brown, Professor, Stanford University School of Medicine and Howard Hughes Medical Institute in California; and Michael Eisen, Associate Professor at the University of California, Berkeley. PLOS became a publisher in 2003 and currently publishes seven peer-reviewed fully open-access journals. They are *PLOS ONE*, which publishes all rigorous science across the full range of life and health sciences; the "community" journals (*PLOS Genetics*, *PLOS Computational Biology*, *PLOS Pathogens*, and *PLOS Neglected Tropical Diseases*); and our flagship journals, *PLOS Medicine* and *PLOS Biology*, highly selective journals publishing fewer than 10% of submissions along with a range of informative and influential non-research content. From publishing only 15–20 articles a month when *PLOS Biology* was launched in 2003, the PLOS corpus now comprises almost 42,000 peer-reviewed articles, most of which are the research output of public funding. This is accomplished by 115 professional staff with the expert assistance of more than 2,500 academics on the journal editorial boards and tens of thousands of reviewers. The huge support we have garnered from the academic community is a testament to the success of PLOS as a publisher and to full open access as both a business model and a model that is changing the landscape of scholarly communication. While our core business is publishing, our key objectives are to:

- Provide ways to overcome unnecessary barriers to immediate availability, access, and use of research
- Pursue a publishing strategy that optimizes the openness, quality, and integrity of the publication process
- Develop innovative approaches to the assessment, organization, and reuse of ideas and data

We are pleased to provide the following specific comments in response to your questions.

**(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

**Comment 1**

## 1.a Growing existing and new markets related to access.

The greatest impact that agencies can have to grow new and existing markets is to mandate that their grantees make the published output of their research immediately and publicly available for anyone to reuse using an appropriate open-access license. Open access enables third parties to not only read the literature online for free (“free access”), but also to reuse that content without restriction—including commercial restriction (hereafter termed “full open access”). Only about 8% of the scientific literature is currently available under an open-access license [1]. This means that up to 92% of the scientific literature is not available as a market opportunity to build new and innovative tools that will 1) increase the speed of output and productivity of scientists, 2) start new businesses and foster future startups, and 3) generate more jobs.

It is important to understand the implications of the distinction between free access and full open access. A license that permits others to read the article for free but that does not allow derivative reuse, including commercial reuse, is inadequate and will not realize the full potential of the US scientific enterprise. The license applied to the published work must not, therefore, limit the legal right for third parties to make derivative copies or reuse it in any way (as long as appropriate attribution is given). It is also important to be aware that third parties consist of computers as well as human readers. Computers function more effectively when browsing text on the open web [2], e.g., for text- and data-mining, and derivative reuse, such as translation to another language, as well as the open exchange of metadata and application programming interfaces (APIs). This will enable markets beyond that of basic science and publishing to benefit from the output of agency funding. A license that enables reuse in any form, including commercial reuse, is the Creative Commons Attribution License (CC-BY, [3]), used by PLoS and other open-access publishers (e.g., BioMedCentral).

As Kim Hailey, Founder of Transmute, Inc., PixelCam, Inc., and Meta-Software, Inc., put it (personal communication):

*As a founder of an advanced energy start up, we depend on open access. Innovation relies on unfettered access to a broad range of subjects, giving rise to groundbreaking, multidisciplinary discoveries. It is important that our researchers have access to the latest articles as this ultimately shortens the time to market for new products. Information should not be hidden behind publishing company pay-walls. Even worse are the articles published in conference proceedings that are only available to those who attended the conference. Cost is only part of the issue. The problem is complicated by having to maintain many journal access accounts and to duplicate them for all members not at the same site as is the case in most virtual organizations. Much of the research is government funded and should be electronically accessible to all. The best way of leveraging the public investment in scientific research is to demand that it be openly accessible to all.*

Funding agencies should therefore encourage academic scholarly publishers to see themselves as service providers, rather than product providers where the product being sold is access to the output of research. Making the published work open access is a service for research funders, scientists, patient advocacy groups, educators, and other businesses (e.g., pharma and agriculture). Open access incurs a

cost and should be paid for, but once the publication fee is paid, publishers do not need to hold the rights to, or demand further payment for, access.

### **1.b Growth of new tools to analyze peer-reviewed publications—article-level metrics and innovation.**

Full open access to the literature (and the associated data) can help promote the development of appropriate analytical tools, such as article-level metrics (ALMs), to enable scientists and businesses to target and track more accurately the research findings they need to grow. ALMs also provide a means for federal funding agencies to have a range of metrics to evaluate their output. The development of these metrics provides a compelling example of the potential power of open access to stimulate the growth of innovative tools that can help speed the progress of science itself and facilitate its application by third parties. Such innovation has the potential to directly foster job creation, but only if a sufficiently large corpus of papers are available as open access—the 8% of the market share currently available as open access is insufficient. Federal agencies can take a lead by supporting the growth of open access and the development of tools such as ALMs.

ALMs are an example of a new category of tools to help analyze peer-reviewed publications. Researchers, funders, and readers are interested in metrics at the article level so that they can identify and curate the most relevant research publications [4]. Traditionally, only one metric, the journal impact factor, has been used as an indicator of the merits of a research publication, but a range of metrics are likely to be more informative [5,6]. By studying the citations to the individual articles, for example, a scientist or a funding agency can understand in a more nuanced way the research impact of that article. The journal *PLoS ONE*, for example, has some papers that have received more than 200 citations, while 20% of articles one year or older have received more than nine citations and 76% one or more, a pattern of variation that will be familiar to all journal publishers. Impact also takes many different forms, so qualitative as well as quantitative metrics need to be developed. An article published in 2008 by *PLoS Medicine*, for example, provided a “Dirty War Index” [7] that has been adapted for use in NATO military environments, such as southern Afghanistan, to reduce the possibility of injuring Afghan civilians. The approach has led to NATO changing procedures [8]. Citations or the number of downloads cannot reflect this impact. Scientists or individuals from industry may also want to have the means to track research threads using social networking tools—who is reading what, where, and when, and what are those scientists then publishing or patenting. Such data-analytic information is useful for markets such as biotech and agriculture, as well as basic science—each will want to be able to identify the most relevant paper for their business or research.

Of course, innovative tools for research evaluation needn’t just come from publishers—they can also be developed by third parties, thus creating new markets. But the effectiveness of such tools requires that published papers have a fully open-access license that legally allows reuse by others (such as CC-BY) and the technology to track that reuse. Not having more than 90% of the papers available as open access is therefore vastly limiting this market potential. Several software applications produced by individuals in response to a public competition hosted by PLoS and a private company called Mendeley [9], for example, created prototypes to measure the impact of articles or researchers (see also Comments 1.c and 4 below). The effectiveness of such tools is hampered because they apply to such a small share of the literature.

The same CC-BY license should apply to the ALMs themselves. For example, if ALMs were to gain acceptance, then it could be conceivable that a not-for-profit entity could take over the project or a new

proprietary company be created that specifically focuses on the production of ALMs. This would potentially hinder the speed at which these evaluation and tracking tools develop.

### **1.c Growing the economy and improving the productivity of the scientific enterprise.**

Full open access promotes scientific productivity because there is no delay in accessing the information from a research publication and it does not impose any restriction—even commercial—on any derivative reuse. This facilitates text- and data-mining, or the extraction of tables, figures, and supplementary materials from the published paper. It also permits the published work to be translated into a different language or for that work to be included in marketing information for biotech, pharma, and other industries, as well as in textbooks or course packs for educators or patient advocacy groups.

There is increasing evidence that open access increases the rate at which articles are cited [10,11]. Scientists can read and extract up-to-date information, but so too can small biotech companies, small agricultural businesses, fisheries, and public health and patient advocacy groups or charities. This promotes a level playing field among those seeking information and engenders competition. Regardless of the subject you are interested in, the size and wealth of the institute or industry you belong to, there is no barrier to your obtaining and analyzing the information you need:

*This flood of data and analytical opportunities creates more value for people who can be creative in seeing patterns and for people who can be entrepreneurial in creating new business opportunities that take advantage of these patterns. My hope is that the technology will create a platform that people can tap into to create new entrepreneurial ventures—some of them, perhaps, huge hits like Facebook or Zynga or Google. But also, perhaps equally important for the economy, hundreds of thousands or millions of small entrepreneurial ventures, eBay based or app based, would mean millions of ordinary people can be creative in using technology and their entrepreneurial energies to create value. That would be an economy where not only does the pie get bigger but each part of the pie—each of the individuals—benefits as well. (Quote from MIT Professor Erik Brynjolfsson [12].)*

An example of such third party creativity bringing together analytics and scientific innovation is the outcome of a partnership between PLoS and Mendeley [9] to host a public competition—the PLoS/Mendeley Binary Battle—to build software applications (apps) that make science more open and useful for the reader. Participants were asked to make use of PLoS and Mendeley content and the freely available API provided by PLoS and/or Mendeley [13]. Mendeley is a company that enables individuals to organize their reference library and PDFs online and to find and share information with others that have similar interests. The judging panel consisted of Tim O’Reilly, founder of O’Reilly Media, Juan Enriquez, Managing Director of Excel Venture Management, John Wilbanks, former VP for Science at Creative Commons, James Powell, CTO of Thompson Reuters, and Werner Vogels, CTO of Amazon.com. The top two winning applications showed prototypes of tool applications for productivity, analysis, and decision tools for faster and better scientific communication. For example, openSNP allows customers of direct-to-customer genetic tests to publish their test results, find others with similar genetic variations, learn more about their results, find the latest primary literature on their variations, and help scientists to find new associations [14]. PaperCritic offers researchers a way of obtaining and providing feedback for each other’s work in a fully open and transparent environment [15]. Other, shortlisted applications provided a range of qualitative and quantitative tools to measure the impact of articles or researchers (e.g., [16–18], see also Comment 1.b).

Social media, video, on-site aggregation, and metric tools can all be used to discover, bridge, and respond to new unforeseen markets if research content is fully open access, such as when there is an urgency for the rapid exchange of data and information. To facilitate this, PLoS (in partnership with the National Center for Biotechnology Information [NCBI] and Google Knol) has developed a new publishing platform—PLoS Currents—specifically for especially rapid dissemination. PLoS Currents: Influenza, for example, was launched during the 2009 flu pandemic [19,20]. A more recent launch, PLoS Currents: Disasters, caters to the study or management of all types of disasters, particularly for data and analyses that might not otherwise be openly shared [21].

When research publications are not silo-ed into subject-specific journals behind access barriers, they can be collated from multiple sources, regardless of discipline or the journal in which they are published, and then made available on a different platform. With appropriate technology, such “hubs” of information can be developed to cater to different communities and markets and be enhanced via communication and data-analysis tools (such as that described in the PLoS/Mendeley Binary Battle). The simplest way to organize content is to package relevant articles into open-access subject-specific collections. PLoS has a range of collections [22] covering papers from all their journals, some of which are the outcome of specific collaborations (such as with the Census of Marine Life, a ten-year initiative intended to assess and explain the diversity, distribution, and abundance of marine life in the world's oceans [23]; see also Comment 4). Another solution is to provide hubs of activity around certain topics. One such initiative, still in the early stages of development, is the PLoS Biodiversity Hub [24], funded by the Sloan Foundation, which allows individuals from the academic community (“curators”) to select and filter articles, regardless of the journal of origin, and which can be enhanced by comments from curators and via semantic linking. Again, aggregation, curation, and annotation are only possible because the articles are fully open access. The fact that about 92% of the literature is not fully open access (see Comment 1a) again severely limits the growth of this market.

Open access, therefore, improves the productivity of the scientific enterprise by making information immediately available and without reuse restrictions. With full open access, PLoS and other new and existing companies have already created, and will continue to create, innovative new initiatives to increase productivity of scientists and businesses.

#### **1.d The costs and benefits of open-access policies.**

According to the Houghton Reports [25–27], open access is likely to return a 5-fold increase in investment. Their analysis shows that the benefits of an open-access policy greatly outweigh the costs (e.g., the benefits of the National Institutes of Health [NIH] policy are estimated to be about eight times larger than the costs). Expanding an NIH-style policy to all other US science agencies is expected to bring in an additional \$1.5 billion in revenue, of which 60% is estimated to benefit the US economy directly.

Although much of the additional revenue will be realized via innovation, increased scientific productivity, and the growth of new markets, it will also promote greater competition among publishers to provide a more cost-efficient service for authors and funders [28,29]:

*The proliferation of online OA journals in combination with aggressive consortia licensing would significantly alter the current business model of academic journal publishing. The creation of OA electronic journals is a form of entry into the academic publishing industry. By multiplying the number of journals available not under the control of for-profit publishers, OA publishing would*

*increase competition within the industry as well as increase the bargaining power of academic libraries and faculty authors. As the use of e-journals becomes more accepted, traditional publishers would most likely be forced to change their role. Rather than acting as oligopolists that profit by controlling access to a small number of prestigious journals, they may be forced to act as agents of the libraries, negotiating with journal providers and packaging e-journals as requested by the libraries. [29]*

Archiving and maintaining access to previously published literature will incur a cost. PubMedCentral (PMC) is a repository of freely available published articles maintained by the NIH and used by more than 500,000 users per day, most of whom are not involved in education. NIH reports that it costs \$3.5–\$4.6/million annually (on a \$30 billion budget) to provide access to the results of all of their funded research [26]. This means that an investment of about 1/100th of 1 percent of NIH’s overall budget results in access to 2.2 million articles.

Other federal agencies can use the resources and infrastructure (such as PMC) already developed by NIH to implement a consistent policy on access across all the federal agencies. Avoiding duplicating effort will help to minimize costs.

### **1.e A full open-access license is the only one to endorse.**

As we have discussed extensively above, the only license that can really liberate the full market and scientific potential is one that permits reuse in any form, including commercial reuse. This is full open access, as provided by the Creative Commons Attribution License (CC-BY) or similar. This license guarantees the creator of the work the legal right to appropriate attribution, while allowing for unrestricted reuse by the public.

The license applied to the published work sets out the conditions under which that work can be distributed and used. The license is distinct from copyright. The copyright holder determines the terms of the license and holds the rights to the article under those terms. Ideally, the copyright holder should also be the author of the work. Copyright holders such as publishers or funders should not, however, restrict reuse, but allow users to “copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship”.

This is explained in the following extract of an article published in *PLoS Biology* [30] by Professor Michael Carroll (Professor of Law, Washington College, Director, Program on Information Justice and Intellectual Property and Member of the Creative Commons Board):

*Granting readers full reuse rights unleashes the full range of human creativity to translate, combine, analyze, adapt, and preserve the scientific record, whereas traditional copyright arrangements in scientific publishing increasingly are inhibiting scholarly communication. Traditional copyright law was designed with the subscription-based publishing model in mind. Authors receive copyright when they write their first draft of an article. Authors then transfer this copyright, or grant an exclusive license, to a publisher in exchange for publication. The publisher relies on copyright to police the behavior of readers and competitors who may seek to obtain or redistribute the content without a subscription.*

*By shifting the financing away from subscriptions, the open-access model realigns copyright to enable broad reuse while assuring authors and publishers that they receive credit for the work they have done. This is done through open licensing by the copyright owner. Initially, the authors of an article automatically own a copyright in the article as soon as it has been drafted. If the authors sign an agreement that transfers the exclusive rights to the publisher, the publisher becomes the copyright owner. The standard means for achieving open access with respect to copyright is for the copyright owner (author or publisher) to use the Creative Commons Attribution license [3], which gives readers and republishers broad reuse rights on the condition that credit for the article is given as directed by whoever is granting the permission. (Disclosure: I sit on the Board of Creative Commons.)*

*Recently, however, some commercial publishers have waded into the open access waters by charging authors a publication fee to substitute for subscription revenue while limiting reuse. Having been paid for coordinating peer review, editing and laying out the text, and the like, these publishers nonetheless limit readers to making only non-commercial reuses, or even also requiring reusers to use the same license for any adaptations, while reserving to the publisher the rights to make any commercial reuse. (This is done through use of the Creative Commons Attribution Non-Commercial license or the Creative Commons Attribution Non-Commercial Share-Alike license.) This is pseudo open access. Authors who pay for publication in these pseudo open access publications are not getting their money's worth. For example, text or figures subject to these more restrictive licenses cannot be uploaded to Wikipedia, which uses the Creative Commons Attribution Share-Alike license.*

*Presumably, these publishers retain commercial reuse rights either to derive additional revenues from certain potential reusers or to block competitors, who may exercise these reuse rights to earn revenue through some kind of value-added service or publication. This latter option is possible only if the competitor discovers a market that the original publisher overlooked. Such entrepreneurs should be rewarded rather than controlled.*

Federal funding agencies should insist on a full open-access license, such as the Creative Commons Attribution License, to ensure that there are no commercial barriers to future entrepreneurs.

**(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research?**

**Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

#### **Comment 2**

As noted at the end of Comment 1.a, publishers should see themselves as service providers, overseeing the production and peer review of articles and making them available under a full open-access license. This is a service that incurs a cost and for which they should be paid. They should not, however, be allowed to retain rights to the future use of that article once the service has been provided.

An additional point to consider is that editors and reviewers of published articles are mostly federally funded academics who are not paid for their services by publishers. Yet they are also stakeholders in the publication process, as they have made an intellectual investment in safeguarding the scientific rigor of the research article. If publishers insist on retaining access rights based on intellectual property arguments, which we do not agree with, then the right of these other service providers also needs to be taken into account, especially given that it is primarily federal funding agencies that pay for their time.

Federal funding agencies should therefore ensure a license is applied to their publications (and associated metadata) that enables unlimited reuse. As discussed in 1.d and 1.e, the Creative Commons Attribution License (CC-BY), or similar, ensures the legal right for author to be attributed for the work while permitting any derivative reuse. By providing legal protection for appropriate attribution, the intellectual property interests of scientists and federal agencies are appropriately protected.

**(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities?**

**Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

### **Comment 3**

The research output of federally funded research should be preserved and useable in perpetuity and held in publicly available repositories. Such research should never be held as proprietary data with limited access and reuse for all the reasons mentioned above, so it is vital that publishers are not solely responsible for archiving the scientific output of federally funded research. All repositories should also apply an appropriate license to their content to ensure public accessibility and reuse by third parties (e.g., CC-BY).

Central repositories can provide advantages for both federal government and third party users. For example, federal agencies can take advantage of other tools and services they provide. In the case of NIH, PMC can provide links to other data sources held by NCBI. OpenAIRE [31], a European central repository across a network of 27 countries, is currently being set up to help researchers comply with European Community policies on open-access deposition and will also provide additional services. The aim of this initiative is both to ensure the long-term preservation of the literature, regardless of which member state the article originated from, and to develop the technology and infrastructure to enable the data associated with publications to be manipulated. Central repositories are also likely to prove cost-effective, as they minimize duplication of effort (see Comment 1.d).

Full open access also facilitates distributed archiving across a range of independently held repositories. Third parties can therefore set up and maintain independent repositories, promoting public-private partnerships. For example, particular communities or businesses may want to aggregate and archive specific content and enhance this with subject-specific tools and analytical services (similar to the rationale for PLoS Hubs). The federal government should ensure that such third party repositories also

meet conditions for reuse and public accessibility (e.g., the Wellcome-funded United Kingdom mirror of the NIH-funded repository PMC). Repositories that hold the content but do not permit reuse are not a viable option, as it is only through reuse that effective long-term preservation can be maintained.

Both central and distributed repositories are likely to enhance and ensure the long-term preservation of publications. Ensuring the content is open access permits both types of repositories to be developed in parallel. It is important to maintain interoperability and data standards between repositories to ensure federated searching and discovery across all content. Consistent licensing that permits reuse of the content will also provide incentives to create and preserve interoperability.

To ensure the preservation of the scientific record, the federal government should also, at a minimum, maintain a publicly accessible mirrored version of all the content and ensure that the content is useable over the long term (including machine reading) despite changing technology.

**(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

#### **Comment 4**

##### **4.a Models for public–private partnerships.**

With its mission of leading a transformation in research communication, PLoS is well-positioned to provide a test-bed for new ideas. Our developing technology and fully open-access content together provide an opportunity to incubate and grow innovation. Ensuring that others can reuse and build on our content also facilitates the long-term preservation of the research output.

PLoS began this process with the PLoS/Mendeley Binary Battle (see Comment 1.c) and will continue it by selecting different early stage innovations to incubate each year, as appropriate. These may take the form of new technologies, services, or partnerships. The goal will be to serve our mission, which will in turn foster new opportunities, growth, and jobs.

Dynamic and creative ideas in many sectors are now regularly emerging from a myriad of startup companies, academic institutions, and industry. By testing and growing these early-stage ideas and technologies, PLoS will contribute to a period of rapid innovation in scientific communication that will both serve science and create economic growth.

##### **4.b Some examples of private–public partnerships include:**

(i) Collaborations with new companies and startups:

- Mendeley [9]—late stage startup company gaining market share. PLoS and Mendeley have a joint interest in providing researchers with services and systems for recommending content to each other based on social web analytics. One partnership created was the PLoS/Mendeley Binary Battle (for details see Comment 1.c). The two winning apps were:
  - openSNP uses the PLoS API to allow customers of direct-to-customer genetic tests to publish their test results, find others with similar genetic variations, learn more about

their results, find the latest primary literature on their variations, and help scientists to find new associations [14].

- PaperCritic uses the PLoS API to offer researchers a way of obtaining and providing feedback for each other's work in a fully open and transparent environment [15]. This is a paper-reviewing service that PLoS can support by offering a plug-in showing reviews while users are reading an article.
- Access Innovations—mature company that PLoS is partnering with to create a Science, Technology, and Medicine taxonomy [32].
- JANE—open-source, student-built tool for "fingerprinting" documents so that you can find related articles [33]. PLoS is helping to grow JANE and make it available more widely.

(ii) Partnerships with researchers still within academia:

- David Shotton (University of Oxford)—working on Semantic Publishing and Referencing (SPAR) ontologies, has done a pilot in which he enhanced an article from *PLoS Neglected Tropical Diseases* [34] with semantics and rich linking that could be transformed into a web-wide service for publishers that would serve discovery of scientific information [35,36].
- Sri Devabhaktuni (California)—a researcher who built a tool for recommending noun phrases for papers which will aid in discovery in an information overload environment [37].

(iii) Partnerships with established public and private enterprises:

- PLoS collaborated with NCBI and Google's Knol publication platform for PLoS Currents to enable a rapid-response publication service for tracking research about influenza ([20]; see also Comment 1c).
- PLoS partnered with the Census of Marine Life to produce a series of subject-specific open-access collections ([23]; see also Comment 1.c). This is supported by government agencies concerned with science, environment, and fisheries from more than 80 nations, including the US, as well as from private foundations and corporations. Sponsorship was provided by the Sloan Foundation to cover the cost of the publication fees.

(i.v) Partnerships with educational bodies:

- PLoSable Biology is an educational resource featured on Arizona State University's (ASU) "Ask a Biologist" website [38] that grew out of a year-long collaboration between an editor at *PLoS Biology* and Charles Kazilek (Assistant Dean of Technology, Media and Communication at ASU), who runs the ASU site. Because all PLoS content is fully open access and thus erects no barriers to reuse, PLoSable Biology was able to use PLoS research articles and related materials to provide tutorials, stories, and interactive learning opportunities for students (pre-K–12th grade) and their teachers and parents. With a new website feature called PLoSable Biology (beta), "Ask a Biologist" makes selected PLoS articles comprehensible to all through simple summaries that link back to the original article for further reading. The site also provides learning opportunities about the benefits of open-access content as well as a showcase for the public communication of science.

The screenshot shows the ASU School of Life Sciences website. At the top, there is a navigation bar with links for ASU Home, My ASU, Colleges & Schools, A-Z Index, Directory, and Map. Below this is a search bar with the text 'Ask A Biologist' and 'ASU'. The main navigation menu includes Home, Activities, Stories, Images, Links, About, and Contact. A secondary menu offers 'Ask a Question', 'Teacher Toolbox', and 'Listen & Watch'. The central banner features the text 'ask a BIOLOGIST' and 'PLOSABLE beta' with a 'beta' badge. The logo 'PLOSABLE' is prominently displayed, with 'PLOS' in blue and 'ABLE' in white. Below the logo is the tagline 'a doorway to the leading edge of BIOLOGY'. To the left of the logo is an illustration of a green frog sitting on a blue puddle, looking out of an open white door towards a bright blue sky with white clouds. To the right of the logo are two orange butterflies. Below the banner, there is a text block explaining that scientists publish in journals like PLoS and that PLoSable Biology provides access to these articles. A 'DONATE NOW' button is visible in the bottom right corner of the banner area.

**(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives?**

**What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities?**

**How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?**

**Comment 5**

The metadata of publications enable specific actions to be made to the content, rather than just labeling it. This facilitates the reuse of that content and the multiple components that it comprises (figures, tables, data, key words, semantic mark-up, etc.). It is important that the metadata model supports the appropriate context for the published works with a controlled vocabulary that permits reuse and interoperability between content platforms and databases. It is therefore also important to couple metadata with an API for standards-based data exchange.

Scholarly publishers should, at minimum therefore, support the National Library of Medicine XML DTD standard for content and metadata as well as the Dublin Core. Publishers should also deposit digital object identifiers (DOIs) into repositories such as CrossRef (<http://www.crossref.org/>) and, similarly, ensure they comply with requirements to allow unique author identification via platforms such as ORCID [39], a central registry of unique identifiers for individual researchers, and an open and transparent linking mechanism between ORCID and other current author identification schemes).

To facilitate new initiatives in the semantic web, publishers should classify content with public domain taxonomies and thesauri and make these classifications available in machine-readable format in the source code. Standard taxonomies and thesauri that are created by, funded by, and recommended by scientific agencies and institutions should, whenever possible, be adopted and used by scholarly publishers to facilitate discovery across the platforms and silos that have been artificially created over the years. These efforts will also enable large-scale research projects across platforms, publishers, and resources.

**(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

**Comment 6**

The success of any public-access policy will depend on the implementation of consistent requirements from federal funding agencies. If not, the research output of the federal agency that, for example, permits free access but not full open access (i.e., permitting reuse), is likely to lag behind other federal agencies in terms of scientific progress, and knock-on effects such as commercialization, job creation, and economic growth. In addition, many researchers are funded by more than one agency. Consistent access policies and data requirements across federal agencies will therefore avoid duplication of effort and help to minimize costs (e.g., of archiving) while achieving maximum interoperability and visibility of scientific research to the wider community.

Consistent requirements include:

- The same licensing policy permitting unrestricted reuse (CC-BY or equivalent, see Comment 1e).
- Mandating deposition of research publications in publicly accessible repositories (also permitting reuse) so that federally funded research is preserved and available for reuse in perpetuity (see Comment 1d).
- Ensuring there is no delay to full open access of the publication, associated data, and metadata on publication (see Comment 8).
- Encouraging the development of tools and services to evaluate research publications and thus enable third parties to track and analyze research output (for example, PLoS's ALMs initiative, see Comment 1b).
- Encouraging grantees to provide publication management plans alongside data sharing and management plans (see also Comment 8).

**(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

The output of all federally funded research should always be made available for reuse under a full open-access license. Although print distribution or author- and reviewer-level payments may incur additional costs, a publication fee paid to the publisher should cover these and guarantee the legal right of free online access and reuse of that material. This should include at least primary research (e.g., original research articles) and secondary research (such as systematic reviews in the medical literature) as well as conference proceedings, book chapters, and scientific protocols that are facilitated by federal funding.

**(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

#### **Comment 8**

##### **8.a The appropriate embargo period.**

PLoS does not impose any embargo on a published paper because any barrier to the literature means a potential delay to access and reuse of that material by scientists or third parties. As outlined under Question 1, a delay in delivering material to these different audiences not only delays scientific progress, but also hampers innovation, the potential emergence of new markets, economic growth, and jobs. PLoS is evidence that you can have a successful business model without having to impose embargoes. Federal funding agencies should therefore ensure that the entire corpus of research they fund is fully open access, and ultimately they should not permit any delay to the access of published paper. Faster access means faster reuse and commercialization. There are no subject areas or disciplines that should be granted an exemption.

##### **8.b Why there shouldn't be "delayed" open access.**

A recent report commissioned by the Research Information Network (RIN), JISC, Research Libraries UK (RLUK), the Publishing Research Consortium (PRC), and the Wellcome Trust [40] concluded that permitting embargoes is unlikely to provide the long-term incentives for publishers to transition to open access and would thus hamper the growth of access:

*1. The Delayed scenario offers closest to a zero cost. But it depends on voluntary action by publishers, and it is not directly amendable to policy influence ... Moreover, it would probably involve embargoes longer than funders such as the Wellcome Trust currently require, it could preclude aggregation of articles in subject repositories, and – as with the Green scenario [self-archiving] – there are risks to the sustainability of the subscription model on which it relies. In our view, therefore, while there is no harm in policy-makers encouraging it as a low-cost and*

*arguably lower-risk way of expanding access, it is unlikely in practice to provide significant changes in access.*

The Wellcome Trust noted [41] that the report “discusses a number of scenarios and suggests that the “Gold” scenario—the model in which author-side payments are levied to enable immediate open access to the published article—has the potential to achieve the highest benefit-cost ratio while lowering the UK’s net costs for scholarly communication. It is also the only model that is considered to be fully sustainable”:

*7. Of the two open access routes, our view is that the Gold route is preferable in the long run, given (i) its underlying sustainability; (ii) the advantages of the author-side business model in terms of improved transparency and lower barriers to market entry, which point to improved economic efficiency; and (iii) (depending on the level of the APC [Article Processing Charge]) the potential to achieve both higher BCRs [benefit-cost ratios] and lower net costs for the UK in general and for its universities in particular. [40]*

Evidence that embargos do not hamper growth and productivity include the faster rate that articles are read, cited, and downloaded [10,11]. Moreover, any delay to accessing the full text of an article can lead to public misinformation by media outlets if third parties, such as the general public or independent researchers, are unable to verify the claims. A notable example is a paper in which NASA claimed to have isolated an “extra-terrestrial” bacterium that substitutes arsenic for phosphorus on its macromolecules and metabolites [42]. Having no embargo, therefore, helps to facilitate the public communication of science. Articles cited by national and international media outlets can provide links to the full article and third parties do not have to pay a fee to independently verify the claims made by journalists.

As the journalist George Monbiot stated recently in the UK national newspaper *The Guardian* [43],

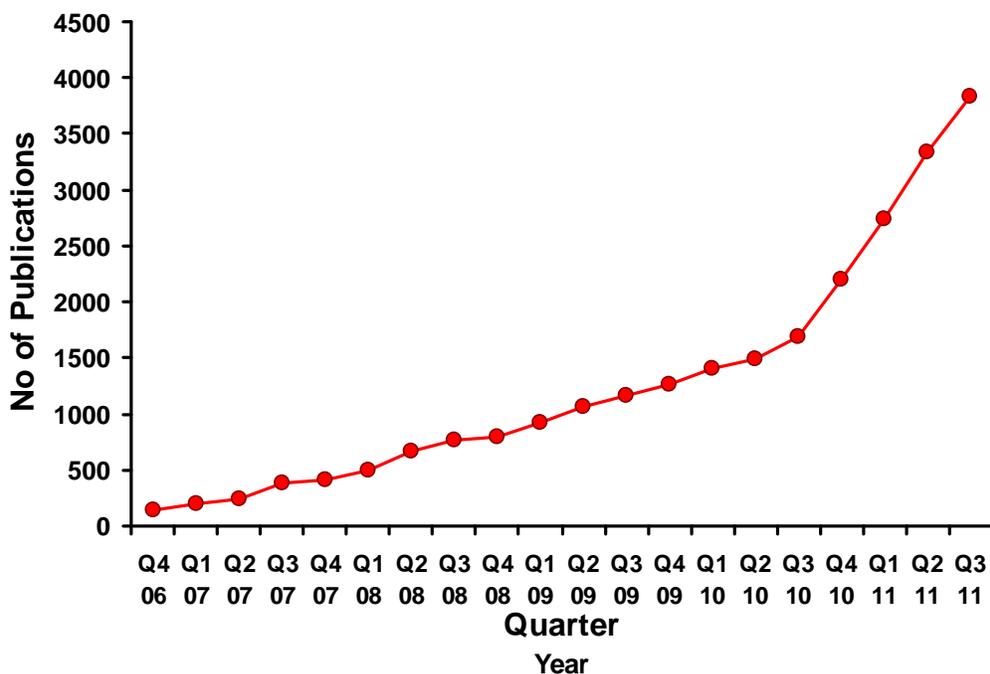
*I refer readers to peer-reviewed papers, on the principle that claims should be followed to their sources. The readers tell me that they can't afford to judge for themselves whether or not I have represented the research fairly. Independent researchers who try to inform themselves about important scientific issues have to fork out thousands. This is a tax on education, a stifling of the public mind. It appears to contravene the universal declaration of human rights, which says that "everyone has the right freely to ... share in scientific advancement and its benefits".*

It is also worth noting that publishers who were previously resistant to making their content publicly available are now making some of their archives more accessible; for example, the Royal Society in the UK has made their archive of the oldest journal in the world (*Philosophical Transactions of the Royal Society*, launched in 1695) freely available to read [44].

Perhaps the best evidence that embargoes and full open access do not hinder commercialization, profit, or a successful business is the continuing expansion of fully open-access publishers, such as PLoS, BioMedCentral (<http://www.biomedcentral.com>), Hindawi (<http://www.hindawi.com>), and Co-Action Publishers (<http://www.co-action.net>). This is reflected in the almost exponential growth of, for example, publications in the journal *PLoS ONE* (Figure 1, from [45]). This journal has received huge support from authors and the growing editorial board of more than 2,000 academic editors. The publication and editorial model is now being endorsed by other publishers, including publishers that

have traditionally restricted access via a subscription. While some of these publishers are offering Creative Commons licenses that still prohibit commercial reuse (e.g., Nature Publishing Group’s *Scientific Reports*), and are therefore not fully open access, they are demonstrating support for a model where the costs of publication are paid up front and there is no embargo on the published paper. In the past year a series of journals have emerged that are very similar to *PLoS ONE* (Table 1, adapted from [45]), suggesting that the landscape of scholarly publishing has irreversibly shifted [45].

**Figure 1.** Publication growth of *PLoS ONE*.



From [45].

**Table 1.** A sample of recently launched journals with no embargo and editorially similar to *PLoS ONE*.

| Journal Name                | Publisher                                 | Website                                                               |
|-----------------------------|-------------------------------------------|-----------------------------------------------------------------------|
| <i>G3</i>                   | Genetics Society of America               | <a href="http://www.g3journal.org">http://www.g3journal.org</a>       |
| * <i>BMJ Open</i>           | British Medical Journals publishing group | <a href="http://bmjopen.bmj.com">http://bmjopen.bmj.com</a>           |
| * <i>Scientific Reports</i> | Nature Publishing Group                   | <a href="http://www.nature.com/srep/">http://www.nature.com/srep/</a> |
| <i>AIP Advances</i>         | American Institute of Physics             | <a href="http://aipadvances.aip.org">http://aipadvances.aip.org</a>   |
| * <i>Biology Open</i>       | Company of Biologists                     | <a href="http://bio.biologists.org">http://bio.biologists.org</a>     |

|                                            |                                |                                                                                                   |
|--------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------------------|
| <i>TheScientificWorldJournal</i><br>(TSWJ) | Hindawi                        | <a href="http://www.tswj.com">http://www.tswj.com</a>                                             |
| <i>QScience Connect</i>                    | Bloomsbury Qatar<br>Foundation | <a href="http://www.qscience.com">http://www.qscience.com</a>                                     |
| <i>SAGE Open</i>                           | SAGE                           | <a href="http://sgo.sagepub.com">http://sgo.sagepub.com</a>                                       |
| <i>SpringerPlus</i>                        | Springer                       | <a href="http://www.springeropen.com/springerplus/">http://www.springeropen.com/springerplus/</a> |

\* These journals have no embargo on access to their articles, but are not fully open access, because they all offer a Creative Commons license that restricts commercial reuse.

**Please identify any other items the Task Force might consider for Federal policies related to public access to peer-reviewed scholarly publications resulting from federally supported research.**

In addition to ensuring that the peer-reviewed research publications of federally funded research are made fully open access, federal agencies should adopt consistent and parallel policies about the raw data behind any research publication they fund. US and UK funding agencies already appreciate that more open sharing of data is required. As a recent report from the UK House of Commons Select Committee on Science and Technology examining research integrity concluded,

*Access to data is fundamental if researchers are to reproduce, verify and build on results that are reported in the literature ... The presumption must be that, unless there is a strong reason otherwise, data should be fully disclosed and made publicly available. In line with this principle, where possible, data associated with all publicly funded research should be made widely and freely available...The work of researchers who expend time and effort adding value to their data, to make it usable by others, should be acknowledged as a valuable part of their role. [46]*

With some exceptions (such as the deposition of genetic sequence data to GenBank), most research papers provide summary data in the form of figures and tables to support their analyses and conclusions. This does not allow reviewers, readers, or other third parties to extract the data necessary to replicate the analysis, and thereby verify the claims made in the paper. We recommend that federal agencies therefore also:

- (i) require that the data needed to replicate a paper is made available for reuse at the same time as the publication of the article.
- (ii) require that there is appropriate citation and credit to authors and funders for the data produced.
- (iii) help identify appropriate methodologies for citing and sharing data outputs.
- (iv) provide incentives for authors by giving credit for good sharing practice.

New initiatives, such the Open Knowledge Foundation’s Working Group on Open Data in Science, are already trying to build the infrastructure and culture to facilitate data sharing to this end [47]:

*In terms of our primary aim of providing tools, apps, and datasets for generating, discovering, and reusing open data, ideas are flowing continuously but require the input of the wider scientific community in identifying the problems they face in publishing, discovering, and reusing data online and requesting assistance in solving them. The working group aims to provide a community and network that can respond to these needs and a hub for access to the resulting tools, which we hope all stakeholders in scientific data will find valuable. Better science—in terms of transparency, reproducibility, increased efficiency, and ultimately a greater benefit to society—depends on open data.*

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## Perspective

# Why Full Open Access Matters

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Scientific authors who pay to publish their articles in an open-access publication should be congratulated for doing so. They also should be aware that they may not be getting full open access from some publications that charge for publication under the “open access” label. Two features define an open-access publication: (1) the published contents are freely accessible through the Internet, and (2) readers are given copyright permission (see Box 1) to republish or reuse the content as they like so long as the author and publisher receive proper attribution [1]. Recently, some publications have begun offering an open-access option that charges for Internet publication without granting readers full reuse rights, such as Springer’s Open Choice or Nature’s Scientific Reports. These publishers have adopted a business model through which authors pay for immediate publication on the Internet but the publisher nonetheless keeps commercial reuse rights for itself. This is not full open access (see Box 2).

Getting open access right matters because the new publishing model is designed to increase the pace and impact of scientific communication through the power of the Internet. Immediate, free publication increases the audience for scientific research and overcomes the increasingly high price barrier to access imposed by the traditional, subscription-based publishing model [2]. N.B., this audience is comprised of both human readers and their computers, which function more effectively when browsing text on the open web. Liberal reuse rights permit users to republish, quote liberally, and to overcome language barriers through translation [3]. To accomplish these important objectives, the open-access model makes two structural changes to the traditional, subscription-based model. The first is to shift the financing for publication from readers, through subscription fees, to authors (often through their funders), through article processing fees. The second

is to shift from a model that uses copyright to control reuse of content to one that uses copyright to encourage republication, preservation, and translation.

## Why Support the Open-Access Financial Model?

Pricing of traditional, subscription-financed scientific journals is highly inefficient. The growth in digital technologies and in digital networks should be driving down the price of access to the scholarly journal literature, but instead prices have increased at a rate greatly in excess of inflation (e.g., [4,5]). Moreover, studies from journal publishing in some disciplines show that commercial journal publishers successfully charge significantly more than non-commercial journal publishers, such as scholarly societies, even when the commercial offerings make less valuable contributions to the progress of science and knowledge as measured by citations (e.g., [6]).

The economic roots of the pricing problem are not difficult to discern. Journal publishers provide a platform between authors of journal articles and their readers. In these situations, the go-between can choose a mix of prices to each side of the relationship, usually charging more to the party that is more dependent on the go-between. The traditional subscription model charges readers through subscriptions only, but a number of publishers have added page charges or color charges on the author’s side as well. Academic and other research-related libraries rather than the readers are the primary purchasers of these journal subscriptions. Journal publishers have extracted generous profits from libraries because

their demand is relatively inelastic for two reasons. First, libraries are mission-driven to acquire as broad a swath of the literature as they can afford to serve their patrons effectively. Second, subscriptions for academic journals within a given field are not readily interchangeable, unlike, say, subscriptions to news magazines, because each academic journal publishes unique research. Having their subscribers over a barrel, commercial publishers have steadily consolidated to reduce their costs while increasing profits through uncompetitive pricing [7].

The open-access model fundamentally shifts the balance of power in journal publishing, and thereby greatly enhances the efficiency and efficacy of scientific communication. In its most common form, the model shifts the costs of publication entirely to the author-funder side of the relationship so as to broaden access as far as the Internet reaches and to remove the need for any lingering usage barriers. By shifting the costs of publication entirely to the author-funder side, journals must compete head-to-head on quality and price without diminishing impact through price or usage barriers because authors have greater choice over where to publish than libraries have over whether to subscribe. This increased competition will reduce the overall costs of scholarly communication while broadening access and reuse of the literature.

## Why Support the Open-Access Model for Reader’s Rights?

Granting readers full reuse rights unleashes the full range of human creativity to translate, combine, analyze, adapt, and

**Citation:** Carroll MW (2011) Why Full Open Access Matters. *PLoS Biol* 9(11): e1001210. doi:10.1371/journal.pbio.1001210

**Published:** November 29, 2011

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**Funding:** No specific funding was received for this work.

**Competing Interests:** Michael Carroll has been a member of the Creative Commons Board since 2001, and he is a member of the subset of Directors who advise on the organization’s initiatives in science and education.

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The Perspective section provides experts with a forum to comment on topical or controversial issues of broad interest.

## Box 1. A (Very) Brief Primer on Copyright

For those with an appetite for more details on copyright's mechanics, here goes. Copyright is a set of exclusive rights given to authors to control most reuses of their work without their permission, subject to certain limitations and exceptions to these rights. The theory that justifies copyright is that authors will use these rights either to self-publish or to entice a publisher to remunerate the author and to invest in publishing and distributing the work without fear of unauthorized republication by others. Authors automatically receive copyright at the moment they fix their work in some digital or analog media. (In the United States, old rules required a copyright registration to obtain a copyright, or, later, simply that the work be published with a copyright notice, ©, or copyright would be forfeited. However, since 1978, copyright has been granted automatically at the moment of creation, and since March 1, 1989, copyright has been retained by the copyright owner even if the copyright symbol is not used on publications.)

Under US law, authors can transfer all or part of their copyright if they do so by signing an agreement to this effect. Subscription-based journals usually require authors to transfer all or part of their copyright to the journal as a term of the publication agreement, and usually designate one author as the "corresponding author" who signs on the others' behalf. This is because the subscription model requires publishers to restrict access to paying customers and to use the threat of a copyright infringement lawsuit as a means of deterring competing publications from republishing or reusing the journal's content without a license.

Alternatively, the grant of copyright permission, (also known as a non-exclusive license) can be done verbally or by conduct indicating that permission has been granted. In the case where authors never sign a publication agreement, the publisher has a non-exclusive license and the authors retain copyright.

The open-access model uses this permission model to grant readers broad reuse rights to encourage the widespread republication and reuse of articles. Open-access publishers do not need to police the behavior of readers or rival publishers except to the extent that journal content is reused without giving the author or the journal proper credit. The standard means for granting readers permission is through a Creative Commons Attribution license [3]. (Disclosure: I sit on the Board of Creative Commons.)

With respect to scientific articles, the "author(s)" who get the copyright are sometimes different than the persons listed as authors on a scientific article. Scholarly norms about who receives authorship credit vary by discipline and usually are based on some measure of contribution to a collaborative research undertaking. The extreme case is in high energy physics, in which one article boasts 2,926 authors [9]! In the life sciences this phenomenon usually is related to large-scale clinical trials, such as one article reporting the work of 972 researchers [10].

For copyright purposes, however, authorship is limited to the persons who translate facts and ideas into expression by writing text, creating figures, structuring the data, creating data visualizations, and so on. Within this subset of contributors who count as authors in copyright's eyes, there is one copyright shared equally by the authors responsible for these forms of expression if they had a mutual intent to create an integrated work. Otherwise, if, for example, a figure were created for independent purposes and was then later included in an article, there would be two copyrights owned independently by the respective creators—one in the figure and another in the text.

Traditional copyright is premised on the idea that the authors' and publishers' incentives are aligned because both seek to profit from the publication and distribution of the authors' work. However, this one-size-fits-all approach does not fit scholarly communication—at least in journal form—in which author royalties are the extremely rare exception. Authors write for impact. As scientific publishing has migrated to digital networks, full open access better achieves scientific authors' goals than does the traditional publishing model designed for the production and distribution of printed artifacts.

preserve the scientific record, whereas traditional copyright arrangements in scientific publishing increasingly are inhibiting scholarly communication. Traditional copyright law was designed with the subscription-based publishing model in mind. Authors receive copyright when they write their first draft of an article. Authors then transfer this copyright, or grant an exclusive license, to a publisher in exchange for publication. The publisher relies on copyright to police the behavior of readers and competitors who may seek to obtain or redistribute the content without a subscription.

By shifting the financing away from subscriptions, the open-access model realigns copyright to enable broad reuse while assuring authors and publishers that they receive credit for the work they have done. This is done through open licensing by the copyright owner. Initially, the authors of an article automatically own a copyright in the article as soon as it has been drafted. If the authors sign an agreement that transfers the exclusive rights to the publisher, the publisher becomes the copyright owner. The standard means for achieving open access with respect to copyright is for the copyright owner (author or publisher) to use the Creative Commons Attribution license [3], which gives readers and republishers broad reuse rights on the condition that credit for the article is given as directed by whoever is granting the permission. (Disclosure: I sit on the Board of Creative Commons.)

Recently, however, some commercial publishers have waded into the open access waters by charging authors a publication fee to substitute for subscription revenue while limiting reuse. Having been paid for coordinating peer review, editing and laying out the text, and the like, these publishers nonetheless limit readers to making only non-commercial reuses, or even also requiring reusers to use the same license for any adaptations, while reserving to the publisher the rights to make any commercial reuse. (This is done through use of the Creative Commons Attribution Non-Commercial license or the Creative Commons Attribution Non-Commercial Share-Alike license.) This is pseudo open access. Authors who pay for publication in these pseudo open access publications are not getting their money's worth. For example, text or figures subject to these more restrictive licenses cannot be uploaded to Wikipedia, which uses the Creative Commons Attribution Share-Alike license.

## Box 2. Requirements for Full Open Access

*Full open access content is*

\* Easily accessible online

AND

\* Available to anyone free of charge

AND

\* Available for re-use without restriction except that attribution be given to the source.

*No one of these alone qualifies content for an open access label.*

Presumably, these publishers retain commercial reuse rights either to derive additional revenues from certain potential reusers or to block competitors, who may exercise these reuse rights to earn revenue through some kind of value-added service or publication. This latter option is possible only if the competitor discovers a market that the original publisher overlooked. Such entrepreneurs should be rewarded rather than controlled.

I suspect that these publishers have commercialized text mining in mind as one of the kinds of reuse they would like to control. This is an illusion. One of the great benefits of open access is that researchers can use any web-based search tool to engage in machine-aided analysis of the published literature. Publishers who lock their content behind a firewall use contracts and technology to limit or prohibit machine-aided research.

Once on the open web, however, even content under a Creative Commons Attribution Non-Commercial license can be freely mined for commercial purposes because the license applies only to uses covered by copyright, and copyright does not regulate text mining—at least in the

United States. Copyright attaches only to the author's expression, rather than underlying ideas or facts. The copyright owner has the exclusive rights to reproduce, distribute, adapt, and otherwise communicate the work to the public, subject to certain limitations and exceptions, such as fair use. However, most scientific data are facts that are not covered by copyright except to the extent that an author has exercised minimal creativity in the selection or arrangement of data. This minimal creativity standard might prevent the republication of some tables or figures, but in no case would copyright restrict the reuse of the underlying data if arranged in a different format or in a new figure. Text mining software makes temporary copies of full text. These temporary copies do not count for copyright purposes because of their transitory duration, and the durable outputs of text mining—factual data—are not covered by copyright.

The other use case that may inspire publishers to retain commercial reuse rights is to sell reprints to private sector entities, particularly for life science publishers [8]. It is true that the non-

commercial license likely would prohibit redistribution of article copies as advertising for, say, pharmaceutical companies. Full open access could cut into this revenue stream, unless these entities require print copies for which even a full open-access publisher would be free to charge. The commercial publisher may argue that diversifying revenue streams makes good business sense, which it may for them. But, authors, or their funders, should then expect a discount on the publication charge as an offset for these revenues. This approach hinders competition by obscuring journal financing and encouraging accounting gimmicks. It also creates a range of potential roadblocks to future commercial reuses necessary to effective scientific communication.

I offer one example to illustrate the danger, but many others abound. Imagine an evolution in digital formats and a pseudo open-access publisher that has gone bankrupt. The journal's content is on the web but its host site will soon be shut down. A new, for-profit venture sees value in republishing the defunct journal's content in the new format. However, while the journal has died, its copyrights live on (for the life of the author plus another 70 years!). Because the journal demanded the commercial reuse rights even after collecting a hefty publishing fee from the author, the new venture would likely lack the legal right to copy and republish this piece of the scientific record in the new format to the detriment of those authors and the research community at large. We are living through a moment of fundamental opportunity. Let's be clear. Only those publishers willing to fully seize this opportunity deserve to call their publications "open access."

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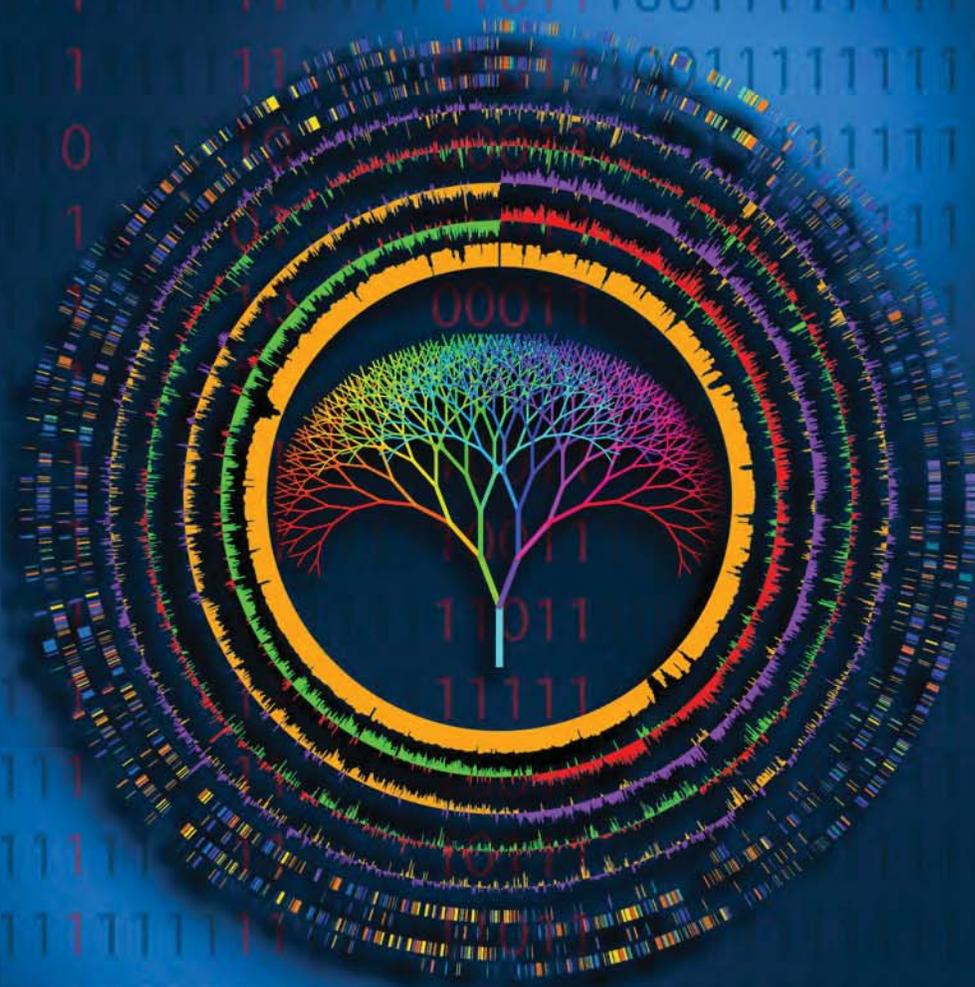


# PLOS

PUBLIC LIBRARY of SCIENCE

[www.plos.org](http://www.plos.org)

2010 Progress Update





Welcome to the 2010 PLoS Progress Update, aimed at keeping our authors, reviewers, editors, and supporters fully apprised of developments at PLoS over our most recent year. You can sign up to read future updates [here](#). If you would like a fuller historical picture of how far we've come, you can read the [2009 Progress Update](#) and the first full [Progress Report](#).

## Highlights

1. Message from the Founders
2. Publishing Initiatives
3. Influential Research
4. A Growing Organization
5. The Evolving Open Access Landscape
6. The First PLoS Forum
7. Customer Service
8. Financial Summary
9. 2011 and Beyond
10. Major Support in 2010
11. Board of Directors, Management

## 1. Message from the Founders

It's been another exciting year for PLoS, focused on establishing more open, efficient, and effective ways to accelerate progress in science and medicine and leading a transformation in research communication.

PLoS reached a truly significant milestone in 2010 when, seven years after entering the publishing business, our annual operating revenues exceeded expenses for the first time. Although we are delighted that PLoS and others have now shown that Open Access (OA) is a viable and sustainable business model, we have a long way to go before universal access is achieved for all.

The significant progress that we've made toward this goal could not have been achieved without the leadership of our co-founder Harold Varmus, who announced during the year that he was stepping aside as Chairman of the Board of Directors to focus on his new role as Director of the U.S. National Cancer Institute (NCI). After a thorough leadership search, we were delighted to welcome [Gary Ward](#) as our new Chairman. His insights into PLoS's vision, his engaging and collaborative style, and his commitment to OA will make him a highly effective leader at this critical juncture in PLoS's history.

As ever, we are indebted to our remarkable staff, our far-sighted supporters, and our authors, reviewers, editors, and advisors for another exceptional year. We would be nowhere without you.

Patrick O. Brown  
Michael B. Eisen



## 2. Publishing Initiatives

During the year, PLoS launched or continued several publishing initiatives aimed at broadly rethinking and reinventing research communication.



### Expansion of *PLoS Currents*

We expanded *PLoS Currents*, a series of experimental websites for the rapid communication of research results and ideas, and launched new sections on [Huntington Disease](#) (produced with support from CHDI Foundation, Inc. – [watch a video](#) about this website), [Evidence on Genomic Tests](#) (in collaboration with the U.S. Centers for Disease Control and Prevention), and phylogenetic studies called the [Tree of Life](#). As we learn from these sections of *PLoS Currents*, we aim to greatly extend the utility of this new communication tool.



### Launch of PLoS Hubs: Biodiversity

In the Fall of 2010, PLoS launched a prototype version of [PLoS Hubs: Biodiversity](#) to show how OA literature can be reused and reorganized, filtered, and assessed after publication. This prototype aggregates relevant articles from a variety of OA journals, including the PLoS journals and many others archived at PubMed Central, and demonstrates some of the data integration that is a key motivation for this project. We have very ambitious objectives for PLoS Hubs, which begin to illustrate the real power and potential of open content.



### Launch of PLoS Blogs

Also in the Fall, PLoS launched [PLoS Blogs](#), a network for discussing science and medicine in public. This platform covers topics in research, culture, and publishing. PLoS Blogs is different from other blogging networks because it includes an equal mix of science journalists and scientists. We were excited to welcome [our new bloggers](#), including Pulitzer Prize winner [Deborah Blum](#), to the network, and we have witnessed tremendous use of the outstanding content that is being shared in this new forum. This network also includes the PLoS journal blogs, [everyONE](#) and [Speaking of Medicine](#), and the [official PLoS blog](#).



### 3. Influential Research

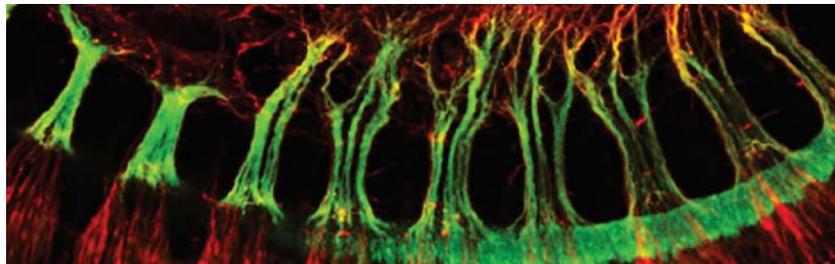
PLoS journals remain at the core of everything we do. During 2010, they continued to hit the headlines by publishing outstanding research along with provocative opinion and commentary.



#### *PLOS Biology*

Research highlights from *PLOS Biology* in 2010 included a study that found that most men in Europe [descend from the first farmers who migrated from the Near East](#) [1] 10,000 years ago. This paper received widespread news coverage and fueled animated discussions in the science blogosphere. Another high-profile study showed how the remains of a nearly complete snake, found preserved in the nest of a sauropod dinosaur in western India, provided [a rare glimpse](#) of an unusual feeding behavior in ancient snakes [2]. Meanwhile, [research](#) by Robert Pringle and colleagues [3] helped termites to get better press, showing that their mounds not only greatly enhance plant and animal activity at a local level, but their uniform spatial patterning also enhances the overall productivity of the entire landscape. The paper, accompanied by an explanatory primer, was featured in the [Harvard Gazette](#), [USA Today](#), [The Telegraph](#), [Discovery News](#), and [BBC Mundo \(Spain\)](#).

*PLOS Biology* also launched an Education series in October with an [Editorial](#) by Liza Gross and Cheryl Kerfeld [4] and an [article](#) by Chaitan Khosla and colleagues, In Living Color: Bacterial Pigments as an Untapped Resource in the Classroom and Beyond [5]. The Education series features noteworthy, innovative open-education programs created to enhance the understanding of biology.





### ***PLOS Medicine***

In 2010 *PLOS Medicine* continued its mission to raise standards in medical publishing with further guidelines on the reporting of papers, such as an article providing [specific guidance](#) for developers of health research reporting guidelines [6], and by highlighting unacceptable practices in publishing, an example being the [first academic analysis](#) of the papers released in 2009 that documented ghostwriting practices by Wyeth [7]. It continued to publish articles on the diseases and risk factors that cause the highest burden of disease; for example a four-part series, [Water and Sanitation](#) [8], launched at the London School of Hygiene and Tropical Medicine; a series on [Sub-Saharan Africa's Mothers, Newborns, and Children](#) [9] published to coincide with the [Pacific Health Summit](#); and [several papers on the tobacco industry](#), including one on how the tobacco industry has attempted to subvert European Union policy [10].

*PLOS Medicine* also continued to publish high-profile debates on important topics in global health, such as the [call by eight global health agencies](#) [11] to strengthen sources of health data and the capacity for analysis, synthesis, validation, and use of these data, and series on [global health diplomacy](#) [12] and [estimates](#) of global health data [13].

Finally, together with *PLOS Biology* and *PLOS ONE*, the journal [implemented a policy](#) [14] to no longer consider papers for which support in whole or in part for the study or the researchers comes from a tobacco company.





## The Community Journals

The first three Community Journals (*PLoS Computational Biology*, *PLoS Genetics*, and *PLoS Pathogens*) celebrated their 5th birthday in 2010 (during OA Week). These well-established journals are outstanding examples of how OA journals can be run and financially sustained with a publication fee model. A brief selection of the research published in each title is as follows:



***PLoS Computational Biology***—[Modeling the interior of bacterial cells at a near atomic level of detail](#) [15]. Having selected the prokaryote *Escherichia coli* as a test system, researchers assembled an atomically detailed model of its cytoplasmic environment that includes 50 of the most abundant types of macromolecules at experimentally measured concentrations, which offers a vivid illustration of molecular behavior inside biological cells.



***PLoS Genetics***—[Characterization of twenty sequenced human genomes](#) [16]. Researchers presented the analysis of twenty human genomes to evaluate the prospects for identifying rare functional variants that contribute to a phenotype of interest. They provided a proof of concept for the identification of rare variants by confirming that the cause of hemophilia A is easily recognizable in this dataset.



***PLoS Pathogens***—[A tropical fungus takes root in the Pacific Northwest](#) [17]. Scientists described an outbreak of cryptococcosis among people, livestock, and wild animals from Vancouver Island to Oregon, identifying a virulent new strain of *Cryptococcus gattii* unique to the United States. Thanks in part to extensive press coverage, from venues as disparate as NPR and WebMD, the article was viewed 16,000 times in its first week.



***PLoS Neglected Tropical Diseases***—[Mapping the global threat of vivax malaria](#) [18]. As part of the Malaria Atlas Project, researchers combined geographic, climatic, epidemiologic, genetic, and population data to create a comprehensive map of the worldwide human risk of *Plasmodium vivax*, a form of malaria less benign than previously believed. An estimated 2.85 billion people on five continents face potential exposure.



## PLoS ONE

PLoS ONE published almost 6,800 articles in 2010, and among the extraordinary range of science that this represented, more than [300 research articles](#) [19] were covered by international media and bloggers. One of these high-profile articles included a clinical trial that found [vitamin B could slow cognitive impairment in the elderly](#) [20]. In another, researchers used [social networks to detect contagious outbreaks](#) [21]. The discovery of [ancient Chalcolithic footwear](#) in a cave located in Southern Armenia [22] also received widespread media attention and was covered by *The New York Times*, *Scientific American*, and *Vanity Fair*.

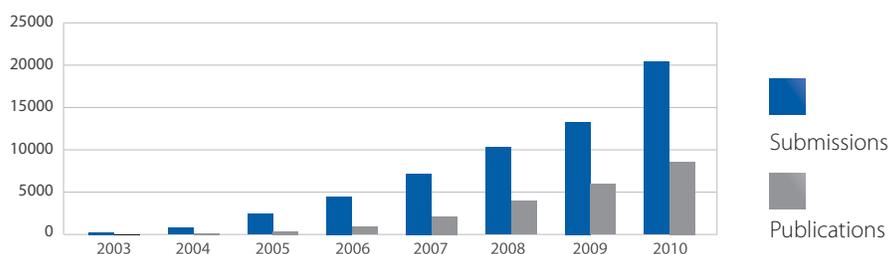
2010 was also a year of Collections. In August, we launched the *PLoS ONE*: Marine Biodiversity and Biogeography - Regional Comparisons of Global Issues [Collection](#) [23]. It was created in collaboration with the Census of Marine Life and was our biggest and most publicized collection of 2010. The articles provided new species inventories, identified biogeographic regions, and collectively established a baseline for further global assessments. The collection received [worldwide media attention](#) and was featured in the BBC, *National Geographic*, and CNN. Additionally, one of our other collections, the [Biodiversity of Saba Bank](#) [24], was credited with having motivated the Netherlands Antilles to pass a National Decree designating the Saba Bank a marine protected area.



## 4. A Growing Organization

With the continued growth at PLoS, in terms of both submissions/publications and the complexity of the projects we are running and launching, comes the challenge of how to maintain the resources and infrastructure that we need to keep moving forward. 2010 was a busy year for us in this regard.

Growth of PLoS — Submissions and Publications



### Two Office Moves

In June and October 2010, we moved both our San Francisco and Cambridge, U.K. offices because we had simply outgrown our existing locations. With careful planning from the IT and Administration teams on both sides of the Atlantic, these logistical projects ran remarkably smoothly with minimal downtime for our staff and authors, so we wish to extend a huge thank-you to everyone involved.

### Editorial Manager®

The increase in submission volumes across all titles, and particularly *PLoS ONE*, meant that we needed a new manuscript submission and peer review system to scale up for our future. As we tune Editorial Manager (EM) to our specific needs, authors, reviewers, and editors should all benefit from an improved experience with our publications. As with any change in infrastructure, the move to EM has not been without challenges, and we are particularly grateful to authors, reviewers, and editors for helping us to negotiate this transition.

### Increased Discoverability

More PLoS articles in the world means that our audience needs new ways to discover our content, which is another good reason why we improved our [search functionality](#). Members of the development community also used our content to help us go mobile. They created our first ever [iPhone application](#), which we launched for *PLoS Medicine*, and an [iPad application](#) for all of our journals – third party developments which were only possible because of the OA copyright license that we use on all our content.

## 5. The Evolving Open Access Landscape

2010 was a big year for OA across the board. The three biggest OA publishers (BioMed Central, PLoS, and Hindawi) all achieved substantial growth. One of the other exciting developments was the announcement, from several publishers, of journals that operate along very similar lines to *PLoS ONE*, and therefore have the potential to grow quickly and accelerate the pace of change toward more comprehensive OA.

In the United States, on July 29, 2010, then-staff member Catherine Nancarrow testified before the 111th Congress Oversight and Government Reform Subcommittee on Information Policy on the issue of broadening public access to federally funded research. Additionally, the Federal Research Public Access Act (FRPAA), which promises to strengthen the National Institutes of Health (NIH) policy and extend it across the federal government, was reintroduced into the House, and the Administration issued a call for comments from the community on how best to make this happen.

PLoS also joined the [Open Access Implementation Group](#), which aims to accelerate the transition toward OA specifically within the U.K., where OA policy has been particularly progressive.

The largest and most successful [International Open Access Week](#) to date also took place in 2010, with just under 900 participants in 94 countries. PLoS co-founder, Nobel prize-winning scientist and director of the U.S. NCI, [Dr. Harold Varmus](#) participated in the official OA Week kick-off event by stating, with respect to where OA publishing has reached and what's now possible: "All of these adventures are tremendously exciting because they markedly enrich the experience of being a scientist, of reading the work of others, and of exchanging views with others in the scientific community."

## 6. The First PLoS Forum

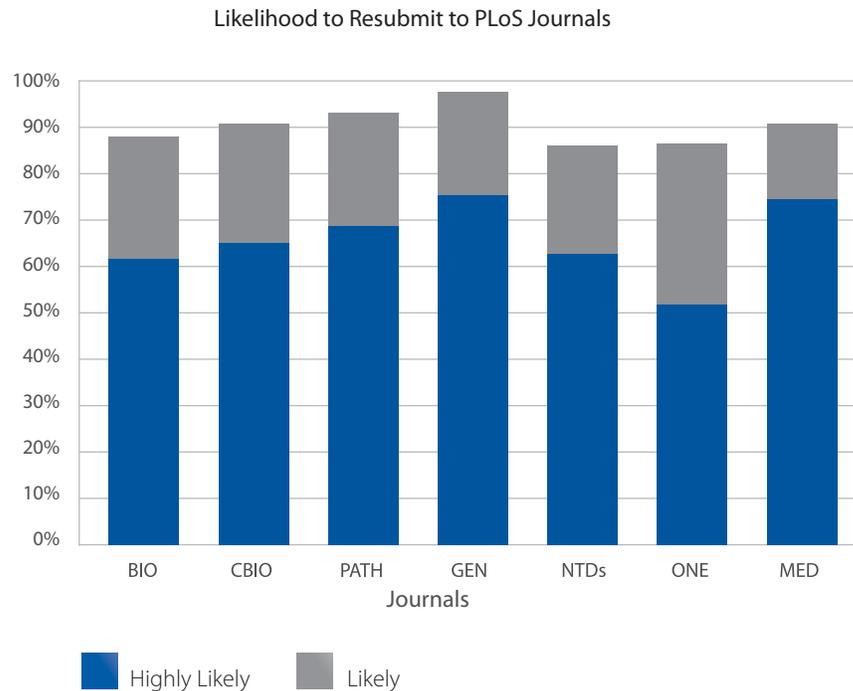
In March 2010, PLoS held the first PLoS Forum in San Francisco, California. Over 70 invited thought leaders, such as research funders, policy makers, OA content users, researchers, etc., came together to brainstorm about the future of scientific communication. The lively and creative discussions will help to inform PLoS's longer-term ambitions for transforming the ways we present and use new research findings.



## 7. Customer Service

### Author Satisfaction Survey

In 2010, we conducted our second comprehensive survey of authors – those whose work was either published or rejected in 2009. In general, the results reinforced our 2009 findings. Levels of satisfaction remained high among PLoS authors, but respondents also identified several areas where processes could be improved, notably our journal management system, which was one of the motivations for our move to Editorial Manager®. As [we did last year](#), we have provided a short summary of the findings in a [SlideShare presentation](#), along with an audio commentary.



## 8. Financial Summary

PLoS reached an important milestone in 2010, operating in the black for the first time. Key contributors were strong growth in *PLoS ONE*, continued performance of our Community Journals, and improvements in our underlying cost structure. This was accomplished without raising publishing fees for any of our journals.

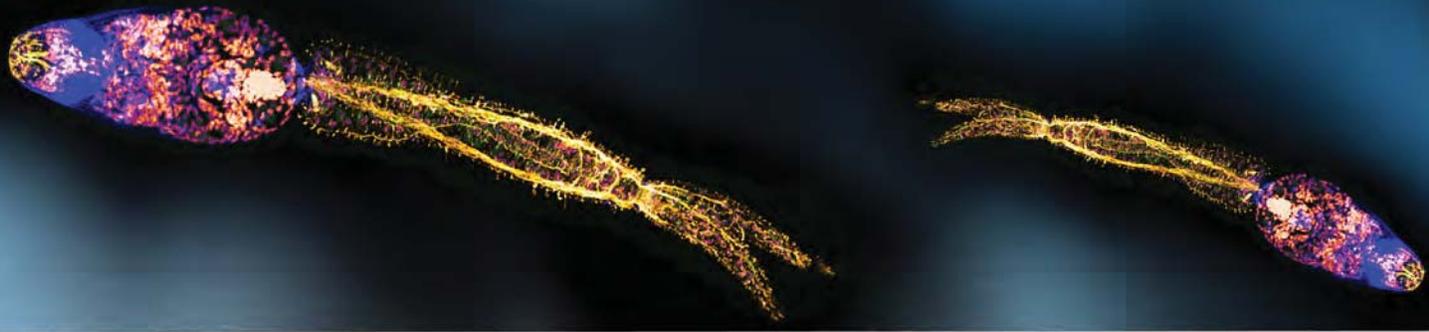
Total revenues for the period grew to a little over \$15.0MM—a 60% increase over 2009 levels—fueled mainly by strong growth in publishing volumes. Operating revenues were \$13.0MM, a 46% increase over 2009; and operating expenses were \$12.2MM, a 25% increase over 2009. Public support for the year was about \$2MM. A full disclosure of our 2010 Form 990 Tax Return can be found [here](#).

### Income Statement (\$000's)

|                                 | 2010          | 2009         |
|---------------------------------|---------------|--------------|
| <b>OPERATING REVENUES</b>       |               |              |
| Net Author Fee Revenue          | 11,995        | 8,390        |
| Advertising Revenue             | 281           | 192          |
| Memberships                     | 310           | 296          |
| Interest & Other Income         | 409           | 21           |
| <b>Total Operating Revenues</b> | <b>12,995</b> | <b>8,899</b> |
| <b>OPERATING EXPENSES</b>       |               |              |
| Direct Publishing Expenses      | 6,680         | 5,372        |
| Operational Expenses            | 5,465         | 4,337        |
| Advertising & Marketing         | 65            | 74           |
| <b>Total Expenses</b>           | <b>12,210</b> | <b>9,783</b> |
| <b>Operating Income/(Loss)</b>  | <b>785</b>    | <b>(884)</b> |
| <b>PUBLIC SUPPORT</b>           |               |              |
| Grants                          | 2,054         | 497          |
| Less: Fundraising Expense       | -             | 121          |
| <b>Net Public Support</b>       | <b>2,054</b>  | <b>376</b>   |
| <b>Net Income/(Loss)</b>        | <b>2,839</b>  | <b>(508)</b> |

### Balance Sheet (\$000's)

| ASSETS                                | 2010         | 2009         |
|---------------------------------------|--------------|--------------|
| <b>CURRENT ASSETS</b>                 |              |              |
| Cash and Cash Equivalents             | 1,203        | 434          |
| Restricted Cash                       | 331          | -            |
| Investments                           | 1,363        | 1,129        |
| Grants Receivable                     | 1,100        | -            |
| Accounts Receivable                   | 1,860        | 1,189        |
| Other Current Assets                  | 52           | 52           |
| <b>Total Current Assets</b>           | <b>5,909</b> | <b>2,804</b> |
| <b>NONCURRENT ASSETS</b>              |              |              |
| Net Fixed Assets                      | 818          | 235          |
| Other Assets                          | 41           | 65           |
| <b>Total Assets</b>                   | <b>6,768</b> | <b>3,104</b> |
| <b>LIABILITIES AND EQUITY</b>         |              |              |
| <b>CURRENT LIABILITIES</b>            |              |              |
| Accounts Payable                      | 573          | 233          |
| Accrued Payroll Liabilities           | 587          | 321          |
| Deferred Revenue                      | 837          | 618          |
| <b>Total Liabilities</b>              | <b>1,997</b> | <b>1,172</b> |
| <b>Equity</b>                         | <b>4,771</b> | <b>1,932</b> |
| <b>Total Liabilities &amp; Equity</b> | <b>6,768</b> | <b>3,104</b> |



## 9. 2011 and Beyond

We're currently working on a number of technology projects that will improve the utility and stability of all our sites and open up our code and content to the world so that others can build and improve on initiatives we started, such as Article-Level Metrics and Search. We're expanding our new initiatives, such as *PLoS Currents*, Hubs, and Blogs.

We also continue to evaluate our infrastructure and operations to make sure that we have everything we need to take us through the next phase of growth and organizational development. We expect that we'll be making a number of changes during the course of the year as we seek to improve the range and level of services we offer.

It's clear to us and many others that scholarly communication is undergoing a fundamental transition as the methods adapt more fully to online media. PLoS is committed to playing a leading role in this transition by simplifying, speeding up, and improving research communication. We have many experiments running in various areas:

- **Improving re-use of content** – PLoS Hubs
- **Measuring impact at the article (not the journal) level** – article-level metrics on all journal content
- **Encouraging more rapid and open sharing of new findings** – *PLoS Currents*
- **Separating technical assessment of research from judgments about potential impact** – *PLoS ONE*
- **Exploring post-publication discussion and assessment** – commenting on all journal content
- **Raising standards through improved reporting** – initiatives in all PLoS journals
- **Bridging the gap between research reporting and the broader public** – PLoS Blogs

As publishers with strong community supporters and collaborators, we are well positioned to consider the evolution of the research article as we envision a world beyond the PDF where better organization of content, improved integration of data and multimedia content into articles, and more online discussions and openness are the norm.

## 10. Major Support in 2010

- [William K. Bowes, Jr. Foundation](#)
- [John D. & Catherine T. MacArthur Foundation](#)
- [Alfred P. Sloan Foundation](#)

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(current as of July 2011)

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**For a full list of PLoS staff**, visit the  
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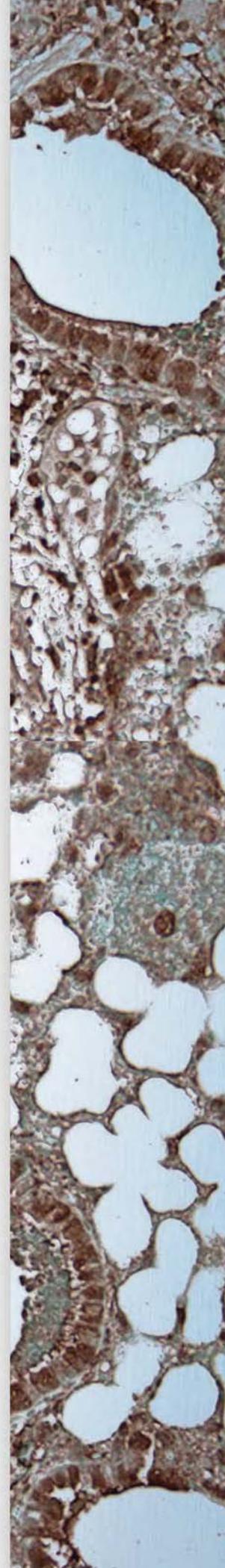
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Editor-in-Chief (view [Editorial Board](#))

**PLoS Pathogens** - Kasturi Haldar,  
Editor-in-Chief (view [Editorial Board](#))

**PLoS Neglected Tropical Diseases** -  
Peter Hotez and Serap Aksoy,  
Editors-in-Chief (view [Editorial Board](#))

**PLoS ONE** (view [Editorial Board](#))



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3. Spatial Pattern Enhances Ecosystem Functioning in an African Savanna  
[www.plosbiology.org/doi/pbio.1000377](http://www.plosbiology.org/doi/pbio.1000377)
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## Notes





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Published July 20, 2011

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**From:** Cameron Gundry  
**Subject:** Public Access response  
**Date:** January 11, 2012 5:50:33 PM EST  
**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

To whom it may concern.

Here are my insights for the open access input. I have italicized and used red for my comments....

(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? We should not be limited by the information available. **My answer:** All things being equal better knowledge of what experiments have been done, and how, would eliminate duplication of efforts as well as speedier validation / invalidation of research findings through publication. What are the relative costs and benefits of such policies? **My Answer:** Benefit is more efficient use of federal dollars going towards research. Why slow down the information flow? That would only slow down research in general. This would be a wasting tax dollars to ban open access. What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise? **Show citation box. My answer:** Full open access. of all federally funded research within 12 months of publication, as is the current model.

(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? **My answer:** None additional needed. USPTO considers publication opening up to the public the potentially novel and patentable idea(s). Anyone skilled in their art already knows this and would submit a patent publication before publishing. Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders? **My Answer:** None needed. In fact, by keeping open access, the USPTO, itself can more efficiently review patent eligibilities, resulting in reduced costs and increased capacity to

review patent applications. I can promise that the costs would go up if the USPTO staff were required to pay for each article they review. Show citation box

...

(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? **My Answer:** Off-the-cuff response is that the current 12 month period is sufficient. I have conducted biomedical research for over 12 years and believe me, 12 months is plenty of delay to still allow publishers to get their profits. one year old publications can be dinosaurs. no change needed is my recommendation. Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications. **My Answer:** Yes, there probably are arguments. Publications in different fields have different peaks of interest, followed by recessions. A proxy of this could be to look at citations of research publications. I suspect that in biomedical research vs. physics or mathematics, for instance, the peaks would have different time scales.

Please consider these arguments. As a Scientist who has 5 papers and over 800 citations to those papers in the field of molecular diagnostics methods developments, I can say that limiting the access to this knowledge would be adding burden to the US citizens, through protracted time periods of techniques making their way into more efficient technologies to be used in biomedical research and diagnostics. This reversal on open access publication availability for federally funded research would reverse the direction our country is trying to go, and increase the costs of health care, for instance.

Sincerely,

Cameron Gundry, B.A., Biology and M.Sci Biomedical Science and  
Laboratory Medicine  
Idaho Technology (Biotech Company currently under DOD support)  
Salt Lake City, Utah



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11 January 2012

Submitted to [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

The American Astronomical Society (AAS) appreciates the opportunity to submit comments in response to the Request for Information concerning Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research [FR Doc. 2011-28623].

Sincerely yours,

Debra Elmegreen  
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Chris Biemesderfer  
Director of Publishing, AAS

Kevin B. Marvel  
Executive Officer, AAS

Richard F. Green  
Chair, AAS Publications Board

# **Request for Information: Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research**

[FR Doc. 2011-28623]

## **Submission from the American Astronomical Society**

*The mission of the American Astronomical Society is to enhance and share humanity's scientific understanding of the Universe.*

The American Astronomical Society (AAS) is the major association for professional astronomers in the United States, with over 7500 members. One of its primary functions is the publication of the key North American scientific journals dedicated to the dissemination of peer-reviewed research in astronomy and astrophysics, the *Astrophysical Journal* and the *Astronomical Journal*. As a society of research and higher education professionals, we have made a concerted effort to conduct our scholarly publishing enterprise with sensitivity to and balance among the need for prompt and inexpensive access to new results, the pressures on the budgets of technical libraries, and the challenges of obtaining grant and institutional funding to support author fees. We have struck this balance in several ways:

- The journals' revenues are nearly evenly distributed between subscriptions and author charges. Receipts from author fees permit us to charge very low subscription costs to individual members for electronic content, and low institutional subscription rates, appropriate for a not-for-profit scholarly publisher.
- Fees charged to authors are nominal. In return for payment of publication charges, authors are granted generous rights for the use of their published material to meet professional needs and institutional obligations.
- In consideration of paid subscriptions, there is a limited proprietary period (12 months) before full public access is granted.

This approach has allowed the Society to maintain the integrity of its editorial and peer review processes, critical for maintaining quality and integrity in the dissemination of scientific results. We are unaware of any substantial dissatisfaction among professionals or the general public with the modes that are currently used for disseminating astronomical information.

### **Questions from the RFI**

1. *Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

Agencies should ensure that there are policies and full institutional support for the payment of author fees with agency funding. Payment of author fees with funds from NSF awards has a long tradition at the NSF. The practice needs to be accepted by all US agencies that fund scientific research.

We find it doubtful that such policies will have substantial impact on the economy. Policies about archiving the scholarly literature have been in place for centuries, and those policies have served scientific productivity by supporting good practices of scholarship. Making the scholarly literature publically accessible has always been a secondary consideration in the adoption and implementation of these policies (maximizing the productivity of the scientific enterprise is the primary reason), but the public has always had access to the literature nonetheless, through college and university libraries and in some regions public libraries. In the case of the AAS specifically, the rights that the Society grants back to authors permits those authors to share their published articles with other individuals. That sharing usually occurs between mentor and student or among researchers that share in interest in a particular research problem, but there is nothing to prevent AAS authors from sharing research papers with the public. Authors are free to share their scholarly articles with interested members of the general public, and also with journalists and educators who prepare content for public consumption – in text books, newspaper and magazine stories, planetarium shows and science museum exhibits, broadcast media productions, etc.

2. *What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

Final research reports are required by funding agencies at the conclusion of grant periods. Arguably, it is these reports that provide the most direct assessment of the research conducted with specific grant funds. By comprehensively providing access to final research reports, agencies would address the need of the public to obtain accurate information about how specific grant funds translated into particular research results.

3. *What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

Some nominal economy of scale accrues to centralized projects, but only if the materials collected are amenable to identical processes and policies. The range of policies and practices for disseminating information among the scholarly disciplines is substantial, and the differences exist for reasons that need to be respected and protected. More to the point, there are already repositories for literature supporting the various scholarly disciplines. Those platforms already perform the necessary services, and they exist in an obviously decentralized infrastructure. It would be better for the government to take advantage of the existing apparatuses, policies, and bodies of expertise that are distributed effectively already.

There are no plausible reasons for Federal agencies to assume custody of all published content. Long-term stewardship of the scholarly literature has motivated the invention of technologies and policies in the academy for a very long time. The publishing, library, and higher education communities came together on their own, driven by obvious needs and

benefits for scholarship, to create services such as LOCKSS [1] and Portico [2] that provide sustainable infrastructure for long-term preservation.

4. *Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

It is possible to connect award identifiers mentioned in articles in the scholarly literature to the corresponding final research reports held at Federal agencies.

5. *What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

Agencies should be aware of existing efforts already underway, they should join or participate in those efforts as may be appropriate, and they should clearly endorse those efforts that are accomplishing important objectives. CrossRef [3] is an example of a highly effective service, one that assembled comprehensive participation among organizations involved in scholarly publishing. The consortium that created CrossRef for article linking has also developed a variety of other services that support scholarly communication. Other organizations modeled on CrossRef have also convened to address other concerns in this problem space. ORCID [4] is a project to investigate and resolve the need for the unambiguous identification of contributors to scholarly communication. DataCite [5] is a coalition initiated in the library community to create an infrastructure for the identification and linking of data sets.

The minimum metadata elements that are applicable for the scholarly literature are most likely those identified in the Dublin Core [6]. Beyond that core, metadata that are helpful for exploring the literature in a particular discipline is discipline-dependent.

Agencies should join, participate in, or more efficiently, just be aware of efforts in the scholarly arena that define metadata element sets. This problem will take care of itself in the academy simply out of self-interest; the government does not need to intervene.

6. *How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

The most direct action the government could take would be to provide for comprehensive taxpayer access to final research reports. Federal agencies could also support smaller libraries, community colleges, university alumni associations, and so forth, to obtain access to portions of the scholarly literature that might be of interest.

It is worth recognizing that the public obtains most of its knowledge about astronomy and astronomical research from non-scholarly sources: text books, newspaper and magazine stories, planetarium shows, science museum exhibits, broadcast media productions, and so on. These outlets offer the public clearly interpreted communication about scientific research

broadly – whether the research was publically funded or not – and the producers all have business models that allow them to persist. The only burdens on the academy are that researchers publish results in the scholarly literature, and for researchers to be available to the journalists and educators who prepare these communications for the public. These mechanisms have been operative for decades in astronomy, because the community in the broadest sense recognized years ago the merits of communicating scientific results with the wider public.

7. *Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

It is our view that to pursue these additional categories of the literature is to go in the wrong direction. We have already stated that the primary purpose of the scholarly literature is to enhance the scientific research process, and to improve its productivity, not to inform the general public about science. The public is much better informed through other channels that are far more accessible and understandable than the scholarly literature.

8. *What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?*

We reiterate our response to this question when it appeared in the RFI two years ago: we endorse the recommendation of the Scholarly Publishing Roundtable [7] that embargo periods be established between publication and public access that are discipline-specific. The AAS strives to maintain an adaptable business model, but an abrupt devaluation of subscriptions has consequences for researchers and for their funding. Maintaining a proprietary period, however limited, is an acknowledgement of the value and importance of subscriptions for maintenance of quality editing and peer review. The length of time that large-scale repositories of digital journals have existed is not long enough compared with reasonable embargo times for there to be sufficient data to draw a meaningful objective conclusion, in our opinion. The proprietary period for AAS journals is currently 12 months. We have reduced the period over the last 15 years from 5 years to 12 months without significant loss of perceived value in subscriptions, although this is a judgment on the Society's part and is not based on analysis of any particular data.

*Please identify any other items the Task Force might consider for Federal policies related to public access to peer-reviewed scholarly publications resulting from federally supported research.*

We believe it would be worthwhile for the Task Force to consider the effectiveness of the AAS business model. As mentioned above, we derive revenue from two sources – authors/researchers and libraries/scholars – in an equitable fashion. These two groups are chosen not just opportunistically: they reflect the scientific and scholarly activities of creating one's own work while building on the work of others. We collect revenue from individual scientists in the form of author charges. We collect revenue from scholars as a class in the form of library

subscriptions. Because we balance the income from these two sources, neither group is overburdened financially: our author charges are among the lowest (of journals that charge author fees), and our library subscriptions are quite low for journals of substantial size. The relatively low subscription prices make our journals accessible to more libraries, resulting in a wider distribution of the journals – which is good for the researchers and good for the Society in addressing our mission. The library community understands and respects our approach. They consider our journals exceptionally good values, and consequently they are loyal subscribers. That librarian loyalty in turn allows us to employ a policy of delayed open access (the current embargo period is 12 months) with no discernible deleterious effect on our renewal rates. We acknowledge that this model is not applicable for all scientific disciplines, but it works remarkably well for astrophysics.

The AAS holds the copyright in the articles it publishes. We obtain the copyright primarily so that the Society can manage rights after authors have passed away, an activity we regard as important for maintaining the integrity of scientific communication. We grant virtually all usage rights back to authors during their lifetime (as do the vast majority of learned society publishers). The combination of the business model and the AAS' generous return of re-use rights to authors satisfies the public's interests as well as those of professional astronomers. In addition to their colleagues, authors are free to share their scholarly articles with interested members of the general public, and also with journalists and educators who prepare content for public consumption.

In an article published in July 2011, Davis and Walters [8] remark that “[c]urrent research reveals no evidence of unmet demand for the primary medical or health sciences literature among the general public.” The journals published by the AAS present a useful environment for examining whether the public is inhibited by pay walls when accessing the primary literature in astronomy, and even for judging the public's level of interest in that literature in the first place.

The AAS journals employ a policy of delayed open access to make the backfile accessible at no charge. As of 1 January 2012, the AAS has published over 120,000 articles in its journals. More than 115,000 of these articles are available free. All the metadata for the astronomical literature is aggregated in a service called the Astrophysics Data System [9] (ADS), which is housed at the Center for Astrophysics (CfA) on the edge of the Harvard University campus in Cambridge, Massachusetts. The vast majority of professional astronomers access the literature via ADS, and the majority of the referrals for the astronomical literature from Google are also routed through ADS. The ADS platform is, therefore, a source of rich web usage statistics about the patterns of use of the astronomical literature.

In an attempt to understand how the public uses the astronomical literature, we analyzed ADS' usage logs from November 2011 and counted the number of outbound referrals to AAS journals, dividing them into categories of professional vs. public requests. The public requests are taken to be those referred to ADS from Google that are *not* associated with known network addresses of astronomical institutions. We also distinguished requests for embargoed (pay wall protected) articles from requests for open access articles. The rate of usage of the journals by the public is the same – 1.3% – regardless of whether the content is access controlled or not. These percentages represent a fairly small absolute number of hits: about 3600 per month, if November 2011 is typical.

If the premise were true that the public really wants access to the primary scientific literature and its only barrier is the pay wall, we would expect a larger fraction of usage by the public of the free articles. To the contrary, we see no increased usage.

Astronomy is a popular subject with the public. If the premise were true that the public wants to access the primary literature *at all*, we would expect to see much higher rates of activity by an interested public, especially in comparison to the rather tiny population of professional astronomers. As an independent indicator of the public's interest, we might presume that the number of pay-per-view acquisitions of articles is a reasonable proxy. IOP processes fewer than 10 per month for the AAS journals. This also suggests a negligible interest by the public in the primary literature for astronomy.

It appears that neither of these premises is valid for the discipline of astronomy. Rather, we contend that these goals are well achieved through channels that are far more accessible and understandable than the scholarly literature.

## References

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4. <http://orcid.org/>
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9. <http://www.adsabs.harvard.edu/>

Luke T. Russell

National Legislative Issues Coordinator

University of Missouri Graduate and Professional Council

Columbia, MO

**Background:** The University of Missouri Graduate Professional Council is the official student government for all graduate, professional, and post-baccalaureate students at the University of Missouri (MU) in Columbia, Missouri. Since 1982, it has represented all the departments of the Graduate School and the schools of Business, Public Affairs (previously Public Administration), Law, Medicine and Veterinary Medicine. In total, GPC represents approximately 7,800 graduate and professional students who will compose the next generation of lawyers, doctors, researchers, entrepreneurs, innovators, and business leaders both in Missouri and across the United States.

The University of Missouri Graduate and Professional Council is a strong supporter of public access policies because we believe that our future as academics, professionals, and citizens is strongly interrelated to the dissemination of information via the Internet and the right to access such information. Graduate and professional students at the University of Missouri currently do not have access to all the scholarly research they need to pursue their education, research, and career goals.

**Comment 1: Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the**

**productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

Many graduate and professional students at the University of Missouri are already funded by federal dollars either directly through federal loans, or indirectly through USDA, NSF, NIH, or other federal agency grants. The skills and talents that our graduate and professional students develop are reliant upon having access to the most recent and up-to-date knowledge generated in their field.

Without access to the most up to date research the state-of-the art skills and training that both the federal government and state of Missouri have invested in may be dulled. This is an especially likely outcome given the currently poor state of the United States economy and job market. Expanding the public's access to cutting-edge research will help graduate and professional students to keep their skills honed and allow them to develop new innovations and industries both while they are still students, and after graduation. It is today's graduate and professional students in the humanities, arts, biological/health sciences, social sciences, engineering and computer sciences that will develop and found the Fortune 500 companies of the next century. Open access can help these new job-creators and job-holders to get their ideas and companies into the marketplace.

**Comment 2: What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

Many publicly funded publications are already available freely in University repositories, where faculty may be encouraged to store pre-published versions of their manuscripts, or on federal agency and personal websites. The University of Missouri has contributed a sizable body of published research articles to the NIH PubMed collection. Developing an open-access policy could move these databases and archives to a more easily searchable and centralized location similar to the current PubMed and Google scholar databases.

Developing such a database without infringing on copyright could best be accomplished by ensuring that federally funded research be required to publish their findings through appropriate Creative Commons CC-BY licenses. High impact journals will always have the need and desire to publish high quality articles and research in order to keep their journals relevant. Researchers

and scientists will continue to maintain their need to publish in high impact journals in order to remain relevant in their fields and ensure their knowledge is widely disseminated. Requiring the use of Creative Common CC-BY licenses would allow publishers and scientists to continue to publish the highest quality articles in the highest impact academic journals while still allowing for appropriate and legal dissemination of these works.

**Comment 3: What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

and

**Comment 4: Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

Long-term stewardship would be best guaranteed by the hosting of databases by government agencies. The NSF, NIH, USDA, and other government institutions are the most appropriate steward to ensure that publicly funded articles are permanently preserved, and made both accessible and usable by the general public. The hosting of such articles in a centralized database would best enable innovative companies and individuals to develop new services and companies. In order to accomplish this wide availability - approved repositories that meet conditions for public accessibility, use rights, interoperability, and long-term preservation of articles could be maintained by third-parties and innovative public/private partnerships.

**Comment 8: What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

Ideally, the sooner students can have access to the most recent peer reviewed research and publications the more likely they will be able to push their fields even further as they develop new technologies and innovations in their final projects, theses, and dissertations. The average semester lasts roughly 4 months, and an embargo could result in replication of old projects, rather than the continuous growth and development that could have occurred had such information been previously available.

With that in mind, a hard stop date between 0-12 months would likely be the most appropriate compromise. Journals in a wide variety of disciplines, ranging from the American Heart Association, to the Journal of Social Cognition and Affective Neuroscience already allow for their works to become publically available within a year after publication through services such as those on [highwire.stanford.edu](http://highwire.stanford.edu) without seeing harmful affects on publishers bottom-line.

Open access will be key to creating a more informed, innovative, and prosperous American society and the University of Missouri Graduate and Professional Council strongly encourages the adoption of a wide-ranging federal policy for allowing open access to publically funded research.

Sincerely,

Luke T. Russell  
GPC - National Issues Coordinator  
University of Missouri-Columbia

To whom it may concern:

I recently heard that the US government is considering doing away with the open access model put in place several years ago, requiring federally-funded publications to be deposited into pubmed central within 12 months of publication. This repository of open access articles is crucial to our competitiveness. There should not be significant worry of other nations picking up US-generated data and outcompeting the US. All else equal, greater funding will determine the winner in research output (comparing countries). The US still has the greatest funding for biomedical research. We want to keep the US competitive, so please do not curtail the open access model.

If you limit the access to this information, the translation of basic research to cures will be significantly delayed, adding costs to health care. If the current model is reversed tax payers' dollars will be wasted in numerous ways including but not limited to: unnecessary duplication of studies due to insufficient knowledge of what has been published, slower validations and just as important invalidations of existing research, and certainly a wasteful increase of researchers' time searching for information (papers which could have been quickly obtained over pubmed central) instead of testing hypotheses and doing experiments in the public's benefit! In the field of medical diagnostics in which I work, the pace is swift for improved technologies and the exact details of studies (provided through the published paper) are needed in order to make technological improvements in the field of molecular diagnostics (a rapidly growing and cost-saving subset of health care technology field).

As in the "time value of money" it is more important to have information now, than in the future, and will lead to better returns of NIH and NSF-funded research. In a time where expanding research funding is very difficult for the US to do, let's certainly not decrease the efficiency of each dollar spent on research.

Sincerely,

Cameron Gundry, M. Sci.  
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**Ref: FR Doc. 2011 – 28623 (Filed 11-3-11)**

**Date:** January 11, 2012

**To:** The Task Force on Public Access to Scholarly Publications,  
of the U.S. Office of Science and Technology Policy (OSTP)

**From:** The Poultry Science Association, Champaign, IL, USA  
(email: psa@poultryscience.org)

**Subject:** Public Access RFI - General Comments from the Poultry Science  
Association in response to the OSTP's Request for Information from  
"non-Federal stakeholders" on the implementation of Sect. 103 of the  
America COMPETES Reauthorization Act of 2010.

These comments are submitted on behalf of The Poultry Science Association (PSA), a non-profit, professional society of more than 1100 poultry scientists, founded in 1908 and committed to the discovery, dissemination and application of poultry-related scientific information. PSA is the owner and publisher of two peer-reviewed scientific journals, Poultry Science© and Journal of Applied Poultry Research©, with Poultry Science© having the highest impact factor of any journal dedicated to poultry research.

**Comment on RFI Question #6:**

As to the question of "maximize(ing) the benefit of public access policies to U.S. taxpayers, and their investment in peer-reviewed literature, while minimizing burden and costs for stakeholders..." we would put forth the following comments for your consideration.

First, we would clarify that U.S. taxpayer investment in poultry science research is generally limited to the funding of the research process, itself, and either does not or does not sufficiently cover the entire cost of publication and distribution of the peer-reviewed literature containing the findings of that research effort. For the past 100 plus years, PSA, through its journal subscriptions and nominal page printing charges, has been able to provide for the low-cost publication and distribution, worldwide, of poultry science research in a manner that is second to none. Public Access, as defined, could severely limit, if not eliminate, the value of journal subscriptions and therein the revenues previously used to support the publication process. With any decline in subscription revenues, additional costs would be transferred to the researcher, their institution and/or their funding source(s) (i.e. the "stakeholders"). With much of our published research done by academic institutions, this ultimately transfers the

cost burden back to the Federal and/or State taxpayer, in one form or another, which we cannot perceive as a benefit to the taxpayer, nor in any way “minimizing burden and costs for stakeholders”.

Should the additional publication costs transfer back to the stakeholder as a result of declining subscription values, the funds available for actually conducting research will be decreased to the extent that publication costs are also being drawn from a finite pool of taxpayer-funded grant dollars. This not only negatively impacts the return on the taxpayer research investment, but it threatens the advancement of the sciences, as high-value research dollars are diverted to publication costs. If Public Access can be controlled such that subscription values can be maintained, any such diversion of research dollars can be minimized or avoided all together.

Much of our agricultural research is not funded in total by Federal research grants, but rather is conducted at principally State-funded Agricultural Experiment Stations and/or with private sector research dollars. Again, any negative revenue impacts of Public Access will ultimately impact the U.S. taxpayer at either the level of State taxation or the cost of goods produced and sold to the consumer by the private sector. As previously mentioned for Federal-funded research, added publication costs stand to materially impact the research dollars available for funding of State and private sector research.

Finally, we are concerned that Public Access, and its likelihood of publishing cost redistribution, might ultimately impact the peer-review process, itself. Peer review is the critical differentiator in scientific research and it is currently conducted on a volunteer basis by those whose interests are solely in the advancement of the sciences. There is a downside risk that shifting additional publication costs to scientists and institutions might negate the incentive of the peer reviewer to add their value gratis, as they see themselves having to pay their publication costs out of limited budgets, rather than sharing in a common burden of common good.

**Comment on RFI Question #8:**

As to the question of “appropriate embargo period after publication before the public is granted free access ...”, we would put forth the following for your consideration.

Based upon PSA’s own experience, we would propose a twelve (12) month embargo on peer-reviewed journal publications of at least the biological sciences. PSA currently provides free public access to our journal articles after 12 months from the date of publication. We believe this time period to be reasonably short for ready access by all non-subscription users who would have use of such scientific data and, yet, 12 months has proven to be sufficiently long to recapture the vast majority of our publication investment.

**Closing comments:**

As an Association of professional scientists, both within the public and private sectors, our principal objective remains the advancement of the sciences. As such, we are not opposed to some reasonable manner of controlled Public Access. We understand the need to have access to peer-reviewed scientific information, but contend that most of those who can value this information in its scientific format are not currently restricted in their reasonable access to such. A reasonable embargo period prior to free public access would seem to be a manageable means to allow publishers to recapture publications costs and not disrupt a well-proven scientific process that for over 100 years has assured the taxpayer of the highest possible return on their research investments.

If Public Access eventually does proceed in a manner that negatively impacts the value of subscriptions, we would propose that additional provision for publication funding be made available to financially support this most critical portion of the scientific research process, thus not detracting from its research endeavors.

Respectfully submitted for your consideration:

Michael J. Wineland, Ph.D.  
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**Subject: RFI: Public Access to Peer-Reviewed Scholarly Publications  
Resulting From Federally Funded Research**

**Date:** January 11, 2012 8:03:26 PM EST

Dear Science and Technology Policy Office,

I'll begin by quoting a letter with the appropriate sentiment which was written by Dr. Mike Taylor:

"Thank you for extending the deadline for comments on Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research. The Research Works Act has only very recently come to the notice of scientists, and it is because of this extraordinary proposal that it is now apparent to us that we need to reaffirm what we thought was settled: that OF COURSE scientific work funded by the public should be freely accessible to the public. I do not understand how this can even be a matter for discussion. The public pays: the public should benefit in every way possible.

The language in the RWA is highly misleading, attributing to publishers far more input into the scientific process than they really have. The truth is that scientists (often funded by public money) provide the underlying research, the writing and the figure preparation that result in a manuscript submitted for publication. Other scientists then provide the editorial services and (contra publishers' claims, as can be easily verified) the peer review. Publishers' contributions are limited essentially to typesetting, the provision of web hosting, and sometimes a very limited amount of compensation for senior editors only (usually not the handling editors who actually deal with authors' works). The notion that such a minor contribution should suffice to hand publishers, rather than the public, the right to determine how, where and under what regime the resulting works are disseminated, is ludicrous."

This is a blatant attempt to rob the public of a service and property which is by rights theirs to access freely. The RWA will not go forward. It must be stopped and measures need to be put in place to prevent Elsevier and similarly-minded groups from attempting such obviously shameless coups on what is not and will never be theirs to own in the future.

Sincerely,  
Lee Hall  
Paleontologist  
SWCA Environmental Consultants



**From:** Marc Lipsitch <mlipsitc@hsph.harvard.edu>  
**Subject:** comment on public access policy  
**Date:** January 11, 2012 8:40:03 PM EST  
**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

The current system of access to federally funded research through a one-year embargo on peer-reviewed scholarly publications works reasonably well, though I think the embargo period should be shorter. For most research, it ensures that a wide spectrum of readers can access it in a timely fashion, while preserving some profitability for journals.

It is not my view that maintaining the profitability of for-profit journals should be a goal of the federal government. Many analyses (eg by Bergstrom and Bergstrom) have found that for-profit journals tend to be more expensive per unit of value (article, citation, etc) than not-for-profit ones. The journal industry is unique in that the content is research paid for by largely by taxpayers, written by scientists, reviewed usually without compensation by other (taxpayer-supported) scientists, and often paid for (in the form of page charges) by the scientists' grants. Then the overhead from grants goes to pay for subscriptions. As Bergstrom and Bergstrom have argued

<http://www.nature.com/nature/focus/accessdebate/22.html> , it is as if General Motors were paid both by car purchasers and by steel manufacturers; I would add, in this case it is as if the funding for the purchasers and steelmakers to do so came from the taxpayers.

Taxpayers fund the research and should get the benefits. The current system is not anti-journal publisher, but rather simply says if the taxpayers fund the research, they should be able to obtain it for free. If journals want to have another model, they are welcome to do so for non-taxpayer-sponsored research. Or

they can offer additional content (news, job postings, etc) that make money while providing taxpayer-funded content to gain attention. But we should not be engaging in industrial policy to prop up journals by providing them taxpayer-subsidized content (and reviewing labor) to make sure they make a tidy profit.

My own recommendation would be to make an embargo period of one month, so that effectively federally funded research is immediately available to all. This would indeed likely lead to the demise of some journals. But not to the main ones that add value (Science, Nature, Lancet, etc.) because people want to see the latest and most important work immediately; and if the obscure, rarely cited journals declined, it is not clear what is lost. That is, many of the queries in the RFI assume that there is great societal value in maintaining the large number of journals we have at present. I don't think this has been demonstrated. Physics does quite well with ArXiv as their main source of information, which is not a journal and doesn't make money. If we as taxpayers are going to subsidize journal publishers, it is their burden to show that the social value exceeds the cost paid.

--Marc Lipsitch, Professor of Epidemiology, Harvard School of Public Health, Boston, MA

Editorial board member: PLoS Medicine, Epidemiology, American Journal of Epidemiology, Epidemics

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**Subject: Re: HR 3699, the Research Works Act**

**Date:** January 11, 2012 9:52:03 PM EST

Dear Sirs, Madams, and Mr. President,

Reps. Maloney and Issa have recently submitted a bill (HR 3699, the Research Works Act, that would prevent compliance with the NIH Public Access Policy (<http://www.gpo.gov/fdsys/pkg/PLAW-110publ161/pdf/PLAW-110publ161.pdf>), which states:

"The NIH Public Access Policy implements Division G, Title II, Section 218 of PL 110-161 (Consolidated Appropriations Act, 2008). The law states:

'The Director of the National Institutes of Health shall require that all investigators funded by the NIH submit or have submitted for them to the National Library of Medicine's PubMed Central an electronic version of their final, peer-reviewed manuscripts upon acceptance for publication, to be made publicly available no later than 12 months after the official date of publication: Provided, That the NIH shall implement the public access policy in a manner consistent with copyright law.'"

The NIH enacted this policy to allow the free availability of medical and environmental data for the purposes of promoting and developing research, including and especially the promoting of treatments for a variety of diseases including cancers, AIDS, and so forth. This policy, sadly, comes against a right of publishing houses to raise fees for the access to their works, including but especially digital copies of papers published within their journals. The Association of American Publishers is a prominent support of HR 3699, has opposed enforcement of the NIH Public Access Policy, ostensibly on the grounds that it infringes on their ability to make money, while the policy itself allows a 1 year (12 month) grace period between initial publication and the requirement that the works be made public in PubMed Central.

It is implicit that the professional and medial public gain clarification of this conflict between what is clear business right of profit and the public need for openly available data. Public interest, as well as public health, is benefited immensely by the NIH Public Access Policy, while the Research Works Act would seek to close a door of access for scientists to use popular and effective journals to disseminate their publications to a wide audience.

With all due respect,

Cheers,

Jaime A. Headden

The Bite Stuff (site v2)

<http://qilong.wordpress.com/>

"Innocent, unbiased observation is a myth." --- P.B. Medawar (1969)

"Ever since man first left his cave and met a stranger with a different language and a new way of looking at things, the human race has had a dream: to kill him, so we don't have to learn his language or his new way of looking at things." --- Zapp Brannigan (Beast With a Billion Backs)

**From:** Julia Mortyakova <mortyakova@gmail.com>  
**Subject:** RFI -Public Access to Peer Reviewed Publications Resulting from Federally Funded Research  
**Date:** January 11, 2012 11:41:13 PM EST  
**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

Assigned ID #]

[Assigned Entry date]

Name/Email - Julia Mortyakova, [mortyakova@gmail.com](mailto:mortyakova@gmail.com)

Affiliation/Organization - – Alcorn State University

City, State – Natchez, MS

#### Comment 1

The 2008 National Institutes of Health policy in this area could serve as a model for other federal agencies in establishing a national archive, such as PubMed Central and making the information resulting from federally funded research available to the public who paid for it with their tax dollars.

During a recent hearing on “Public Access to Federally-Funded Research” in the U.S. House of Representatives Elliott Maxwell from the Committee for Economic Development said that having a “greater openness is critical for increasing innovation and economic growth” and broadening the impact of science.

The NIH repository only costs about \$3.5 to \$ 4 million to maintain out of its overall \$30 billion budget and the NIH has stated that they will help other agencies establish their own similar repositories.

In order to reach a wide audience of stakeholders, access should be open via an online repository on the internet.

#### Comment 2

The authors should retain the rights to their works.

#### Comment 3

Having a centralized approach is important for archiving purposes and also for easy access for the public.

#### Comment 4

Comment 5

Comment 6

Federal agencies that fund science can maximize the benefit of public access policies to U.S. taxpayers through the establishment of online repositories similar to PubMed Central. As a patient myself living in rural Mississippi, I find the research articles on PubMed Central invaluable to finding a cure for my health problems.

Comment 7

Book chapters should also be made available to the public.

Comment 8

**From:** Alisha Upwall  
**Subject:** open access for publicly-funded research  
**Date:** January 11, 2012 11:59:22 PM EST  
**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

As a taxpayer, I believe that all publicly-funded research should be readily available to the general public. I don't believe private organizations should be the gatekeepers of such vital information--it curtails the advancement of science, education, and medicine.

Alisha Upwall  
West Valley City, Utah

# Public access to USA Federally funded scholarly publications (Response to US OSTP RFI)

*Arthur Sale, PhD*

*Emeritus Professor of Computer Science, University of Tasmania, Australia*

*Formerly Professor of Computing Research 2002-200), Pro Vice-Chancellor 1993-1999,  
Chair of Academic Senate 1990, Professor of Computer Science 1974-93.*

*National Vice-President, Australian Computer Society 1979, 1980 and 1983. Chair  
Association of Professors of Computer Science 1985-87, etc. ANCAAC Prize 2002, Lifetime  
Award for contribution to ICT, etc.*

*[Contact details at end]*

## Question 1

*'Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise.'*

Yes, there are steps that agencies can take. Publishers assert rights over the published forms of articles, which are probably not justifiable (see later), but also often over-ride the dubious claim by requiring transfer of copyright, or enforce restrictive monopoly practices such as embargo periods. As agencies fund the research, any requirements they place on the grantees regarding publications emerging from funded research constitutes a prior legal requirement, binding the grantee and making it illegal for them to sign away these rights.

The basic step any government agency can take is to make it a condition of accepting a grant offer that:

1. Every peer-reviewed publication arising from the grant shall be made open access (in other words freely downloadable to and readable by any person with access to the

Internet and appropriate display software) not later than one month after the date of publication.

2. Acceptable forms of open access include:
  - (a) Publishing in a journal which provides open access at publication time.
  - (b) Depositing the *Version of Record* of the publication (=VoR; NISO terminology) in a repository and marking it open access (it does not matter if the repository is institutional though this is preferable, or a subject repository).
  - (c) Depositing the Version of Record of the publication in a social networking tool such as Mendeley and making it public (open access).
3. When assigning a licence to publish to a publisher, the publisher shall be informed by the grantee of the prior legal constraint agreed to by the grantee. Failure to do so will not invalidate the requirement.
4. It shall be a requirement that in the final acquittal of the grant, the grantee shall list all publications arising from the grant together with their Internet URL (or acceptable alternative such as a DOI) and the date on which it was made open access.

The intention is to provide low-cost open access, with freedom of choice of open access route by the grantee. Spot audits should be carried out on the final acquittal to ensure compliance, and grantees should be informed of this at the time of accepting the grant. Responsibility for these audits could be delegated to the grantees' institutions with appropriate reporting. There should be consequences for non-compliance.

There is one further thing that could be done, though it is not essential. Under present conditions, route 2(a) is limited by the uneven playing field *as seen by the researcher*. As many open access journals charge reader-side fees, authors see this as a charge for a service they have always got for free. They do not see the economics of publishing from a wider perspective. Of course, when the majority of journals have become open access, the institutional funds at present used for subscriptions can be diverted to reader-side fees, but in the meantime, the growth rate of open access journals is limited to be so slow that some authors have predicted 2035 as the year in which this situation may be achieved. The projected date and the assumptions are disputable, but this highlights the problem.

The playing field may be levelled, and the growth in the number of open access journals accelerated, by simply allocating (at the agency level) a small amount of grant funds for paying reader-side fees, capped at say \$1,500 per publication to prevent exploitation. These funds might then be allocated to grantees' institutions according to available data, for local administration and disbursement. The advantage of this is that the decision is made at a level where the total cost of the publishing system is evident and used in policy-making. Funds would not be available for so-called 'hybrid' practices which are generally exorbitantly priced, and offer no long term benefit. Any such system of subsidizing researchers for author-side fees should be regarded as strictly transitional and reviewed after say three years.

Routes 2(b) via institutional repositories, and route 2(c) through social networking apps appear free to the researcher anyway. Route 2(b) using a subject repository may be free but the funding responsibility is unclear, but it is undesirable to encourage subject repositories since they create and rigidify silos. Multi-disciplinary research would be hindered.

## Question 2

*‘What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?’*

The answer to question 1 addresses all these questions, except the intellectual property rights of publishers. Where exactly this idea arose that publishers created an intellectual property right in an article though copy-editing is not clear. It may be at the time that the Internet and pdf files began to impinge on journal publishers. Intrinsic intellectual property rights from copy-editing are not the norm in the book publishing industry, where I can look at book after book (fiction, non-fiction or textbook) and find on the title page the copyright attributed to the author or authors. If proof-reading, editing, pagination, binding etc do not create intellectual property rights in books, why should they in the case of scholarly journal publishers who exert far smaller effort, make far fewer creative decisions, and take far less risk than a book publisher?

A competent defence lawyer should be able to cite the above and other examples (such as the non-acquisition of IP by typists (in the past) and in-house copy-editors should this be challenged in court. The only cases which are exceptions, and which can be seen in the book publishing industry, are when a publisher or another person is commissioned to add photographs or illustrations to a text-based manuscript (for example see Richard Dawkins ‘Climbing Mount Improbable’. Such instances would be rare in the scholarly publishing industry as the authors supply diagrams, photographs and illustrations in the manuscript. They would arise only in the populist science press such as *Scientific American*, *American Scientist*, *National Geographic*, etc, which are assumed to be outside the definition of ‘publication’ in this RFI.

If intrinsic intellectual property rights of publishers do not exist, their protection is not necessary. If and when authors transfer some copyright or a licence to a publisher, the Copyright Law is perfectly adequate to deal with the acquired rights. The proposed action (see Question 1) simply limits the rights that authors may dispose of, so as to preserve the public benefit of open access.

No steps are necessary.

## Question 3

*‘What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?’*

This question involves some duplication, but this will be supplied (less succinctly) so the response stands alone. To the two categories mentioned I have added a third: Personal Repositories, which might be considered a limiting case of decentralized repositories, but has special and different consequences. I do not see this question as central to the RFI. The task force should not be setting up repositories or writing software.

### ***Decentralized Repositories***

This term is interpreted to mean institutional repositories, which are not subject-specific. It includes the possibility of a consortium of institutions sharing a repository. Subject-based searches require tools which are readily available.

#### **Pro**

- The institution has the legal power to compel its employees (especially researchers) to deposit materials produced by them during the period of employment in its own repository (a 'mandate'). This goes beyond the scope of agency control.
- The institution also has the legal power to compel its graduate students to deposit materials produced by them during their enrolment in its own repository. This is also outside agency control.
- In principle, this implies that institutions can ensure the capture of born-digital versions of all publications produced by their researchers and graduate students. It does *not* mean that all such materials will be made open access. This can potentially capture close to 100% of publications in a born-digital form, not just the Federal funded publications.
- The number of repositories is not large in Internet terms, at most the number of research institutions in the USA.
- Internet search requires use of global search tools which aggregate the contents of all websites or repositories known to them. Examples include Google Scholar, Scirus and BASE.
- Preservation of records is the responsibility of the institution, and will be carried out with varying degrees of effectiveness depending on the institution.

#### **Con**

- Most researchers are not able to keep copies of all their publications in one repository, as they move institutions.
- There are no tools for discovering new decentralized repositories, not for new repositories to advertise themselves. There are voluntary directories of varying effectiveness.
- The cost of running decentralized repositories is a charge on the institutions. This charge is not large, but it is also not zero.
- The cost of maintaining a mandated deposit regime is a cost to the institutions.
- Researchers identify first with their careers, then with their disciplines, and with their employers last. This affects the attitude of researchers to decentralized repositories.

## *Centralized Repositories*

This term is interpreted to mean repositories which are limited to a single subject, and which hold all the works supported by an agency, while perhaps holding others.

### Pro

- Many [older] researchers are happy with discipline-based repositories, as they conform more to their pre-Internet ideas. (These ideas are no longer valid and are based on discovery limitations of the print era.)
- There is a small chance of subject-specific tools, perhaps exemplified by searchers for gene names (biology), or crystallographic structures (chemistry). These are relatively little used and can be provided on gateways instead.

### Con

- Centralized repositories cast discipline boundaries into concrete and reinforce silos. (Centralized gateways harvesting from decentralized repositories do not, at least to the same extent. They can always be paralleled by another gateway with a different admission strategy.)
- Multi-disciplinary research is inhibited. (Gateways based on discipline repositories will be so broad as to be no better than global search.)
- The responsibility for running the repository is unclear. It may well result in claims for Federal funding.
- Access by international researchers to Federally funded centralized repositories would be unclear.
- There are actually very few centralized repositories, so their adoption as a model involves high set-up costs. Agencies may not be prepared to fund them or guarantee continuance.

## *Personal Repositories*

This term is interpreted to mean software that allows a researcher to create a personal repository of an individual corpus of publications, such as Mendeley. This can be considered to be a limiting case of decentralization, but has special features since it is allied to social networking. I have called it the Titanium Road to OA.

### Pro

- Personal repositories utilize the phenomenon of the social media such as Facebook, YouTube, Twitter, etc. Mendeley is cited here as the 'killer app', but may be superseded by an even better product under market forces, or by a group of apps (like browsers). They attract high numbers of participants, without compulsion.
- Preliminary data show that the number of researchers in the world is around 3.6M, while Mendeley currently claims 1.4M users. This is about 40% penetration, allowing for some non-researchers to be Mendeley users.
- The annual growth rate in usage is estimated at between 37% and 74% pa.

- Open Access publications on personal repositories is no harder to harvest and aggregate than institutional repositories. The numbers of sites are perhaps 3M instead of 20k, but this is easily do-able in current technology.
- It is relatively easy for publications to be copied from repositories to social apps.
- It is a bit more difficult to migrate publications from social apps to repositories, though one trial is under way (DURA). Full synchronization is probably not wanted by the repositories, since researchers move institutions, and the institutions do not want all their prior publications.
- Social apps may result in multiple copies of a publication becoming OA. This is a net benefit to preservation probability.

## Con

- Social apps distract attention from the other two routes to open access (Gold and Green)
- This route poses a bigger risk to the recalcitrant toll-access publishers than any other. Their move to a different business model (for example author-pays) is accelerated. This could be considered as a benefit.
- Discovery of relevant publications is perhaps slightly more difficult, but only slightly.

The adoption of Mendeley has resulted in publications being made OA at a rate at least equal to that of a departmental mandate. It is not known yet, and is a matter of research, to what extent Mendeley users are a disjoint or overlapping set from those providing OA through other routes.

## ***Final Two Questions***

There *no* compelling reasons why Federal agencies should maintain custody of all published content [funded by them]. There *are* compelling reasons for them *not* being involved. Obviously taking on such a task involves the expenditure of taxpayer funds, and it creates unnecessary silos, not only between disciplines, but within disciplines. This inhibits multi-disciplinary research, and research into new fields.

The best way to ensure long-term survival of content is to distribute multiple copies of the document across the Internet. Not to excess, but adequately. That is how the scientific literature of the past (and such ancient and medieval manuscripts as survived) did. There is scope for some Federal funds to be applied to making interoperability between open access journals, decentralized repositories, centralized repositories, and personal repositories as easy as possible, as well as strongly recommending that all of these adhere to agreed standards.

This implies that if an open-access journal becomes bankrupt and perchance its online presence is destroyed, its footprint is still largely or completely visible on the Internet. Current search engines can easily deal with duplicates, and it will only become easier and easier. If any repository closes (or its host institution), the content will survive. Personal repositories may not long survive the death of their owner, but the Library of Congress may wish to advise on whether any action should be taken in respect of them.

There is one facet of this advice which should be drawn out. It would be desirable for *all* copies of a document online to have the same ancestor. There can be no doubt that this needs to be the *Version of Record*, or in other words the version that was published, as an electronic file. Its form may be xml, html, pdf or another form – it does not matter much to ICT specialists. It is undesirable for multiple versions to be simultaneously online (such as a *Draft Manuscript* or the *Accepted Manuscript*) unless they are attached to the primary document as prior versions and clearly identified as such. In some cases, authors may want to attach a *Long Version* or an *Extended Version* (not NISO terms).

## Question 4

*‘Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?’*

I submit three new cooperations:

1. Funding or supporting gateway systems which provide access to aggregations of the data stored in the cloud, but perhaps provide discipline, subject or emerging interest foci. This does not involve migration of data, but search and discovery.
2. Funding or encouraging standardization and interoperability between *all* the forms of open access to scholarly literature (persona; plain html web pages perhaps excluded). See above re creating multiple copies on the internet.
3. Supporting a Library of Congress program to monitor and address what to do when the number of open access copies of a federally funded scholarly publication on the Internet drops close to extinction (say one copy). There might be a Repository of Last Resort, for example. At the start, toll-access journals with the usual monopolistic practices will need to be treated as special cases, because they may only permit single (or no) copies to be open access online (theirs), against the public interest.

## Question 5

*‘What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?’*

This question is trivial. The standards for metadata already exist, though there are arguments at the margin. All that is needed is to pull together a common core standard. If interoperability of all sources is a key part of the outcome of this RFI, compliance will follow swiftly.

As to discovery, this is largely both trivial and an insoluble problem. Search facilities like Google Scholar and Scirus make a better fist of discovery than any publisher, agency or society can hope to achieve. Let them get on with the task. Precision *vs* coverage is an

insoluble problem, though helped by current research by computer scientists into analysing personal needs and predicting useful outcomes. Again, nothing is needed from the Federal government, apart from its usual research grants.

If one knows the citation of an article it is of course totally trivial to find it on the Internet if it exists. Simply search for the title as a literal string, and search for an author with an unusual name, or several authors. The result is almost guaranteed to be definitive.

Metadata are not very important in this discovery process. They mainly help gateways and other secondary services, and automatic metadata extraction is almost as good (if not better than) librarian custom metadata.

## Question 6

*'How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?'*

This is a strange question. It is really two questions because the link between the halves is tenuous. The maximization is easy: maximize free, open access worldwide, thereby both encouraging maximization of access to US residents, and international collaborations. Also use this policy as a lever to get other countries to reciprocate. Australia should be easy, if a little pressure is applied, as a long-standing ally of the USA.

The minimization is addressed in the rest of this response to the RFI. Awardee institutions have minimal obligations but receive research funding anyway; scientists have minimal burdens; publishers are impacted but mainly to make them give up monopoly practices and change their business model to a sustainable one (sooner rather than later for US-reliant publishers one hopes), Federal agencies have minimal obligations, and libraries simply absorb the changing world into their practices.

There is no need for any special action.

## Question 7

*'Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?'*

*Articles* in conferences should certainly be included, because they are key forms of publications in ICT (information and communication technologies) which is a key driver in industrial growth (including genetics and biological science). Conference *proceedings*, as a collection, need not be included as a result of this RFI round. They are too easy to confuse with books.

Book chapters and conference proceeding should perhaps be left for a later time, after the journal and conference article open access is firmly embedded in researcher and publisher

consciousness. Books themselves often involve royalties (which scientific articles don't) in exchange for publication rights.

## Question 8

*'What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?'*

Simple question, though an irrelevant one. Publishers have no rights to set an embargo period unless researchers assign such a right to the publisher. The optimum period is zero months.

Each extra week embargo means lost impact of the research and damage to taxpayer return. This is evidenced by the citation data, which are themselves simply lagging indicators of impact.

There are no arguments for different discipline embargo periods. Zero means exactly zero days after publication and zero times any factor is still zero.

It should be emphasized that publishers have no rights to set embargo periods, except by exercising bullying power and pseudo-legal claims, unless researchers (the basic copyright owners) assign them these rights. They should not be allowed to, through the prior legal status of the grant acceptance contract.

## Any Other Matter

*'Please identify any other items the Task Force might consider for Federal policies related to public access to peer-reviewed scholarly publications resulting from federally supported research.'*

### ***Publisher rights***

I have referred to the opinion that publishers have no *intrinsic* legal claim to any rights over journal articles arising from copy-editing or preparation for publishing. It is worth teasing this out a bit more.

The institutional mandate idea has been publicized as ID/OA: In other words 'Immediate Deposit, Open Access when possible'. This attitude is based on not confronting publishers with their claim to implicit copyrights, and requires a researcher to immediately deposit their *Accepted Manuscript* (the final pre-publication draft), and to make it open access.

Unfortunately, while readers of articles are happy to read an AM instead of a VoR, researchers are not happy to deposit an AM and frequently do not, preferring to deposit a VoR and make it Restricted Access.

As suggested in this submission, the journal publishers' claim to intrinsic copyrights derived from their copyediting and publishing activities are spurious. This is why the publisher lobby have sought to enact a US law: *Research Works Act (H.R.3699)* to create such a new right. This is totally unjustifiable. The proposed Act should be rejected; it is unlikely to be accepted by other countries as it is contrary to the common copyright laws of the world, based on the Berne Convention.

### ***Researcher attitudes***

It is clear that prior to publication, most researchers are chary of confronting publishers with any quibbles, and they sign whatever they are presented with as a contractual agreement. Researchers are eager for their work to be published, whatever that means. They have little knowledge of law, in general, nor do they have agents who are.

After publication, the situation changes. Researchers have always regarded the article they authored as 'theirs', and they treat the Version-of-Record as theirs also. Legally, they are correct, unless they signed away all their rights. If anyone asks for a copy of their publication, they dispense the VoR as a matter of routine, whether in times past this was a reprint or a photocopy, or now it is a pdf file. This applies across the spectrum of disciplines, though there are some slight discipline variations.

In addition, researchers treat publications of which they are not an author as in the public domain, once they have them in their hand. It is the VoR that they identify as the publication. Seldom does a week go by on any of the mailing lists to which I subscribe that I do not receive something like the following (de-identified, but not otherwise edited):

Hi there.

Someone can help me to get a copy of the following paper?:

A rapid and inexpensive microplate assay for the enzymatic determination of glucose, fructose, sucrose, L-malate and citrate in tomato (*Lycopersicon esculentum*) extracts and in orange juice Joyce S. Velterop, Femke Vos  
Phytochemical Analysis Volume 12, Issue 5, pages 299-304, September/October 2001  
DOI: 10.1002/pca.598

Thanks in advance

Followed the next day by the post:

Thank you so much!!!

This week I received notice of at least three such exchanges. It is clear that as far as researchers are concerned, the copyright law might as well not be enacted. Scholarly articles that they or others wrote are considered to be in the public domain. Publishers are acquiescent in this attitude, and do not contest any transfers of this kind, though they must be aware of them.

## ***Minimal intervention***

This submission suggests a minimal intervention route for the Task Force.

The proposed policy simply interposes a condition of accepting a grant (that it be made OA and will be audited) and leaves the route of achieving this to the grantee and their institution.

- Market forces can determine which form of OA is effective or dominant. It does not matter, as long as the article is OA. This is consistent with general US attitudes.
- Every researcher has at least one free solution, being the social network access exemplified by Mendeley.
- The articles on the Internet are all of the canonic form of the published version, eliminating confusion, and fitting with researcher wishes.
- Publisher claims to copyright which are unsustainable are rejected. However, publishers are also provided with market force freedom. It is open to them to transition to open access journals (often author-side fees), or to provide selective (hybrid) OA to publications funded by Federal Government agencies.
- The audit requirements are simple, low cost, and largely devolved to grant-recipient institutions. However, agencies need to enforce penalties for non-compliance (like ineligibility for an institution to receive grants for say three years), which should be easy.
- Publishers and publisher associations should be informed that researchers in receipt of Federal grants are unable to dispose of copyright without securing an immediate open access right for their articles. Agreements signed by the author contrary to this will be invalid. Agencies should be prepared to challenge and contest in a court of law any author agreement which does not comply with the proposed requirement.

Outside these, the open access transition details are left to private enterprise and market forces. Publishers will adapt or adopt new business models. Some may offer free open access routinely to grant recipients (a hybrid model), while others may transition to full open access journals. A minimalist solution of this kind should be highly attractive to US citizens.

## **References**

Few references are quoted, because otherwise they would be voluminous and detract from the submission. However, I offer the following few important references.

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## **Contact Details**

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**From:** Maura Smale  
**Subject: Re: Request for Information: Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research**  
**Date:** January 12, 2012 8:18:49 AM EST  
**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

To the Science and Technology Policy Office,

I am writing in response to the Request for Information about Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research.

I am a faculty member in the library department at NYC College of Technology of the City University of New York. As a faculty member, a librarian, an American, and a global citizen, I strongly believe that the results of scholarly research in all disciplines should be as widely disseminated and shared as possible.

I am outraged by the high subscription prices for academic journals, especially at this time of severe budget constraints for public education. These scholarly publishers do not compensate academics for their work on the articles that are published in the journals and, on top of that, price their subscriptions and articles so outrageously that access to the research is severely limited.

I have personally pledged to only submit the results of my own research to open access journals, and to only contribute my time as a peer reviewer or editor to OA journals. But if I did publish an article in a commercially-published journal, American taxpayers would pay up to 4 times for my research to be published:

1. For my salary as a faculty member at a public college
2. For the grant funding I receive to conduct my research
3. For the peer review and editing donated by scholars at other public institutions
4. And finally, for the subscription to the journal that published my article.

Of course, with tightening budgets across higher education, many libraries

cannot afford to purchase subscriptions to these very expensive scholarly journals. And with individual article charges of upwards of \$25, unaffiliated researchers and the general public cannot get access, either.

Further, I was absolutely dismayed to see the recently proposed Research Works Act (H.R. 3699), and hope that this office considers the rights of US taxpayers to the research that they fund, rather than the academic publishers who have already made such high profits from the work that the scholarly community freely provides.

In conclusion, I support any and all efforts to increase public access to scholarly and research-based information, including but not limited to encouraging open access policies instituted by colleges, universities, and research centers; as well as public access mandates for taxpayer-funded research with as little embargo as possible.

Thank you,  
Maura A. Smale, PhD, MLIS  
Brooklyn, NY

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Maura A. Smale, Ph.D.  
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Ask me about [Open Access!](#)

I would like to thank OSTP and the NSTC for their leadership on ensuring public access to the results of federally-funded scientific research, and for providing the opportunity for the public to comment on how this can best be achieved.

I am a Professor of Microbiology and Molecular Genetics at the University of Vermont (UVM). I run a research lab funded by three grants from the National Institutes of Health (NIH), and I teach undergraduate, graduate and medical students. I am active member of the American Society for Cell Biology (ASCB), and served a 6-year term as the organization's Treasurer. I am currently also on the Board of Directors of Public Library of Science (PLOS), a non-profit open access scientific publisher. Both ASCB and PLOS will be submitting comments separately, so I write to you today as a scientist and educator. I strongly support the approach taken by the NIH to ensuring public access to the biomedical literature, and I encourage the NSTC Task force to recommend extending this framework to other federal research agencies.

I will comment specifically on questions 6 and 8 of the RFI:

***Question #6:*** *How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

*The benefit of public access policies to scientists and educators.* The access problem is real, and is something that my colleagues and I experience on a daily basis. My lab does competitively-funded research on an infectious disease that causes mental retardation, birth defects and death in the U.S. We frequently find that we must “make do” without articles from the scientific literature that would help this research progress. This is due primarily to the cost of journal subscriptions; UVM's budget of ~\$1.5 million for biological/biomedical journals is insufficient to meet the needs of our diverse faculty and staff. Journal prices have risen faster than library budgets for many years, and our libraries find themselves in a constant struggle just to maintain the subscriptions we already have. My research has become increasingly multidisciplinary in recent years, and this has exacerbated my own problems with access: we now collaborate closely with chemists, and I have discovered that access to the chemistry literature is even more restricted than the biomedical literature.

In my role as an educator, I also often find myself teaching my graduate and medical students what I have access to, rather than what they most need to know. For example, in preparing a lecture for medical students on why there is a difference in the incidence of coronary artery disease in women and men, I found I was only able to access about two thirds of the articles I needed to provide my students with all the available information. This is very frustrating as a teacher and does not serve students well.

There are various “workarounds” to the access problem that academics practice, such as emailing authors directly for manuscripts or asking colleagues at other institutions to download copies for them – practices that in some cases violate copyright law. Pay-per-view or interlibrary loan (ILL) are offered by publishers as alternative solutions to the access problem, but these are either prohibitively expensive (\$20-30/article for pay-per-view) or often slow to arrive (days for ILL). Most importantly, all of these workarounds miss a critical aspect of how scientists and educators

use the scientific literature: we browse. It is often impossible to tell from looking at an abstract whether an article contains needed methodological detail or the perfect illustration to make a point to one's students. Workarounds such as those described above are often of no help in the day-to-day work of a scientist: we simply don't know what we're looking for until we find it.

These access barriers handicap research, teaching and public health, and are unacceptable to me as an academic and as a citizen, particularly given the taxpayer investment that funds the research enterprise.

*The burden of public access policies on researchers.* Complying with the current Public Access Policy at the NIH poses little burden to researchers. It takes the average investigator less than 10 minutes (see footnote 1) to upload a manuscript into PubMed Central via the NIH Manuscript Submission System (plus whatever amount of time s/he chooses to spend reviewing the formatted web version before it is posted online.) This is a truly insignificant amount of time compared to what goes into writing the grant application, doing the research and preparing the manuscript for publication. I have deposited my own papers in PubMed Central, and I can attest to how simple and quick the process is. Furthermore, if the author submits to one of the many journals that participate in PubMed Central (2), submission is automatic and proofing is not required. If a government-wide public access policy that follows a similar implementation is enacted, the burden on individual investigators will be minimal.

Negotiating copyright agreements with publishers to allow for public access is unfamiliar territory for most scientists and could represent a burden. However, given the responsibility of institutions in assuring compliance with the NIH Public Access policy, many (including mine [3]) have put together information and boilerplate letters that make this process simple and straightforward. If a widespread mandate were adopted, publishers would also have an incentive to make compliance as easy as possible for their authors, for fear of losing submissions.

*The burden on publishers.* Lengthy access barriers are unnecessary to protect publishers' interests. I know this in part through my six years as Treasurer of the ASCB (2002-2008), publisher of the monthly research journal, *Molecular Biology of the Cell (MBoC)*. The ASCB has provided free access to all of the research articles in *MBoC*, two months after publication, since 2001. The articles are available both on the journal's website and in PubMed Central. Despite an access policy that goes well beyond what the NIH Public Access Policy requires (*i.e.*, *MBoC's* embargo period is two months rather than twelve; 100% of *MBoC's* content is made freely available, not just the fraction supported by NIH funding; and the final peer-reviewed, edited and typeset version is made freely available, not just the author's manuscript), the journal remains a major source of net revenue for the Society.

Many other prestigious and financially successful journals also offer their content for free after periods of time ranging from zero to twelve months (2), providing the best possible data that reasonable access and financial sustainability are not mutually exclusive, even for journals that rely heavily on subscription income. The reason for this is simple: to remain competitive, I as a researcher must have immediate access to the literature that is relevant to my research. My research would suffer greatly if my library were to cancel subscriptions to journals I need based on the rationale that I would have free access to those journals 12, 6 or even 2 months later. Surveys of librarians have shown that free availability of content is not nearly as important a factor in

subscription cancellations as usage (4).

***Question #8:*** *What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research?*

For scientists and researchers, the optimal embargo period is no embargo at all, *i.e.*, a situation in which the results of all federally-funded research is freely available immediately upon publication. Given the abundance of data showing that open access publishing is a viable business model, an argument could be made that all government-funded research should in fact be published in fully open access journals. If an embargo is to be a part of any new policy on public access, it is critical to recognize that the longer the embargo, the less useful the policy becomes to those who need access. The ASCB's experience with *MBoC* suggests that embargo periods as short as two months are possible and plenty of evidence exists (2) that six months is more than sufficient to protect publishers' interests. Thus, the embargo should be as close to zero as possible and no longer than six months.

Again, I thank OSTP and the NSTC for their efforts to improve access to the results of federally-funded research; this will benefit a wide group of stakeholders, and is critically important to researchers and educators such as myself.

(1) [http://publicaccess.nih.gov/submit\\_process.htm](http://publicaccess.nih.gov/submit_process.htm)

(2) <http://www.ncbi.nlm.nih.gov:80/pmc/journals/>

(3) <http://www.uvm.edu/~ospuvm/PublisherLetter.pdf>

(4) *Learned Publishing*, Volume 19, Number 3, July 2006, pp. 226-229(4)

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<http://sbb.uvm.edu/~gward/Welcome.html>

Dr. Karen Cole, Director, and library staff  
Ken Davis, Chair of Faculty Assembly Information Resources Committee, and  
committee members  
January 12, 2011  
Archie Dykes Library of the Health Sciences, University of Kansas Medical  
Center  
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### **Comment 1**

a) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research?

Yes.

1. Agencies can require that the results of all federally funded research be deposited into federal or institutional repositories without restrictions on access within a reasonable amount of time.
2. Agencies can provide financial support for existing and entrepreneurial efforts by publishers, individuals, and researchers in developing or improving innovative tools to mine and analyze publications in a variety of ways. Text analysis, knowledge discovery, and mapping interdisciplinary connections are market opportunities ripe for development and expansion. Open access to content (peer-reviewed article manuscripts, citations, reports, conference proceedings, and data), without subscription paywalls, is critical in order to develop such tools and reap the market rewards. While the following tools apply broadly to scientific literature, a new market could emerge that focuses on tools targeting publications resulting from federally funded research. Some examples include:
  - o the work of Carl T. Bergstrom, Jevin D. West, and Martin Rosvall:<http://chronicle.com/article/Maps-of-Citations-Uncover-New/128938/>
  - o Maps of Science, developed by SciTech Strategies, Inc.: <http://mapofscience.com/index.html>;
  - o the work of Katy Borner of Indiana University: <http://ella.slis.indiana.edu/~katy/>
3. Agencies can support and expand access to peer-reviewed publication data by maintaining their own repositories and providing metadata. For example, PubMed now has over 21 million citations and, particularly since NIH's open access requirement of 2007, provides increasing full-text access to taxpayer-funded research. Citation databases such as PubMed provide enormous datasets but without open access to full text content, potential markets and the entrepreneurial need for new tools will not be fostered. An example of an existing tool that might benefit from additional expansion and financial support is [Science.gov](http://www.science.gov) -

<http://www.science.gov/>. Many of the participating agencies in this endeavor could use this tool to make available the final research reports resulting from research the agencies have funded.

b) How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise?

One example of a policy that has already shown potential to grow the economy and improve the productivity of the scientific enterprise is the NIH Public Access Policy (<http://publicaccess.nih.gov/>). In 2005, the NIH offered a voluntary policy requesting that scientists deposit into PubMed Central a digital copy of any research findings published in a peer-reviewed journal that were obtained using NIH funding. Compliance rates were less than 4%. Since the NIH Public Access Policy went into effect in 2008, the rate of article submissions has jumped to 77%. This demonstrates that federal mandates requiring free and open access to the results of federally funded research can greatly increase the amount of research content available to the public.

The key to policy mandates is that published results of federally funded research must be openly available in a digital archive so that results can be archived and reused. It is the ability to preserve the content and to reuse that content in derivative ways that will allow others to make innovative uses of federally funded research findings.

Agencies should take bold steps in ensuring the timely reporting and review of research that they fund. A recent study by Yale School of Medicine found that fewer than half of a sample of clinical trials funded by NIH were published within 30 months of completing the clinical trial (Ross et al. Brit. Med. J. doi: 10.1136/bmj.d7292). Alternatives to journal publication exist for cases where journal publication is either slow, problematic, or not ideal. These alternatives (e.g. [ClinicalTrials.gov](http://ClinicalTrials.gov)) are already widely supported by agencies.

#### **References:**

Many NIH-funded clinical trials go unpublished over 2 years after completion. [http://www.eurekalert.org/pub\\_releases/2012-01/yu-mnc010312.php](http://www.eurekalert.org/pub_releases/2012-01/yu-mnc010312.php)

UNIVERSITY RESEARCH: Most Federal Agencies Need to Better Protect against Financial Conflicts of Interest. 2003. p. 8-12. <http://www.gao.gov/new.items/d0431.pdf>

c) What are the relative costs and benefits of such policies?

Relative costs of the NIH Public Access Policy, as noted by Dr. David J. Lipman, Director of NCBI:

Source: <http://www.hhs.gov/asl/testify/2010/07/t20100729c.html>

- Start up costs estimated at \$500,000
- It costs \$3.5 - \$4.6/million annually (on a \$30 billion budget) to provide access to results of all of their funded research.
- An investment of about 1/100th of 1 percent of NIH's overall budget results in access to 2.2 million articles.
- PubMed Central is currently used by more than 500,000 users per day, with the majority of users coming from domains outside of education – underscoring deep demand for this information throughout the public sector.

The cost to utilize an existing tool, [Science.gov](http://www.science.gov), to disseminate research results for FY 2011 was estimated at “\$67,000 plus in-kind contributions of agencies.” Source:<http://goo.gl/WD7A5>

Other federal agencies that award research dollars can use the NIH as a model for costs and benefits and see that the costs are minimal compared to their overall budget and the numbers of users show that the publicly available content is in high demand.

A policy that requires the deposit of peer-reviewed manuscripts into a single open access repository, either centralized or institutional, will achieve maximum research impact for authors and provide the broadest means of access

The costs and benefits of providing open access have been extensively analyzed, country by country, in the following reports:

Houghton, J.W. & Oppenheim, C. (2009) The Economic Implications of Alternative Publishing Models. *Prometheus* 26(1): 41-54

Houghton, J.W., Rasmussen, B., Sheehan, P.J., Oppenheim, C., Morris, A., Creaser, C., Greenwood, H., Summers, M. and Gourlay, A. (2009). *Economic Implications of Alternative Scholarly Publishing Models: Exploring the Costs and Benefits*, London and Bristol: The Joint Information Systems Committee (JISC)

Houghton, J.W. and Sheehan, P. (2009) Estimating the potential impacts of open access to research findings, *Economic Analysis and Policy*, vol. 39, no. 1, pp. 127-142.

d) What type of access to these publications is required to maximize U.S.

economic growth and improve the productivity of the American scientific enterprise?

The ability to freely access, read, distribute, re-use and modify federally funded research electronically is required in order to maximize the benefit to patient care - starting in the research laboratory and culminating at patients' bedsides through disease discovery, diagnosis, treatment and cures. Federally funded research content must be fully and freely open in order to reap the benefits of publication models that encourage publicly funded research findings to be reused. Full access should be defined as making content available outside of firewalls or other barriers that restrict text and data mining. Publicly funded research should be made available for further uses through sharing and integration in ways that take advantage of computer-readable language markers. It is the ability to fully reuse publicly funded content that can stimulate the developments in new markets.

Only providing open access to peer-reviewed content will motivate powerful new developments in cross-disciplinary research and knowledge discovery. There is only limited incentive for developing powerful new tools now in both public and private arenas, while the content is still so sparse.

## **Comment 2**

What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research?

In accordance with U.S. Copyright Law, authors automatically retain copyright unless they transfer it to another entity, such as a publisher. In order to keep key rights to publicly funded research, one option for authors is the use of a Creative Commons license in order to select a range of terms for how others can use their content. With a creative commons license, authors select the terms of use. Terms of use can be selected that require all modifications and reuse attribute the author as the original source. The author will retain copyright while granting Creative Commons terms of use that can encourage reuse and derivative uses that can potentially grow into new products and services that are based on the findings of taxpayer funded research results.

Another option is to use the Scholar's Copyright Addendum Engine developed by Science Commons and SPARC found at this link <http://scholars.sciencecommons.org/>

Using this addendum, the author will sign an agreement that modifies

any publisher copyright language that restricts article use and reuse in ways that prohibits free public access to taxpayer funded research. The author can attach this addendum to the publisher copyright transfer agreement and sign the publisher agreement only after the publisher agrees to the terms in the addendum. The main point is for the author to retain all rights to distribute, modify, deposit, and reuse the peer reviewed, edited manuscript as accepted for publication. Publishers will be able to retain copyright of the manuscript as it appears in their publications but not the author manuscript after edits and peer- review.

Embargo on access, another protection mechanism, might be applied sparingly to protect intellectual property interests.

Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?

There are publisher copyright transfer agreements which state that the publisher owns the article and controls the systems in which an article can be deposited and accessed as well as controlling how an article can be reused and distributed. Public access policies should not adopt any language that grants publishers all rights to federally funded research that results in peer reviewed scholarly journal articles as they appear now or in any unforeseen format into the future in digital systems operating now or in any systems not yet developed. Such language is currently used in several copyright transfer agreements by scientific publishers and sets extreme restrictions on how taxpayer funded articles can be accessed, re-used, distributed and archived. Tax payer funded research results should be openly and freely available in order to build upon the knowledge and results in order to offer new and innovative services that serve the public good.

Authors should retain full copyright for, ownership of, and license to a peer-reviewed final manuscript. The publisher's final version should be considered the publisher's version of record with full license for the publisher to sell, license, and build additional services around. No policy should be made that restricts either the author's license or a publisher's license to do what they want with their final versions.

### **Comment 3**

What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities?

Subject repositories such as PubMed Central and arXiv, and institutional repositories, such as The University of Kansas Medical Center's Archie, and Scholar Works at the University of Kansas, are designed to

- enable free and open access in order to encourage and promote innovation
- benefit the public through shared knowledge, and
- encourage commercial and educational progress. arXiv is an example of a Physics subject specialty repository

We share a vision of broad dissemination of rapidly released scientific research available freely to all.

Real-world experience has shown that centralized approaches (e.g. PubMed Central) to public access can provide stable, persistent access, some threshold of quality metadata, and curation. However, the same centralized approaches lack agility and responsiveness when it comes to providing new and improved services around content.

The web is by nature decentralized. It is “distributed content provision and central harvesting, Google-style. It is not, as in paper days, that all the content needs to go in one central physical space.”

(Harnad, <http://openaccess.eprints.org/index.php?/archives/341-guid.html>)

Innovation and commercial opportunities will arise from smaller communities or commercial ventures in the interest of solving specific needs. Decentralized approaches, public and private, tend to provide innovative and more specialized services much faster. Moreover, institutions have vested interests in facilitating and ensuring deposit of peer-reviewed manuscripts into institutional repositories.

Institutions that do not manage their own repository systems still have multiple options for creating repositories. Institutions can partner with other institutions, consortia or organizations such as Dryad (<http://datadryad.org/>). Alternatively, they can license commercial repository services such as BioMedCentral's Open Repository service <http://www.openrepository.com/> or Berkeley Electronic Press' DigitalCommons <http://digitalcommons.bepress.com>.

Centralized repositories or even commercial entities, having harvested peer-reviewed manuscripts, reports, and other content from institutional repositories could provide the following enrichment services: quality metadata, canonical access points through resolvable persistent identifiers (e.g. DOI, PURL, or PMCID), support of author and institutional identifiers (e.g. ORCID), enhanced or cross-disciplinary discovery services, and distribution channels through standard protocols

such as OAI-ORE, Atompub, and SWORD.

Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

Federal agency custody can ensure constituents and stable access and use conditions that permit all interested individuals, organizations, institutions, corporations, and entrepreneurs to build upon, reuse, create new services and products, share with and educate others based upon federally funded research findings.

Although multiple private sources may certainly ensure long-term preservation they by nature will have a financial interest in controlling access. This cannot be equated with public access. The two are at odds.

#### **Comment 4**

Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?

Currently, there are few models because of the lack of open access to publisher archives. And, while archives are immensely valuable, we must first and foremost open up access to current research. Advancements in biomedicine, physics, chemistry, and related disciplines occur too rapidly.

One model is NLM's Back Issue Digitization Project using PubMed Central - a partnership between the National Library of Medicine and publishers. This project includes archival content that was previously only available in print, in addition to more recent material provided voluntarily by participating publishers. Content is now available digitally and free to the public. <http://www.ncbi.nlm.nih.gov/pmc/>.

Another is BioMed Central where value-added services and content curation are vital to the BioMed Central private enterprise, yet journal content is freely available to all because research or institutional funds have paid manuscript submission fees.

#### **Comment 5**

What steps can be taken by Federal agencies, publishers, and/or scholarly and

professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives?

Interoperable search, discovery, and analysis can only work if content is accessible. Further, the current situation works against libraries and institutions who must pay not only for subscriptions to journals but also for additional privileged search and discovery services, many now acquired by publishers, that can access article text. Only a handful of institutions can afford this.

Only providing open access to peer-reviewed content will motivate powerful new developments in interoperable search, discovery and analysis tools across repositories and disciplines. There is only limited incentive for developing powerful new tools now in both public and private arenas, while the content is still so sparse.

1. All agencies must mandate that all federally funded research be made openly accessible without restriction except in rare cases where an embargo period is absolutely necessary.
2. Agencies must require that research findings, reports, and peer-reviewed manuscripts be deposited into an openly accessible repository.
3. Federal agencies, publishers, and academic societies should co-develop and reuse existing standards for the application of metadata and the encoding of both metadata and works.
4. Metadata is not enough. Agencies can ensure access to full-text. Institutions, commercial ventures, publishers, and societies can provide access to the XML representations of peer-reviewed manuscripts. Alternatively, publishers and other commercial ventures could develop additional editing and creation tools to assist authors and institutions in creating publications that begin life as standardized semantic documents, e.g. the NLM Journal DTD is a candidate for encoding journal content. These documents would be ripe for analysis and mining.
5. Providers should avoid designing interchange standards and instead implement common modern ReSTful, Linked Data, and Semantic Web architectures. They should start by providing small prototype data services, releasing enhancements early and often, and be open and attentive to the needs and wants of real-world data consumers and application developers.

What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities?

Open access to full-text content is vital for truly accelerating scientific advancement, dissemination of knowledge, and new market opportunities. XML representations of full-text articles would be ideal, facilitating the application of semantic web technologies to analyze and mine publications.

The OAI core metadata – author, date, title, publication, etc. – are the minimum metadata required for interoperability. They can be enhanced and made more powerful; the urgent priority, however, is not to enrich the metadata but to provide the OA content itself. OAI is more than enough for most uses of peer-reviewed journal articles – by researchers, harvesters, and the public. What is needed is the articles themselves. And for that, deposit must be mandated. Once the OA content is there, the hard part is done: Further enriching the metadata and capabilities is the easy part and will be taken up by many skilled and creative developers and metadata specialists.

Enhancements to minimal metadata should include unambiguous unique identifiers (ORCID, I-2, publisher identifier, publication identifier), copyright status, reuse rights, publication status, work type, archived-version-type, archive status. Machine-readable metadata values should be expressed as endpoints, dereferenceable identifiers or URIs.

All players, agencies, publishers, societies, institutions, and authors have an interest in measuring use, readership, and citation of works. They should work together to adopt a common standard or mechanism for measuring reuse across access points, whether a work is downloaded from an institutional repository or a publisher's site. This could mean ensuring that a registered identifier similar to a DOI is applied consistently across versions of works and is traceable across the Internet. This would provide further opportunities for businesses offering analytics services.

## **Comment 6**

How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?

Federal agencies can maximize the benefit of public access policies by ensuring that all stakeholders mentioned do not have to pay multiple times for access to the same peer-reviewed literature. Under the current system, taxpayers are funding research – but then have to pay again to access the scholarly publications that result from the research. Libraries license journal databases to access the work of their own researchers. As authors are increasingly being asked to pay author fees to have their work published in journals that provide immediate, free access to anyone worldwide, it is crucial that the open publishing model is truly open. Federal agencies can adopt public access policies that promote the ability to reuse and produce derivative works of the peer-reviewed literature, as well as archiving and other types of

machine readable analysis and preservation of those works.

Interdisciplinary collaboration is a critical factor in many researchers' ability to win funding. This work cannot happen without fast dissemination of new research, especially to those outside of our universities. All parties involved in collaboration need to have access to existing research findings that resulted from federal funding in order to grow and build upon those findings.

Public access policies can minimize the burden and costs to stakeholders by moving away from an ownership model where authors are required to sign over their copyrights to publishers, to a model where full open access and markets can co-exist (perhaps in the form of licensing access, with authors retaining copyright over their scholarship). Both researchers and publishers can continue to thrive. Publishers can offer many value-added services to re-package the results of federally funded research (both the peer-reviewed literature and accompanying data), for which there would be a strong market. Additionally, if authors retain ownership and grant terms of use that encourages reuse and derivative works rather than restricting such activity, new markets and existing publishers could potentially open to them and offer them value-added services that currently do not exist. Libraries would likely have more resources available to purchase those value-added services if they were no longer locked into restrictive journal license packages with prices that vastly exceed the rate of inflation and budget increases.

A second important step is to ensure that any policies adopted are consistent across all Federal agencies. Awareness of the policies must be raised using clear, simple language. Policies must be easy for all stakeholders to understand and follow. Policies should include a uniform set of instructions and tools must be developed to facilitate the compliance process.

### **Comment 7**

Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?

Yes, all peer-reviewed publications, regardless of format, resulting from federally funded research should be covered by public access policies that make them openly accessible without restriction to the public. However, we recognize that different publication types may require different policies to account for copyright, royalties to authors, format and access issues. Books, for example, generate author royalty fees while scientific journal articles do not. Where possible, if the author

and publisher both agree, the deposit of publications – over and above refereed journal articles and refereed conference papers – such as book chapters, books and research data should be encouraged as well. It is important that these other types of peer-reviewed publications be deposited in an openly accessible repository, with standards for metadata developed and applied, so this valuable content can be more easily located and used.

We recommend that priority be given first to making scholarly journal articles resulting from federally funded research freely available. That is something that most authors want, whereas there is not wide agreement that book content should be made open access.

### **Comment 8**

What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research?

Ideally, immediate, free open access is desirable so that the public can make use of the research and start building upon it and making innovative uses of it that serve the public. Embargo should be the exception. It should be applied only when a strong case can be made that it is needed to protect the author, a pending patent, the funder, or the public good.

Please describe the empirical basis for the recommended embargo period.

The sooner that research is released, the sooner the public can benefit from the findings and economic growth in new markets and services can be developed. Since the NIH mandate took effect in 2008, publishers have accepted the 12-month embargo and it has not been proven that releasing content freely after twelve months results in publisher loss of revenue. Because statistics show that the immediate release of published research results in higher citation counts and more widespread use of the content, an embargo of less than twelve months or a zero embargo would have a higher impact on the ability of the public to use the content that results from publicly funded research.

Other items the Task Force might consider for Federal policies related to public access to peer-reviewed scholarly publications resulting from federally supported research:

1. Consider using Federal policies to expand upon what appears to be standard practice for several government agencies - providing public access to unclassified research reports at the conclusion of the funding period. See David Wojick's arguments for this

at<http://scholarlykitchen.sspnet.org/2012/01/06/my-argument-for-public-access-to-research-reports/> . Examples of currently supported information portals and content include:

- a. Department of Energy: <http://www.osti.gov/bridge/>
  - b. National Science Foundation: <http://www.research.gov/>
2. Enforce existing mandates to “ensure that all final project reports and citations of published research documents resulting from research funded, in whole or in part, by the Foundation, are made available to the public in a timely manner and in electronic form through the Foundation's Web site.” Source: America COMPETES Act of 2007, H.R. 2272, 110th Cong., 2007
  - a. Sec. 7010. Reporting of Research Results.[http://www.nist.gov/mep/upload/PL110-69\\_8907.pdf](http://www.nist.gov/mep/upload/PL110-69_8907.pdf)

*Karen Cole*

Director of Dykes Library  
University of Kansas Medical Center

**Subject: RFI: Public Access to Peer-Reviewed Scholarly Publications  
Resulting From Federally Funded Research**

**Date:** January 12, 2012 9:21:58 AM EST

**To:** publicaccess@ostp.gov

Dear Science and Technology Policy Office,

Thank you for extending the deadline for comments on Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research. The Research Works Act has only very recently come to the notice of scientists, and it is because of this extraordinary proposal that it is now apparent to us that we need to reaffirm what we thought was settled: that OF COURSE scientific work funded by the public should be freely accessible to the public. I do not understand how this can even be a matter for discussion. The public pays: the public should benefit in every way possible.

The language in the RWA is highly misleading, attributing to publishers far more input into the scientific process than they really have. The truth is that scientists (often funded by public money) provide the underlying research, the writing and the figure preparation that result in a manuscript submitted for publication. Other scientists then provide the editorial services and (contra publishers' claims, as can be easily verified) the peer review. Publishers' contributions are limited essentially to typesetting, the provision of web hosting, and sometimes a very limited amount of compensation for senior editors only (usually not the handling editors who actually deal with authors' works). The notion that such a minor contribution should suffice to hand publishers, rather than the public, the right to determine how, where and under what regime the resulting works are disseminated, is ludicrous. It would be laughable if it were not so iniquitous.

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Ahmed Bouabdallah  
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Network, Security and Multimedia Department

Request for Information: Public Access to Peer-Reviewed Scholarly  
Publications Resulting From Federally Funded Research

Response: University of Illinois at Urbana-Champaign

[Assigned ID ]

[Assigned Entry date]

Paula Kaufman

Juanita J. and Robert E. Simpson Dean of Libraries and University Librarian

University Library

University of Illinois at Urbana-Champaign

Urbana, IL 61801

We thank the White House Office of Science and Technology Policy (OSTP) for the opportunity to comment on policies related to public access to peer-reviewed scholarly publications resulting from federally funded research. We support the development of policies that allow immediate, free, and open access to and reuse of such scholarly publications without commercial restriction. We strongly believe that such policies are in the best interest of the US public and would advance the scientific enterprise by allowing unimpeded access and use of the best and most current research findings. In addition, such policies would allow economic growth through the application of such findings in private, commercial enterprises. Such policies are feasible and realistic. We respond below to the specific questions in the RFI.

**Comment 1:**

*Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

We believe that scholarly publications—in particular peer reviewed scholarly articles and conference publications—resulting from federally funded research should be made publicly, freely accessible without commercial restriction in such a way that allows the public, the scientific community, and the commercial entities to make full use of them whenever possible. Full use means not only access to download and read a publication, but also the ability to text and data mine, to make use of the information through computational methodologies, and to create derivative works with attribution. Enabling open access of these publications allows innovative individuals, organizations, and companies immediate access to research findings and trends to inform new research, services, and applications.

Enabling full reuse facilitates the ability of innovative individuals, organizations, and companies to build a variety of applications and services on top of this corpus—discovery and data mining systems, improved search algorithms, semantic web applications, to name a few—that will continue to extract value for this initial investment for decades to come. We do not really know who will be interested in a research publication either now or in the future. Restricting access and reuse rights essentially cuts off potential previously unexpected public uses and commercialization of federally funded research.

We offer one other small example of such a public use. The Mid-America Earthquake Center at the University of Illinois makes its research reports openly available in the campus institutional repository. One of these, a report on the potential impact of a severe earthquake at the New Madrid Seismic Zone that runs through Illinois, Indiana, Missouri, Arkansas, and other Midwestern states (<http://hdl.handle.net/2142/14810>), was used by a group of ham radio enthusiasts in Arkansas to develop emergency plans and maneuvers. While not a peer-reviewed publication, this is exactly the type of public use that open access to such publications can encourage and that restrictions inhibit. As an example, Cambridge University Press' analysis of Cambridge Journals Online indicates that of the 60 million views of journal abstracts, 20% were from users unaffiliated with a subscribing institution; only 0.01% of those views led to the purchase of an article. (*Chronicle of Higher Education*, Nov 30, 2011)

There is evidence that restricting openness and reuse rights also inhibits new research within the scientific enterprise. Murray et al (2009) analyze citations and use of material before and after access and IP rights of mouse genetic data was released from commercial control in 1998 through a National Institutes of Health (NIH) brokered arrangement. They come to the conclusion that:

...particularly in research settings characterized by high levels of freedom [i.e. researchers can set own agendas], openness not only increases the overall flow of research output, it should also be closely associated with the establishment and exploration of entirely new research lines. Moreover, while openness should affect both basic and applied research, the impact on basic research will...dominate when researchers in the pre-openness period face high fixed costs of initiating a new line of research. In contrast, the increase in applied research will dominate when significant basic research has already been conducted. (3)

Murray et al also note that “the bulk of the new citations arise from articles published by new researchers or institutions. In other words, most of the incremental citations to a given mouse-article come from researchers working at institutions that had not cited that mouse-article prior to the NIH agreement.” (4) A similar analysis was done by Williams (2010) on the impact of restrictive intellectual property rights gene-level data by the private firm Celera on subsequent scientific research and product development. Her analysis suggests that the restrictive IP “led to economically and statistically significant reductions in subsequent scientific research and product development outcomes.” (2)

Evidence on the costs and benefits of enacting a public access policy can be found in the Houghton et al 2010 study of the economic and social returns on investment in open access to publicly funded research outputs (the study was commissioned by SPARC to understand the impact of the proposed Federal Research Public Access Act (FRPAA)). Houghton et al estimate that if FRPAA was enacted, the overall

potential benefits to the United States would be about 8 times the cost of implementing a public access policy at about \$5 billion (using the cost structure associated with the NIH mandate) (Houghton et al, 2010, 8). The authors note that these benefits are diffuse, that is they would be found throughout the scientific community and economy, and would accrue over time.

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#### Comment 2:

*What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

The NIH policy as it currently stands is a good model to examine in this context: it allows open and public access to federally funded research while still allowing the publishing community to profit and benefit from the publication of this research. This mandate asks that the researchers confirm during the publication process that they can deposit their research in PubMedCentral; this is a matter of ensuring that such language is included in the copyright transfer agreement or license agreement, and most publishers now have standard boilerplate language inserted. What the NIH policy does not do is allow wider reuse of this material (including data mining).

In general, the primary goals of the publication and dissemination of peer-reviewed scholarly publications is to reach as wide an audience as possible and to have the greatest impact as possible. Most researchers within academic institutions are 'paid' for publication through indirect means: promotion and tenure, grants, invited talks, recognition within their scholarly societies, etc. The greater the impact of their research (as measured through citations, attributions, amount of research dollars received, invitations to collaborate on research projects, etc.) the better 'paid' they are. It is to the advantage of scientists and researchers to take allow maximum levels of access **and** reuse, provided that they are attributed appropriately. We believe that the intellectual property interests of scientists, Federal agencies, and the taxpaying public (who also wish to see an impact made given the research dollars invested) are best protected by not overly restricting access and reuse of scholarly publications given appropriate attribution. Retention of copyright by the authors of the paper and use of a license such as the Creative Commons Attribution license<sup>1</sup>—as the Public Library of Science does in all of its publications—would satisfy this interest in the majority of cases.

While publishers certainly add value to peer-reviewed scholarly publications through their management of the peer review process (though, we note, not the actual conducting of the peer review), editorial oversight, marketing, and branding, it is not necessary for researchers to transfer full copyrights to them, as is done in most cases. Publishers should retain rights to copy and distribute, as well as the right to be named as the place of first publication (i.e., citation). Stronger protection of intellectual property rights for publishers has and would continue to result in restricted and impeded access to federally funded research; this simply does not make sense if the goal is to increase the impact, use, and potential commercialization of federally funded research.

### **Comment 3:**

*What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

In our experience (gained from extensive research on the effective aggregation of metadata and content from disparate sources as well as the development of federated search technology to bring together content<sup>2</sup>) the centralized vs. decentralized approach included the following:

- Pro: Centralization facilitates consistent enforcement of standards and compliance (the last assuming that such management would be at the agency level);

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<sup>1</sup> <http://creativecommons.org/licenses/by/3.0/>

<sup>2</sup> See <http://imlsdcc.grainger.illinois.edu/about.asp> and [http://search.grainger.uiuc.edu/searchaid/easy\\_search\\_summary.html](http://search.grainger.uiuc.edu/searchaid/easy_search_summary.html) for publications and summaries of research.

- Pro: Centralization allows a ‘one stop shop’ for search;
- Pro: Centralization allows for a standard, well documented programming interface (or API) that would facilitate the development of analytic tools;
- Pro: Decentralization allows institutions and publishers to develop systems that meet their needs as well as a public access policy;
- Con: Decentralization does not facilitate enforcement of standards, compliance, or standard APIs to facilitate tool development;
- Con: Decentralization would necessitate the need to aggregate the metadata somewhere or provide a standard way to search across the decentralized system;
- Con: Centralization can have a high overhead and cost given the necessary size and scale of management;
- Con: Centralization generally does not allow the flexibility to meet different needs of depositors, publishers, and searchers;
- Pro and Con: Decentralization can spread the costs of a public access policy across the scholarly publishing ecosystem.

We are sure that there are others to consider, but these are some of the major issues in our experience.

That said we are agnostic whether there should be centralized or decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research. In a decentralized approach, however, we urge you to consider the role not only of publishers, but of the research library community in helping to support such a decentralized approach. In the digital sphere, academic research libraries have now years of experience in managing large repositories, in digital preservation, and have strong relationships with researchers (particularly on their home campuses); in the physical sphere, we have centuries of such experience. Organizations such as the Coalition for Networked Information (CNI), the Association of Research Libraries (ARL), Portico, the Hathi Trust, and the Digital Library Federation (DLF) should be consulted for their advice on roles that research libraries could play in a decentralized model. We do not believe that commercial, for-profit publishers that ultimately answer to their shareholders should be solely or even mostly responsible for the long-term stewardship of the results of federally funded research. Academic research libraries are the memory institutions of science, and we believe could be an important component of a decentralized model if that is the direction that is chosen.

**Comment 4:**

*Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

Repeating our last paragraph in Comment 3: we urge you to consider the role of the research library community. In the digital sphere, academic research libraries have now years of experience in managing

large repositories and in digital preservation, and have strong relationships with researchers (particularly on their home campuses); in the physical sphere, we have centuries of such experience. Organizations such as the Coalition for Networked Information (CNI), the Association of Research Libraries (ARL), Portico, the Hathi Trust, and the Digital Library Federation (DLF) should be consulted. Examples such as Portico, the Interuniversity Consortium for Political and Social Research (ICPSR), the Hathi Trust, and arXiv are evidence that there are partnerships possible under a variety of models to both encourage innovation and to ensure long term stewardship. We do not believe that commercial, for-profit publishers (that ultimately answer to their shareholders) should be the single point of access to the results of federally funded research.

**Comment 5:**

*What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

Making peer reviewed publications resulting from federally funded research openly available is the first step to encouraging interoperable search, discovery, and analysis capacity across disciplines and archives. The second step is to require the use of such broadly accepted standards such as the National Library of Medicine (NLM) journal archiving and interchange tagging sets; this will enable the creation of standard services across sets of archives, publisher files, and other repositories. As mentioned in comment 3, within the Library and the Graduate School of Library and Information Science we have extensive experience in applied research on the aggregation of metadata and content from disparate sources as well as the development of federated search technology to bring together content.<sup>3</sup> Put simply, the more consistent the metadata and content types, the easier it is to build effective search and discovery tools on top of the metadata and content.

In addition to search tools, we believe there should be investment in tools that allow better discovery through browsing and linking. This would require use of controlled vocabularies, standard identifiers for specific entities (certainly people, institutions, and funding agencies), use of grant IDs, and metadata that would allow the expression of relationships between items (research papers and data sets), items and entities (research paper and author), and entities (author and institution). There currently exist an array of broadly accepted and emerging standards that could be used; again, consistency in their use is the key to easily building effective discovery tools.

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<sup>3</sup> See <http://imlsdcc.grainger.illinois.edu/about.asp> and [http://search.grainger.uiuc.edu/searchaid/easy\\_search\\_summary.html](http://search.grainger.uiuc.edu/searchaid/easy_search_summary.html) for publications and summaries of research.

In order to encourage analysis capacity specifically (which we understand to mean the ability to text and data mine, markup, and make use of information within a text through computationally based means, as well as to download and access the item) ideally three pieces must be in place:

- 1) rights and permissions information must be expressed explicitly within the metadata;
- 2) the full text of articles must be in a standard format that is friendly to such machine processing; and
- 3) this format should be available via application programming interfaces (API) in a standard and well documented way.

For point 1, for publications to be fully useful, they should be licensed, as argued above, in such a way that allows such use without explicit permission being sought (for example, using a Creative Commons Attribution Only license). For point 2, the NLM journal archiving and interchange tagging sets (<http://dtd.nlm.nih.gov/>) are well accepted standards in the library and publisher community.

The core metadata set must not simply be descriptive of the published piece, but as we suggest above, must enable specific actions—discovery of similar works, datasets associated with the work, understanding of what can be done with the work—and should also be machine readable and processable. We suggest that the National Library of Medicine, the Library of Congress, and the National Information Standards Organization (NISO) be consulted about the creation of a minimum metadata set that could be made available to the public. These organizations have long experience with working with standards as well as a deep understanding of what would be required to enable discovery and use.

#### **Comment 6:**

*How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

In order for Federal agencies to maximize benefits to taxpayers while minimizing burden and cost for stakeholders, there must be consistency of policies and requirements. Uniform policies and requirements allow researchers, awardee institutions, and other stakeholders to set into place standard workflows for depositing publications resulting from federal research funding, rather than a workflow for each agency (which would be particularly confusing for those researchers who hold grants from multiple federal agencies).

In addition, whatever the technical implementation of the public access policy is, the emphasis should be on an open technical infrastructure that allows the development of applications and toolsets that would help both to maximize benefits and minimize costs (particularly after the initial set up costs). Examples of such tools include:

- *Minimize cost* - Use of openly documented application programming interfaces (APIs) and standard protocols that facilitate automatic deposit of publications to multiple repositories;
- *Minimize cost* - Tools that would enable the automatic recording of deposits in internal and external grant management systems, minimizing the tracking of these deposits for reporting purposes;
- *Minimize cost and maximize benefits* - Tools that would allow awardee institutions to more accurately measure research output, as well as to promote research;
- *Minimize cost and maximize benefits* - Tools that would allow researchers to automatically create profiles of their output and research interests, as well as research that might interest them, and networks of other researchers doing similar or complementary work. In some ways this type of work is being developed through VIVO (<http://vivoweb.org/>) which makes heavy use of the data provided through PubMedCentral; and
- *Maximize benefits* - Applications or portals that could highlight and contextualize material for use in teaching and learning at both high school and college levels.

These are just tools and applications that are easily imagined; as noted above it can be difficult to guess what other potential tools could be developed given consistent policies and requirements and an open technical infrastructure.

**Comment 7:**

*Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

There are two issues to consider for this question.

- 1) Publication practices are quite different from discipline to discipline; thus limiting a public access policy to scholarly journal articles may have the unintended consequence of limiting access to federally funded research for one discipline but not another. For example, from our own analysis, a significant amount of the output from a computer scientist is in conference proceedings ([http://connections.ideals.illinois.edu/groups/15-Computer\\_Science](http://connections.ideals.illinois.edu/groups/15-Computer_Science)), while for an animal scientist the most significant output is in journals (see [http://connections.ideals.illinois.edu/groups/24-Animal\\_Sciences](http://connections.ideals.illinois.edu/groups/24-Animal_Sciences)). In the physical and life sciences, in general, there is relatively low output in the form of books or book chapters. For the majority of the social sciences, the output is mainly in the form of journal articles, with book chapters second (see <http://connections.ideals.illinois.edu/groups/%2014> for an example of a Communication Department). In the Humanities there appears to be a fairly even mix between journal articles and book chapters and monographs (see <http://connections.ideals.illinois.edu/groups/45-History> for a History Department).

- 2) The economics of the book market is quite different than that of the journal and conference proceedings market. For example, authors may be paid for book chapters, and generally are paid for books, including textbooks. Authors are not paid for journal articles, conference papers, or conference posters. We believe that requiring that these be made readily accessible to the public would require a broader investigation of the impact on this market, and a better understanding of the cost and benefits of such an approach.

Based on our understanding of the publication patterns of researchers likely to receive federal funding for their research, we believe that providing open access to **scholarly journal articles and conference papers and posters** would allow for the greatest impact of federally funded research. While we would ideally like to see book chapters and other peer reviewed and edited material included under the public access policy, this would require a broader investigation.

**Comment 8:**

*What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?*

Ideally, in order for the public, researchers, and commercial entities to be able to fully utilize the information contained in scholarly journal articles and conference papers and posters resulting from federally funded research, they should have immediate access to these resources. Houghton et al estimate that “a six-month embargo reduces the returns [from increased R&D] by around \$120 million.” (Houghton, Rasmussen, & Sheehan, 2010, p. 8) In a similar study but focused on the United Kingdom, Houghton et al found that a one year embargo reduced returns by 2% or £120 million. (Houghton) Particularly for fast paced disciplines, such as much of the life sciences, long embargo periods would be particularly detrimental to access to the current state of the art.

That embargoes are necessary for those journal publishers that rely on subscription income, particularly in the sciences, is the common argument for instituting an embargo. We have found little evidence to support this argument beyond a report from the Publishing Research Consortium, a group representing publishers and societies, that indicates some librarians may be likely to cancel journals if all of the content was openly available. (Beckett and Inger, 2007). However, we note that this represents attitudes rather than actual data on the impact of embargoes (or lack of them) on journal subscriptions. This lack of data is likely because most funder mandates in Canada, the United Kingdom, and Europe as well as that from the National Institutes of Health (NIH) do have embargo periods attached to them for a period of 6 to 12 months.

Given this, we recognize that in order to balance the public's interest in having unrestricted access to scholarly publications resulting from federal research funding and that of commercial publishers and scholarly societies to see subscription income from journals and conference proceedings, embargoes may be a necessary part of public access policies (though we note that embargoes benefit only those publishers who use the subscription model). We believe that embargoes should be kept closer in line with other funder mandates that are limited to six months such as the Canadian Institutes of Health Research, the Australian Research Council, the Research Councils U.K., and the Wellcome Trust, rather than the 12 months that is the current policy of the NIH.<sup>4</sup> Some of the major scientific journals such as Nature and Science have only a six month embargo rather than 12 months. In the end, the length of an embargo—between 0 and 12 months—should be left to the author(s) to negotiate; it is the authors who best understand what the impact of an embargo might have on the dissemination and use of their research results.

We do not believe that a public access policy should institute different levels of embargos or delays based on disciplines. While there certainly exist disciplinary differences in the rate of publication, use of published literature, and primacy of the most current research results, in practice such differing embargos would be extremely difficult to administer; in particular, in areas of heavily interdisciplinary research or in sub-disciplines which are focused on applied research, embargos might be applied that may not be appropriate. A common embargo policy across all disciplines between 0 and 12 months that can vary based on negotiations of the author(s) or the policies of a publisher should be sufficient.

#### References:

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<sup>4</sup> ROARMAP: Registry of Open Access Repositories Mandatory Archiving Policies (<http://roarmap.eprints.org/>) provides the most comprehensive list of current funder public access policies.



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January 12, 2012

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Executive Office of the President  
725 17<sup>th</sup> Street, Northwest  
Washington, D.C. 20502

**Attn: Open Government Recommendations on Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research**

**Ref: Federal Register Volume 76, Number 214**

With over 120,000 members, the American Society of Mechanical Engineers (ASME) is the largest mechanical engineering professional organization in the world. Since its founding in 1880, ASME has worked to advance public safety and quality of life throughout the world. ASME's reputation as an "honest broker" has been earned over these many decades by its deliberate embrace of all stakeholders in the consensus process and in facilitating a robust technical peer review process built on integrity and honesty.

ASME has balanced its mission with reasonable economic models in order to become an essential resource for mechanical engineers and other technical professionals throughout the world for solutions that benefit mankind. Throughout its long history, ASME has deliberately maintained affordable publications, conferences, standards, workshops, and seminars.

ASME endorses the principle of providing public access and enhancing dissemination of federally funded research results in ways that advance public safety and welfare, and improve the quality of life throughout the world. In so doing, ASME is resolute on our position that it is critical to protect the authors' rights to their intellectual property, as well as the critical functions of peer review. We are also concerned that in an era of dwindling federal resources, central federal repositories are duplicative, unnecessarily expensive and a recurring burden that may not be viable for long-term stewardship. Agencies should seek productive and mutually beneficial projects and partnerships with publishers that ensure greater availability of both taxpayer-funded research directly from the government and peer-reviewed, value-added publisher content.

**Comments on Public Access to Peer-Reviewed Scholarly Publications:**

- As OSTP develops its public access policies, it must be careful to consider the range of scholarly publications which are not the direct result of federally-funded research as they are funded by the private sector and distinct from the direct outcomes of federally funded scientific research. Publishers have a long record of providing long-term stewardship and broad public availability of the peer-reviewed scholarly publications that report on, analyze, and interpret federally funded scientific research results. OSTP must be careful to not establish mandates that undermine intellectual property rights without full, voluntary rights-holder authorization, intellectual property rights protection, and compensation.

- ASME supports the goals of the America COMPETES Reauthorization Act of 2010, which calls upon OSTP to coordinate agency policies related to the dissemination and long-term stewardship of the results of federally funded unclassified research. ASME also supports the guiding principles of transparency, participation and collaboration that President Obama articulated at the onset of his Administration
- For decades, the U.S. has reaped the benefits of effective public-private partnerships. The consensus standards process is a prime example of this model providing the most rapid and technically relevant process in the world for dissemination and implementation of technology advancements. Similarly, with respect to private sector scholarly publications, we believe that the best approach to achieving greater public availability is through public-private collaboration with publishers and scientific societies that will result in the broad dissemination of materials that analyze and interpret research while preserving the critical functions of peer review, editing, design, value-added development, composition of content, staffing, archiving, and other activities which build on the results of federally funded scientific research and disseminate scientific knowledge for the betterment of society.
- Publisher activities and investments have contributed to U.S. economic growth directly through the high-skilled workers they employ, as well as through the dissemination of knowledge that leads to innovations beneficial to safety and health of all Americans. Sustainable partnership with publishers is the best way to continue supporting the U.S. economy and the productivity of the scientific enterprise.
- We also oppose government mandates requiring that private-sector scholarly publications be made available online without authorization and compensation. Such unnecessary and harmful mandates jeopardize the sustainability of a robust peer-review publishing system which the vast majority of scientific researchers consider to be first-rate, and which helps ensure U.S. leadership in scientific research.
- OSTP should work with researchers and other stakeholders to create appropriate policies to make the Federal agency-collected and maintained outputs of taxpayer-funded research, such as data sets, grant reports and research progress reports, freely available to the public.
- Federal policies should foster the ability of publishers to partner with the research community to provide high-quality products and services that build upon federally funded research. The government should encourage interpretation, application and on-going development of ideas based on federally funded research. The intellectual property that results from these endeavors drives innovation and must be honored. Embargo periods should be determined on a case by case, collaborative basis rather than through a federal proscriptive process. A single, uniform policy or mandate for all agencies would be the wrong approach, as noted by the Scholarly Publishing Roundtable report of January 2010.
- OSTP should carefully evaluate the value of providing open access to a final research report after appropriate embargo periods, rather than asserting a type of eminent domain over the peer-reviewed journal article. This solution would allow standardization of information reported, rapid and broad dissemination of the government-funded materials even before publication of a peer reviewed article, and the preservation of IP.

- OSTP must work to ensure copyrighted materials are protected from unauthorized dissemination and piracy. Copyright is an essential ingredient in promoting creativity, innovation, and the continued integrity and reliability of the scholarly record. We have seen that the NIH policy undermines IP and promotes pirating. Not only is the free digital database, the PubMedCentral (PMC), undermining an important U.S. export market, but PMC copies of copyrighted material appear on rogue sites, contributing to millions of dollars in annual losses to U.S. publishers.
- Peer-reviewed papers are not the direct result of the expenditure of taxpayer funds; conversely, they result from a significant publisher investment. The ability to recoup that investment enables innovation, allows infrastructure to be developed (including archives and metadata), and provides incentives to try new approaches. Long-term stewardship of content carries significant costs that are already being borne by publishers.
- Peer-reviewed papers should not be made public within the duration of the article's copyright without the copyright holder's permission. For accepted author manuscripts and published journal articles, both of which publishers have invested in heavily, publishers should determine the business models on which their publications operate and this should include the time, if any, at which the final peer-reviewed manuscript or final published article are made publicly available.
- Public access government mandates have significant costs to the U.S. economy and the scientific enterprise. NIH's PubMedCentral data indicates 2/3 of users are from overseas, undermining critical export opportunities for an \$8 billion publishing industry that employs 50,000 Americans.

ASME recommends that OSTP carefully review all approaches to public access and comprehensively consider the economic implications of various public access models, including the impact on the federal budget, the peer review process, and the health of America's innovation ecosystem.

ASME is prepared to work with OSTP and other federal agencies to improve the dissemination of federally funded research and to support the development of an effective public access policy. We urge the Administration to convene the major stakeholders in a comprehensive evaluation and understanding of the various public access models.

Sincerely,

A handwritten signature in blue ink that reads "Victoria A. Rockwell". The signature is written in a cursive, flowing style.

Victoria A. Rockwell  
ASME President



January 12, 2012

Office of Science and Technology Policy (OSTP)  
Executive Office of the President  
725 17th Street Room 5228  
Washington, DC 20502  
[publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

*RE: Request for Information: Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research 76 Fed. Reg. 68518, November 3, 2011*

To the OSTP:

AVAC welcomes this opportunity to comment on the recent RFI, *Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research*. AVAC is a non-profit organization that uses education, policy analysis, advocacy and a network of global collaborations to accelerate the ethical research and development and global delivery of vaccines, male circumcision, microbicides, pre-exposure prophylaxis (PrEP) and other emerging HIV prevention options as part of a comprehensive response to the AIDS pandemic. By invitation from federal agencies, AVAC Board members and staff participate in U.S. government advisory committees, federally funded biomedical science review teams, conferences and planning groups and other activities. These activities require knowledge of the latest published materials in the field in order to add stakeholder value to taxpayer-funded initiatives. We commend the OSTP for soliciting public comment on the importance of open access to peer-reviewed scholarly publications as a supportive policy under the America Competes Act.

The NIH public access policy currently requires that all investigators funded by the NIH submit, or have submitted for them, to the National Library of Medicine's PubMed Central, an electronic version of their final, peer-reviewed manuscripts upon acceptance for publication, to be made publicly available no later than 12 months after the official date of publication.<sup>1</sup> Along with many other public representative organizations, AVAC saw this knowledge-user measure as a long over-due, but imperfect, means to enhance public health education; speed the translation of scientific advances into quality, affordable health care; extract best returns on investments in research; and empower patients in their health care decisions. Since 2004, when NIH access instructions appeared as policy, AVAC has

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<sup>1</sup> <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-08-033.html>. The policy follows the statutory directives of Section 218 of PL 110-161 (Consolidated Appropriations Act of 2008).

continually supported efforts to require immediate access to federally funded research upon publication.<sup>2</sup>

Patients, academics, researchers and advocates deserve free, timely, and complete access to these articles. The NIH policy began to restore balance to this system. The OSTP can now build upon the NIH policy to fuel innovation and improve health outcomes.

Our responses note the several questions to which they relate.

**1. *Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?***

An increase in the scope of available literature and a decrease in the waiting period for public access to scholarly publications have potential to increase US competitiveness and maximize the potential for discovery from government investments.

A recent study found "the observed differences in access levels between institutions suggest an un-level playing field, in which some researchers have to spend more efforts than others to obtain the same information." Even well funded U.S. institutions lack adequate access to research necessary for their vaccine research productivity. International collaborators in U.S. government sponsored vaccine research show even lower rates of access. As a result, scientists must spend time away from primary investigation to engage in laborious, fair use or private paper specific requests to share new literature that they need on a daily basis.<sup>3</sup> This is not a wise use of tax dollars, which should instead free up the time of investigators to carry on funded clinical study. An open licensing model works best since it grants permission to access, re-use and redistribute a work with few or no restrictions.

Two visitors in a new city may each own a map – one a large paper foldout, the other an instant phone app – but the modern tourist will get to the destination faster. In

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<sup>2</sup> AVAC Letter to "NIH Public Access Comments," November 1, 2004, responding to 69 Fed. Reg. 56074, September 17, 2004

<sup>3</sup> [Voronin Y, Myrzahmetov A, Bernstein A, Access to Scientific Publications: The Scientist's Perspective, PLoS One. 2011; 6\(11\):e27868. Epub 2011 Nov 17.](#)

collaborative vaccine research for the public good – 85% of which is funded by public investment – the U.S. funding goal should be that both arrive at the earliest possible time.

Eliminating this un-level playing field will facilitate increased productivity. Even minor increases in research efficiency can have significant effect on the United States economy. With the United States' gross domestic expenditure on research and development at \$312.5 billion in 2007 and assuming economic and social returns to R&D of 50%, a 5% increase in knowledge access and efficiency would have been worth \$16 billion.<sup>4</sup>

Literature on social returns from R&D, while varied, show that returns to publicly funded R&D are high. The increase in returns to R&D resulting from more Open Access may be sufficient to cover costs. When the cost savings and additional returns are added together the benefits of open access publishing models likely exceed the costs.

Perhaps the most important potential benefit of open access is enhanced access to, and greater use of, research findings, which would, in turn, increase the efficiency of R&D as it builds upon previous research. There is also significant potential for open access to expand the use and application of research findings to a much wider range of users, well beyond the core research institutions that have had access to the subscription-based literature.<sup>5</sup>

A U.S. requirement for immediate broad access will maintain competitiveness with programs in other countries, such as the efforts of the European Commission, to develop new policies to make access “quicker” – in the words of the EU Commissioner - and broader in scope than its current system.<sup>6</sup>

**2. *What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?***

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<sup>4</sup> Houghton J.W. and Sheehan, P.J. (2006) *The Economic Impact of Enhanced Access to Scientific Publications*, Centre for Strategic Economic Studies, Working Paper, No 23, Victoria University, Melbourne. (<http://eprints.vu.edu.au/archive/00000472/>).

<sup>5</sup> Houghton, J.W., Steele, C. and Sheehan, P.J. (2006) *Research Communication Costs in Australia, Emerging Opportunities and Benefits*, Centre for Strategic Economic Studies, Working Paper, No 24, Victoria University, Melbourne. (<http://www.cfses.com/documents/wp24.pdf>).

<sup>6</sup> EU Commissioner Kroes on Open 2011 and Open Access  
<http://www.youtube.com/watch?v=YAkf7VmpQ5M>

Data storage and management require significant investment of time and resources. Economies of scale and efficiencies are most likely to be achieved with a centralized model. AVAC is not opposed to decentralized storage provided that federal standards insure its quality.

AVAC strongly supports the development of new analytical tools for searching peer-reviewed scholarly publications. The search function available for searching Pub-Med publications, Entrez Global Query Cross-Database Search System, allows users to search many [health sciences](#) databases at the [National Center for Biotechnology Information](#) (NCBI) website. Improved search options for peer-reviewed scholarly publications may take advantage of capability currently available through Google and other search engines, such as optimized or personal use retrievals that are enhanced compared to NCBI's current personalized retrievals.

**3. *What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?***

AVAC supports the development of minimum core metadata for scholarly publications and efforts such as the "Dublin Core Metadata Initiative" to define them.<sup>7</sup> Linking methods such as connections currently available between PubMed and personal scholarly citation portals such as "citeulike"<sup>8</sup> would enable this information more efficiently.

**4. *How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?***

Community advocates are frequently appointed to Food and Drug Administration (FDA), NIH and investigator science boards pursuant to Federal Advisory Committee Act procedures or to other official advisory bodies requiring advocates and their constituents to keep abreast of and speak knowledgeably on latest scientific developments. Pursuant to provisions of the health care reform law, a new "Patient-Centered Outcomes Research Institute" was created to "commission research that is guided by patients, caregivers and

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<sup>7</sup> [http://www.niso.org/publications/isq/free/FE\\_DCMI\\_Harper\\_isqv22no1.pdf](http://www.niso.org/publications/isq/free/FE_DCMI_Harper_isqv22no1.pdf)

<sup>8</sup> <http://www.citeulike.org/>

the broader health care community and will produce high integrity, evidence-based information.” The PCORI’s first funding announcement received 856 grant applications subject to traditional peer review scoring procedures and involves over 60 government recruited community public representatives to sit on high level grant review study sections. They must decide how to spend the initial \$13 million in first term pilot projects.<sup>9</sup> In order to secure the value of this public investment and generate quality peer review, open access to the scientific literature must be provided to all knowledge users serving in multiple citizen roles and not restricted to those in otherwise subsidized environments such as universities or government institutions.

Federal agencies require and solicit broad input based on sound science to decide numerous policy, research and funding choices. The patient and at risk public community are often asked to participate in these decisions as part of open government consultation measures. Yet often agency staff producing vital data to compile evidence based information directly informing policy and translational science publish their own studies in publications where consulting parties may not read them. A case in point recently occurred when the Centers for Disease Control experts published an important proposal affecting best ways to implement HIV prevention research in the U.S.- an effort on which the nation spends hundreds of millions of dollars annually - in a journal that cannot be read without costly subscription.<sup>10</sup> The public is strategically involved now in complex consultations on these matters that change day to day and benefit from the latest new data reports. At a minimum when discussing systems to view publicly funded research, the government’s own publications produced by staff and directors with taxpayer funds must be available promptly and at no cost to further the aims of transparency, access to public records and public participation.

***5. Besides scholarly journal articles, should other types of peer- reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?***

AVAC strongly supports access to reports from conferences or other meetings supported by federal funds. Recent and expected constraints in federal research grant funds prevent grantees and others from attending conferences where collaboration, productive peer interactions and knowledge exchange occurs in real time and reviewing abstracts on site. Although published or other conference reports are not an adequate substitute for

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<sup>9</sup> <http://www.pcori.org>

<sup>10</sup> Herbst, Jeffrey H.; Glassman, Marlene; Carey, James W.; Painter, Thomas M.; Gelaude, Deborah J.; Fasula, Amy M.; Raiford, Jerris L.; Freeman, Arin E.; Harshbarger, Camilla; Viall, Abigail H.; Purcell, David W., *Operational Research to Improve HIV Prevention in the United States*, JAIDS Journal of Acquired Immune Deficiency Syndromes., POST ACCEPTANCE, 1 January 2012  
doi: 10.1097/QAI.0b013e3182479077

attendance, open access publication at least mitigates the missed opportunities that result from these funding decreases.

**6. *What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research?***

AVAC strongly supports immediate access to publicly funded research publications with no embargo period as discussed elsewhere in these comments. Ensuring timely, free access to health-related information empowers patients and disseminates information affecting themselves and their families.

Thank you again for this opportunity to comment. If you have questions about this letter, please do contact me [mitchell@avac.org](mailto:mitchell@avac.org).

Very truly yours,

A handwritten signature in black ink that reads "Mitchell Warren". The signature is written in a cursive style with a long, sweeping tail on the "n".

Mitchell Warren  
Executive Director

January 12, 2012

Dr. John Holdren, Director  
Office of Science and Technology Policy  
725 17<sup>th</sup> St NW  
Room 5228  
Washington, DC 20502

Re: Request for comments regarding public access to scholarly publications (76 FR 80418)

Dear Dr. Holdren,

Thank you for the opportunity to comment on public access to peer-reviewed scholarly publications resulting from federally funded research. As the publisher of a peer-reviewed journal, the American Institute of Biological Sciences (AIBS) is concerned about the probable impacts of open access on our ability to sustain the investments we make in editing, peer reviewing, and making accessible manuscripts published in our journal.

The AIBS is a nonprofit scientific association dedicated to advancing biological research and education for the welfare of society. AIBS works to ensure that the public, legislators, funders, and the community of biologists have access to and use information that will guide them in making informed decisions about matters that require biological knowledge. Founded in 1947 as a part of the National Academy of Sciences, AIBS became an independent, member-governed organization in the 1950s. Today, AIBS has nearly 160 member organizations with a combined individual membership of approximately 250,000. AIBS advances its mission through coalition activities in research, education, and public policy; publishing the peer-reviewed journal *BioScience* and the peer-reviewed education website [ActionBioscience.org](http://ActionBioscience.org); providing scientific peer review and advisory services to government agencies and other clients; convening meetings; and managing scientific programs.

Our responses to the questions OSTP posed in its request for comments are below.

*1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

Agencies can ensure the growth of existing and new markets related to the access to and analysis of peer-reviewed publications by ensuring that the intellectual property and commercial interests of researchers and publishers are respected, thus sustaining existing markets and providing the predictability needed for planning new ventures. Holding publishers of information resulting from federally-supported research to minimum standards for discoverability through online

access might be a plausible way to grow markets without putting unreasonable pressure on finances; discoverability—the ability to learn of the existence of a relevant resource and how to access it— does not mean free access to all, however.

*2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

A published scientific article represents, in varying degrees, the outcome of a collaboration between a publisher and authors. Authors provide the initial input, but editors typically spend many hours refining and checking content, and improving its presentation to make it more readily understood. Publishers then invest in systems to safely archive the finished product and ensure its discoverability to researchers worldwide.

Regarding the intellectual property interests of publishers, copyright law has historically provided protection, although publishers may have to spend time and effort to monitor compliance and address apparent violations. For publications that have elected not to secure copyright on their articles, which may be a reasonable commercial decision in some cases, licenses such as those available from Creative Commons ([creativecommons.org](http://creativecommons.org)) may provide worthwhile protection against misappropriation.

Regarding the intellectual property interests of scientists generally, publishers that do secure copyright on their articles, including AIBS, commonly “give back” to the author rights to archive their articles on an institutional Web site, make copies for colleagues and for educational purposes, and/or make articles available on a personal Web site. Scientists also benefit from publishers’ efforts to prevent misappropriation. The federal government might advise scientists it supports to secure such rights commensurate with their needs before submitting an article for publication. Articles produced in the course of the official duties of a federal researcher may not be copyrighted; this ensures the federal government’s interest in having unimpeded rights to produce copies of reports resulting from federally supported research.

For-profit as well as not-for-profit publishers, such as AIBS, have to secure revenues to cover their costs, at a minimum, and more than that to innovate. Library subscriptions have historically been important, but publication fees from authors are becoming a larger part of revenue, and are the principal contributor for open-access publications. Advertising revenues may be important in fields where readers have budgets for expensive equipment that can sustain significant advertising revenues, but not all fields of science can support substantial advertising revenues. Libraries have little incentive to subscribe to journals if the content, including the relatively recent content, is certain to be publicly available through other channels in an easily searchable archive. For this reason, AIBS opposes measures that would mandate wider open access to publications in markets that lack alternative revenue streams adequate to compensate for the resulting predictable fall in subscription revenue.

*3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

The federal government presumably maintains copies of research reports resulting from work it supports, but this rationale does not extend to the government's making all such information routinely available at no cost to the public at large. Innovators do not require free source materials; rather, they need an environment with some predictability. Decentralized approaches to making information available are widely recognized to confer advantages in terms of reliability. The government might encourage these by requiring federally supported researchers to publish in outlets that adhere to recognized technical security standards. Interoperability standards could be encouraged in a similar way.

*4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

Policy-makers should recognize that there are large disparities in the typical levels of funding available to investigators across different fields of science. There is marked variation even among researchers funded by e.g. the National Science Foundation. There are also differences in the sizes of collaborations and the amount of time typically required to generate a publication. As a consequence, no one-size-fits all approach is likely to be optimal. Investigators in some fields typically have grants that include funds adequate to defray the publication charges associated with open-access publication. Investigators in other fields do not, and will therefore often prefer to publish in journals that do not require large publication fees, even though that means their work will only be accessible to subscribers of the journal and those who have access to it through a library. Many publishers, including AIBS, would be willing to cooperate with the federal government to ensure compliance with minimum standards for discoverability and security.

*5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

As indicated above, ensuring compliance with minimum standards could encourage interoperability of systems. Regarding metadata, traditional citation formats in combination with digital object identifiers seem to be adequate as a minimum.

*6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden*

*and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

A public access policy that applies to research results should not apply to derivative works, such as reviews. The attempt to control the publication of such derivative works by stipulating that they become open access could impair the sustainability of publication of such items by scientific journals. Derivative works typically represent more work (per published page) by editors than do primary research reports. The quality of a review article (more so than a primary research article) is often in substantial part a result of sustained expert editorial attention that maximizes the effectiveness of the presentation; through successive rounds of peer review, mediated by editorial staff, articles or chapters are strengthened. It is in the national interest and the interest of science that publishers be able to realize sufficient revenues from publication of reviews to sustain this high-level editorial attention.

The federal government may hold its employees and grantees who publish research findings to minimum standards in terms of the discoverability and security of the publication products. Ensuring an environment in which publishers can survive and grow will minimize burdens and costs for parties that don't have that specialization: awardee institutions, scientists, Federal agencies, and to some extent libraries.

*7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

As indicated in the preceding response, AIBS does not believe there is a vital public interest in the mandated open-access publication of peer-reviewed publications such as book chapters and conference proceedings. This would effectively prevent for-profit and not-for-profit publishers from developing such products.

*8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications? Please identify any other items the Task Force might consider for Federal policies related to public access to peer-reviewed scholarly publications resulting from federally supported research.*

*BioScience* has a 2010 ISI Impact Factor of 5.51, and a 5-year impact factor of 6.335, and a cited half-life of 9.5 years, according to the Institute for Scientific Information. These statistics establish that articles published in a journal, considered a leader in its field, may still be gathering citations and be valuable to scholars a decade after publication. It is therefore appropriate that AIBS be able to secure revenues from the republication of articles years after their original publication. These revenues help to support the costs of on ongoing publication, including the incorporation of technical innovations (e.g. automated cross-linking, multi-media formats, etc.). Mandating open access of scientific journals with such a long shelf life threatens

the ability of AIBS to preserve the value of its archive and realize returns from its past investment in producing useful and discoverable presentations of research results. This in turn threatens our ability to continue providing peer review and editing services on new manuscripts.

If AIBS may be of further assistance to you on this or any other matter, please contact Dr. Robert Gropp, AIBS Director of Public Policy at 202-628-1500 x 250 or [rgropp@aibs.org](mailto:rgropp@aibs.org).

Sincerely,



Richard O'Grady, Ph.D.  
Executive Director



To: The Office of Science and Technology Policy

From: Elizabeth A. Rogan, CEO, The Optical Society of America  
Tel. +1 202-416-1944; [erogan@osa.org](mailto:erogan@osa.org)

Re: Response to November 4, 2011, Request for Information, Office of Science and  
Technology Policy, Public Access to Peer-Reviewed Scholarly Publications Resulting from  
Federally Funded Research, FR Doc: 2011-28623  
  
Submitted electronically to [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

Date: January 12, 2012

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The Optical Society of America (OSA) is pleased to provide comments in response to the above-referenced November 4, 2011 "Request for Information" (RFI). We welcome the opportunity to continue to work with OSTP and other federal partners on this issue.

While OSA strongly supports the dissemination of scientific research to the public at large, this must be balanced by sustainable revenue needs of non-profit scientific organizations like OSA whose mission is to foster programs in optics and photonics science, technology and education.

In addition, any mechanism for compliance with open access requirements should not be overly burdensome and prescriptive so that the increased costs and administrative burdens associated with it do not negatively impact cost sensitive non-profit scientific organizations like OSA.

#### About OSA and Optics

Founded in 1916, OSA was organized to increase and diffuse the knowledge of optics, pure and applied; to promote the common interests of investigators of optical problems, of designers and of users of optical apparatus of all kinds; and to encourage cooperation among them. Based on the science of light, optics and photonics are specialized fields of physics and engineering. From fiber optics and telecommunications to medical imaging and cancer research, optics and photonics are advancing today's critical technologies.

OSA's mission is to promote the generation, application and archiving of knowledge in optics and photonics and to disseminate this knowledge worldwide. The purposes of the Society are scientific, technical and educational. OSA's commitment to excellence and long-term learning is the driving force behind all its initiatives.

Uniting more than 130,000 professionals from 175 countries, the OSA brings together the global optics community through its programs and initiatives. OSA publications, events, technical groups and programs foster optics knowledge and scientific collaboration among all those with an interest in optics and photonics.

## OSA Journals

Since 1917, OSA has set the standard of excellence in peer-reviewed optics and photonics research. As a non-profit science publisher, OSA plays a central role in the process by which research is developed, communicated, disseminated, and ultimately consumed by the scientific community and the general public. Today, OSA publications include 15 broad-based journals, one magazine, *Optics and Photonics News* (OPN), and a comprehensive conference proceedings series. To produce these high-quality, well-respected publications, OSA invests an extensive level of resources (staff, volunteers, financial) annually on peer review, editorial management, production, promotion, printing, distributing, and hosting its publications on a fully digital, reliable online platform, making the content available at all times to consumers around the world.

Whether an article is read online or in print, high-quality peer review, page composition (XML), copyediting, and the listing and linking of bibliographic and reference data must be managed, necessitating considerable human capital investment in staff at our Washington DC office. Our 300 scientific editors maintain the quality and reputation of our journals, utilizing OSA's own well-established system of peer review, whereby independent experts in the field review submitted articles. Accepted articles are those that meet OSA established criteria, including novelty and the substantial nature of the research findings. Managing the peer review process is a complex undertaking for OSA. To effectively and efficiently handle the 13,000+ articles submitted to OSA annually requires a large ongoing investment in sophisticated electronic resources, associated support personnel, around 300 editors and help from tens of thousands of referees—many of which require significant training and support, especially the next generation of scientific professionals and students. Each year OSA makes such necessary investments to fulfill its public nonprofit mission, generating an intellectual return through the dissemination of scientific research.

Currently, three OSA journals are produced using an all-electronic or online only format. OSA employs the "Gold" open access business model (ie: supported by author publication fees) for these journals, and the content is available to the public free of charge. Additionally, all three of the journals regularly receive significant exposure to the general public via such mainstream media outlets as the New York Times, BBC, Scientific American, and Time magazine.

*Optics Express* (OpEx), OSA's first open access journal was launched 15 years ago and is well-known within the optics and photonics field for its 60-day rapid time-to-publication. It is currently ranked number 2 by the total number of cites (46,603) and number 5 by Impact Factor (3.749) out of 78 journals listed in the Optics category of the Thomson Reuters 2010 Journal Citation Reports (JCR). Additionally, OpEx is currently ranked number 12 of all 8,073 journals tracked by the JCR. This reflects not only its importance in the field of optics and photonics but in scientific publishing overall. Today, OpEx publishes more than 3,000 peer-reviewed articles annually, which is half of all OSA papers published each year, and these articles reflect new developments of interest to the optics and photonics community in all fields of optical science and technology.

OSA's journals are all hosted on Optics InfoBase, its digital library. Optics InfoBase is an online, searchable archive of all of OSA journals and conference proceedings that dates back to 1917. It includes more than 200,000 articles and the proceedings from 360 conferences. Using Optics InfoBase, visitors can freely review and retrieve all of OSA's open access articles, read abstracts for all

articles at no charge, and gain access to free products like “Spotlight on Optics.” “Spotlight on Optics” features journal articles from OSA’s subscription and open access journals that have been nominated by OSA’s Editors. These Spotlight articles are freely available on Optics InfoBase, and each is accompanied by an original summary written in plain English to extend the reach of the technical content.

In addition to OSA’s investment in open access journals and content, the society also publishes 12 subscription-based journals. These journals represent over 70% of all revenues for OSA. It is important to note that these revenues are then reinvested back into critical science and engineering programming. All of the educational and scientific programs OSA creates support both current and future generations of the optics and photonics communities. Two examples: as a result of these revenues OSA has developed an extensive student and young professionals program that supports more than 4,500 student members and 260 student chapters worldwide. Another example is LaserFest. This was the celebration of the 50<sup>th</sup> anniversary of the invention of the laser, which took place in 2010, and educated the general public about the inception and continued importance of the laser in our everyday lives. Through OSA’s efforts and those of its partners, we were able to reach a worldwide audience of 365 million people. OSA alone invested \$1M in this year-long event. Agencies, such as NSF and DOE, plus over a hundred non-profit partners, participated as well.

#### Introduction to OSA’s RFI Response:

One of OSA’s most critical goals is to achieve the widest possible dissemination of the research results it publishes, including associated data and context information. Enabled by internet technologies, OSA is able to disseminate its growing number of articles, more widely and affordably than ever before in its history, reaching the largest number of authors, subscribers, and users since its inception in 1917. This ability to disseminate its content requires substantial investments in technology and infrastructure (such as our online and peer-review platforms) and business-model innovation to deliver the option of free, open or subscription access as well as pay-per-view options, recognizing that the value of the final published article needs to be paid for to remain sustainable.

OSA believes that it would be in the best interest of the United States and its government, as well as in the best interest of all other stakeholders, to strike a balance between public access and ongoing viability and sustainability of the scholarly publishing industry because of the impact and value it brings to the progress of science and its contributions to American society and economy. The business development culture within OSA created its open access publishing model years before a federal agency funding mandate was considered. This product is one example of the shared values between OSA and the federal agencies’ and the desire of both to provide open access materials to a broader audience. Such a balance can be achieved based on shared principles such as the importance of peer review, the recognition of economic realities through adaptable and viable publishing business models, the need to ensure secure archiving and preservation of scholarly information, and the desirability of broad access. One way to achieve this balance is for government to adopt a sensible, flexible, and inclusive approach to drafting public access policies—an approach that engages all concerned parties, including federal agencies, scientists, university administrators, librarians, publishers, and the public.

Consistent with the recognition of economic realities, it is OSA’s position that government agencies develop public access policies through voluntary collaborations with non-governmental stakeholders, including researchers and publishers. Policies should be developed by the need to foster interoperability

of information across multiple databases and platforms. Agencies' efforts then could be directed toward facilitating cyber infrastructure and collaboration programs with and between agencies and the stakeholders to develop robust standards for the structure of full text and metadata, navigation tools, and other applications to achieve interoperability across the scholarly literature. More detail on this is provided later in the document. OSA believes that any scholarly publication access policy needs to be flexible to accommodate agency-specific needs and have the capacity to evolve in response to the rapidly changing nature of scholarly publishing.

## OSA Responses to RFI Questions

**(1) Are there steps that agencies could take to grow the existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

- a) According to trade association and other industry surveys, U.S. publishers, in both the non-profit and commercial sectors, serve a robust, innovative global market for the access and consumption of peer-reviewed publications. Academic, corporate, and governmental research and education communities constitute primary segments of the market. The global revenue from scholarly journal publishing was estimated at \$8.0 billion in 2008,<sup>1,2</sup> with approximately \$3 billion attributed to the U.S. market. The enterprise employs approximately 110,000 people worldwide, 30,000 of which are in the U.S. Additionally, new publishers, journals, and business models either evolve or are emerging constantly, signaling a healthy competitive marketplace.
  - i. This robust market has led to multiple channels of access to and analysis of research across a broad array of social and scientific disciplines. Publishers have led in technological developments. They have likewise been active in assisting the formation of library consortia, both in the United States and globally. These and other **publisher initiatives have helped to accelerate and broaden access to the peer-reviewed literature across the globe and have dramatically decreased the cost of such access.** Currently, OSA serves more than 2,200 of the roughly 2,500 research institutions, government labs and corporations worldwide that have an interest in optics and photonics content, and every individual affiliated with these institutions has instant access to OSA journal content and conference proceedings. As research institutions in developing countries are able to overcome their English language barriers and meet the basic educational needs of their patrons (i.e.: elementary textbooks on math and English), OSA anticipates that there will be a growing need for optics and photonics content. We are closely monitoring this growth and have programs in place to both assist with it and then meet the need once present.

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<sup>1</sup> Cox, J. and L. Cox, (2008) *Scholarly Publishing Practice: Academic Journals Publisher's Policies and Practices in Online Publishing*, 3rd ed., ALPSP (2008),

[http://www.alpsp.org/ngen\\_public/article.asp?id=200&did=47&aid=24781&st=&oaid=-1](http://www.alpsp.org/ngen_public/article.asp?id=200&did=47&aid=24781&st=&oaid=-1)

<sup>2</sup> Outsell, "An Open Access Primer-Market Size and Trends" (2009),

[http://www.outsellinc.com/contact\\_us/open\\_access\\_primer\\_2009](http://www.outsellinc.com/contact_us/open_access_primer_2009)

- ii. **Publishers are willing and able to work with all stakeholders to address existing or future gaps in access.** Agencies should identify specific needs of particular user groups that are not already being met and collaborate with publishers and other stakeholders to meet those needs most effectively. Researchers, the general public, funders, patients, doctors, and others EACH have different information requirements. Publishers have already demonstrated their commitment to identifying and addressing these access gaps, e.g., International Network for the Availability of Scientific Publications (INASP), DeepDyve rentals, Research4Life, patientINFORM, Emergency Access Initiative, access for public libraries, journalists, and high schools.
  - iii. OSA and many other scholarly publishers offer various open access options for authors. In addition to OSA's "gold" open access model, OSA also offers authors the opportunity to have their articles be made freely available in our subscription journals. As with the "gold" open access option, we allow authors to pay a publication fee to enable this option. Currently, less than one percent of OSA authors choose the open access option for their papers published in our subscription journals.
- b) Some options to broaden access to materials that analyze and interpret research for scientists and the public include:
- i. Work to develop standards for data and meta-data to make research more readily searchable and discoverable. Publishers are already working in partnership with third parties like CrossRef<sup>3</sup> to develop standardized information and collections.
  - ii. Work with researchers and other stakeholders to create appropriate policies to make the Federal agency-collected and maintained outputs of taxpayer-funded research, such as grant reports and research progress reports, freely available to the public.<sup>4</sup>
  - iii. Make federal agency funds available to authors to support payment for open access of their published articles. Several research funders already do this (Howard Hughes Medical Institute—U.S., The Wellcome Trust—Europe, and Max-Planck Institutes—Europe).
  - iv. License content from publishers to make it available to specific audiences. Publishers license content to customers of many kinds, and can generally customize those licenses to meet specific or specialized user needs, including those of government agencies, and have the ability to ensure the availability of their content with existing infrastructure.
- c) Public access government mandates have significant costs to the scientific enterprise.**

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<sup>3</sup> CrossRef (<http://www.crossref.org>) is a not-for-profit group founded by publishers in 2002 and maintains 50 million items. Almost 1000 publishers participate and assign Digital Object Identifiers (DOIs) to published content items. Development of the CrossRef service has resulted in seamless navigation of the research literature by users so that researchers using the bibliography in one article can link from a reference to the full text of the referenced article.

<sup>4</sup> This would ensure readability to the broadest audience. NSF is already pursuing such a policy: <http://www.nsf.gov/pubs/policydocs/porfaqs.jsp>

- i. NIH's PubMed Central data indicates two-thirds of users are from overseas, undermining critical export opportunities for an \$8 billion publishing industry that employs 30,000 jobs in the U.S.
- ii. Significant value added by the publishing industry could be eliminated if revenue channels necessary for publishers to reinvest in their businesses and innovations continue to be threatened by government mandated access policies that provide free access to publishers' works and enable piracy and unauthorized reuse.
- iii. Mandates often result in additional direct and lost opportunity costs for publishers. For example, although only a very small portion of OSA's content is subject to the NIH public-access mandate (OSA is primarily a physical science publisher), OSA has and continues to incur costs to modify formats and procedures in order to deposit manuscripts into NIH's PubMed Central (PMC). Additionally OSA remains concerned that PMC is shifting readers from its site to PMC despite linking arrangements and thus undermining the value of OSA's investments in its content.
- iv. We do not yet know all of the impacts of the NIH policy, but there are significant concerns that it may undermine U.S. competitiveness and negatively impact U.S. jobs.<sup>5</sup> Because OSA continually spends time, money and resource on working with PMC to overcome its inconsistent and regularly changing standards, OSA has had to divert resources away from innovative efforts to develop new products and services that would provide added value to the research community and public at large. New products and services result in new revenues and the need for additional talent. Without them, there are lost opportunities for OSA and the scientific community and fewer jobs to support the U.S. economy.

**(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

- a) Do not establish mandates that take IP without the full rights holder authorization and compensation. It is of paramount importance that the government does not take any actions that undermine publishers' legal right and entitlement to protect their intellectual property.
- b) Ensure copyrighted materials are protected from unauthorized dissemination and piracy. Scientific publishers rely heavily on the reputation of their journals to compete in the marketplace. **Copyright is an essential ingredient in promoting creativity, innovation, and the continued integrity and reliability of the scholarly record.**

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<sup>5</sup> House Energy and Commerce Committee Subcommittee on Health Chairman Joe Pitts sent a [letter to Francis Collins, NIH Director](#), expressing concern that the NIH Public Access Policy undermines the competitiveness of STM journal publishers, and seeking additional information on the NIH Public Access Policy, PubMed Central, and its impact on the science, technology and medical publishing fields.

- i. We have seen that the NIH policy undermines IP and promotes pirating. Not only is PMC undermining an important U.S. export market,<sup>6</sup> but PMC copies of copyrighted material appear on rogue sites, contributing to millions of dollars in annual losses to U.S. publishers.
  - ii. Nearly all scholarly publishers adopt liberal copyright policy with regard to authors, allowing them to post copies of their manuscript on their individual and institutional websites, with very little restriction, share copies with colleagues, and to use their manuscripts for other educational and research purposes. For example, within the physical science community, authors regularly post their articles accepted for publication to Cornell University's arXiv platform.<sup>7</sup> Only commercial use is restricted and enforced by the industry.
- c) Provide free public access to funder-collected and maintained final research reports and link to the peer-reviewed journal articles, which are available through a variety of mechanisms. This solution would allow standardization of information reported,<sup>8</sup> rapid and broad dissemination of the government-funded materials even before publication of a peer reviewed article, and the preservation of IP. The NSF policy referenced above can be positively contrasted with the NIH policy.
- d) Support the continued operation of various models of publishing to ensure access to innovation and the ability for researchers to publish in the venue of their choice.

**(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

- a) Centralized, government-controlled custody of publication carries significant downsides and few upsides.
  - i. **Long-term stewardship of content carries significant costs that are already being borne by publishers.** In an era of dwindling federal resources, central federal repositories are duplicative and an unnecessary expense and recurring burden that may

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<sup>6</sup> See question 1

<sup>7</sup> arXiv (<http://arxiv.org>) is an e-print service in the fields of physics, mathematics, non-linear science, computer science, quantitative biology, quantitative finance and statistics. Submissions to arXiv must conform to Cornell University's academic standards. arXiv is owned and operated by Cornell University, a private not-for-profit educational institution. arXiv is funded by Cornell University Library and by [supporting user institutions](#). The National Science Foundation funds research and development by [Cornell Information Science](#).

<sup>8</sup> Some agencies may want to establish a template for certain kinds of reports so as to facilitate various kinds of aggregate meta-analysis.

not be viable for long-term stewardship.

- ii. With multiple sources of scholarly publications, many of which are not based on U.S. government-funded research, partnerships among stakeholders are essential for achieving effective access to literature that represents the latest scholarly discoveries.
- iii. A centralized governmental approach will deter private sector innovation by establishing unnecessary levels of oversight and bureaucracy that stifle creativity. It will also minimize scientific and commercial opportunities by reducing potential traffic to innovative new applications, such as those provided by publishers that facilitate the work of researchers.

**b) The publishing industry is already doing a good job of promoting interoperability, search, development of analytic tools, and other scientific and commercial opportunities.<sup>9</sup> There is no reason to doubt that publishers will continue providing innovative products and services, unless their financial livelihood is undermined by harmful policies.**

- i. A competitive publishing environment of not-for-profit and for-profit organizations – all of whom must receive a return on investment to survive – has led to robust technology development in scholarly publishing during the past 20 years. This sector of the publishing community, which includes professional associations, commercial publishers and university presses, moved quickly and decisively to introduce new technologies that meet researchers’ demands for faster and more user-friendly delivery of scholarly information. Just in the last year, OSA has committed to spending \$2.5M over the next five years (and has already spent \$500K) to further upgrade its platform in an effort to more easily develop new products, enhance researchers’ experience on our site by providing in-line access and linking to and within the full-text (as opposed to just the PDF), as well as greater interoperability, discoverability and accessibility of all OSA content.
- ii. Through the CrossRef service, publishers over the past decade have developed the Digital Object Identifier (DOI) a unique identifier for each piece of content in a scholarly publication. In partnership with stakeholders, we are continuing to innovate in the creation and standardization of metadata to make it easier for researchers and the public to find and use scientific research information.
- iii. Publishers collaborated with librarians and database providers to establish COUNTER (Counting Online Usage of NeTworked Electronic Resources) which has produced an international set of standards and protocols governing the recording and exchange of online usage data. This enables libraries to better understand how the digital collections are being used and it allows publishers to better understand the usage patterns of their digital content.
- iv. Internet search engines, abstracting services, and other tools do an excellent job of ensuring the discoverability of research, and innovations in this area are happening

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<sup>9</sup> See question 5

every day without government interference.

- c) U.S. federally funded research is only one part of the entire universe of information on any given topic, and in some disciplines, research is increasingly non-U.S. government funded. A centralized repository such as PubMed Central, though by some measures successful, is not a model that is universally applicable or necessarily the best model for the future. Any successful and optimized scientific publishing system will incorporate effective incentives to implement and expand interoperability and reuse across internationally distributed databases.
- d) What constitutes a publication and the nature of publication is changing with technology. Publications can include supplemental material, multimedia files, software, links to resources on the web, and can be revised and corrected over time by the authors and publishers, hence the emergence of new community initiatives such as CrossRef's CrossMark<sup>10</sup> service, which electronically watermarks an article's Version of Record (VoR), and DataCite,<sup>11</sup> which extends the CrossRef-promoted Digital Object Identifier (DOI) to datasets. Any plan for the future should recognize that the static aggregation/library model is not likely to hold up well in the distributed and dynamic Internet milieu.
- e) It seems unlikely that one optimal procedure for preservation and stewardship would emerge to become applicable across all of scholarly publishing, thus agency policies should embrace diversity, decentralization, and interoperability. In the long term, systematic collaborations among stakeholders (government, publishers, universities and their libraries, and other not-for-profit participants in the scholarly publishing system) will be necessary to achieve maximum benefit. Libraries, in partnership with publishers, have established entities for preservation of digital documents that are already in wide use, for example, Portico<sup>12</sup> and CLOCKSS<sup>13</sup>.

**(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

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<sup>10</sup> CrossMark is a current pilot project of CrossRef to that will allow readers to easily determine whether they are looking at the publisher-maintained, stewarded version of a journal article.

<sup>11</sup> DataCite is a not-for-profit organization established to facilitate easier access to research data on the Internet, increase acceptance of research data as legitimate, citable contributions to the scholarly record and support data archiving that will permit results to be verified and re-purposed for future study.

<sup>12</sup> Portico (<http://www.portico.org/digital-preservation/>) is a digital preservation service provided by a not-for-profit organization with a mission to help the academic community use digital technologies to preserve the scholarly record and to advance research and teaching in sustainable ways. It is among the largest community-supported digital archives in the world, working with libraries, publishers, and funders to preserve e-journals, e-books, and other electronic scholarly content.

<sup>13</sup> CLOCKSS (*Controlled* LOCKSS) is a not for profit joint venture between the world's leading scholarly publishers and research libraries whose mission is to build a sustainable, geographically distributed dark archive with which to ensure the long-term survival of Web-based scholarly publications for the benefit of the greater global research community (<http://www.clockss.org/clockss/Home>)

- a) **Publishers provide significant value and are uniquely positioned to partner for long-term archives and innovations in accessibility and interoperability. Such innovation is dependent on continued funding for the value-added work of publishing.**
- b) Journal publishers are actively working with federal research agencies to develop and implement multiple collaborative projects that will enhance the public access, utility, and preservation of materials that report on and analyze and interpret federally-funded research including progress reports, scholarly publications and data for use by both the research community and the general public. Such agencies include NSF and DOE.
- c) A pertinent recommendation of the 2010 *Scholarly Publishing Roundtable* report<sup>14</sup> states that government policies should be guided by the need to foster interoperability and encourages “...additional multiagency programs supporting research and development to expand interoperability capacity and to develop and promote additional interoperability practices and standards.” The *Roundtable Report* further notes that the National Science Foundation, the Department of Energy, and other agencies provide important funding for the development of interoperability capacities through their cyber infrastructure programs.
- d) OSA has and continues to partner with NIH on an innovative, open-access visualization tool for the optics and photonics community. Please see our response in Question 5 for more details on this specific initiative and other possible public-private partnerships.

**(5) What steps can be taken by federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to federal science funding?**

- a) **Publishers, like OSA, are dedicated to the widest possible dissemination and discoverability of publications that analyze and interpret research.**
- b) Many scholarly publishing non-profit organizations, such as OSA, were founded by scientists for scientists and fully embrace providing myriad publishing opportunities for the scientific communities that they serve. OSA not only provides open access and subscription-based journal publishing opportunities but a host of other educational and scientific services as its primary mission. As part of the publishing options that OSA provides to the optics and photonics scientific community, OSA partnered with the NIH National Library of Medicine and AFRL to develop an open access visualization tool called Interactive Science Publishing (ISP).

With ISP, authors can integrate large 2D and 3D image datasets and the original source data with a peer-reviewed journal article. The datasets and source data can be freely viewed and analyzed interactively by readers.

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<sup>14</sup> Report and Recommendations of the Scholarly Publishing Roundtable, January 2010, available at: [www.aau.edu/WorkArea/showcontent.aspx?id=10044](http://www.aau.edu/WorkArea/showcontent.aspx?id=10044).

- c) To facilitate public access and drive and support scholarship, federal agency databases should be able to communicate with each other. Each federal agency's policies should include common core properties that promote access to and interoperability among the content in all public access databases.
- d) Beyond common properties, federal agencies should have the flexibility to manage and modify their policies in response to evolving circumstances for the various constituencies that they serve and that are affected by their policies. Federal agencies should fully engage researchers, institutions, and publishers working in fields that coincide with the agencies' missions, both in establishing initial public access policies and in modifying those policies as appropriate over time.
- e) When determining the common properties that all federal agency databases should share, OSA strongly encourages the agencies to develop collaborations and partnerships with scientific publishers so that the properties are vetted and are consistent with industry norms for capturing data within the STM industry—and especially within the physics and engineering market where mathematical equations are the norm and difficult to capture in differing database structures.
- f) More specifically, OSA recommends that federal agencies develop collaborations and partnerships with scientific publishers to develop and implement:
  - i. ***Standards and persistent identifiers to enhance the discoverability of federally funded research results and to promote interoperability among agency, publisher, and any third party databases and platforms;***
    1. Most funding agencies currently require researchers to acknowledge in publications the support that they have received. There are no standards, however, on how this should be done. Consequently, agency funders find it difficult to know what publications have arisen from the research they have funded. OSA strongly recommends that publishers develop, in collaboration with funding agencies and CrossRef, a means of standardizing funder information and make that information available to funding agencies and the public. We believe that a community-wide solution of this type will be easier and far less expensive to deliver than for each agency to develop its own response to the problem. This is because **publishers are in the best position to provide a simple way of ensuring that journal articles are accompanied by standardized, high-quality metadata providing information about the agency, program, and the specific grant that funded the research.** It would be very expensive for agencies to obtain this information through data mining existing publisher databases and equally expensive for publishers to be required to work with each funding agency to comply with their individual standards. OSA's experience to date with NIH's PubMed Central is that the standards in place are not being consistently applied and do not always comply with the needs of content, such as from OSA's journals, that has extensive math and equations in it. As a result, significant time, resource and expense is being incurred by OSA on an ongoing basis to ensure that federally funded research published in its journals is available on the PubMed Central database.

2. This proposal has been endorsed by CrossRef and the major scientific, technical, and medical (STM) publishing trade associations: the Professional and Scholarly Publications Division of the American Association of Publishers (PSP-AAP) and the International Association of Scientific Technical and Medical Publishers. Related to this proposal, the DOE's Office of Scientific and Technical Information (OSTI) has agreed to maintain a registry of standard nomenclature for funding agencies and the associated naming and numbering system for grants. OSTI already houses technical reports and data sets for more than 40 federal and international funding organizations.
3. With the successful implementation of this funding identity proposal by STM publishers and CrossRef, agencies would have access to standard metadata from published articles. By displaying this information on agency websites, visitors—from the research community to the general public—could follow the link [enabled through the Digital Object Identifier (DOI)] to the publisher's platform where article abstracts are freely available and the Version of Record (VoR) of the article (maintained by the publishers) is available through a variety of access mechanisms. More than 40 scholarly publishers are currently testing this access mechanism.
4. Additionally, publishers are aware that increasingly grant investigators are being asked to share or provide plans regarding how they will share with other researchers the primary data, samples, physical collections, and other supporting materials created or gathered in the course of their work. Grantees are expected to encourage and facilitate such sharing. Scholarly publishers are already participating in a number of initiatives designed to facilitate the voluntary sharing of data or to foster interoperability among data sharing repositories, and they would be willing to work with NSF, DOE, and other database/repository operators to develop recommended practices for assigning DOIs to data sets and supplementary material.
5. For helping federal agencies to standardize data policies, publishers would draw on their experience with initiatives such as Opportunities for Data Exchange (ODE; see [www.alliancepermanentaccess.org/current-projects/ode](http://www.alliancepermanentaccess.org/current-projects/ode)), which aims to gather and promote best practices on the way scientific data are treated, and CoData, a partner of the International Council for Science (ICSU) World Data System ([www.icsu-wds.org](http://www.icsu-wds.org)). The goals of the relatively new ICSU World Data System (WDS) are to create a global federated system of long-term data archives and data-related services covering a wide spectrum of natural sciences, thereby encouraging interdisciplinary scientific approaches. For supporting information, publishers would draw on their involvement with the joint NISO/NFAIS Working Group on Supplementary Journal Information (see [www.niso.org](http://www.niso.org)).

Additionally, OSA is already a member and/or participates in a number of standards organizations initiatives such as the National Information Standards Organization (NISO—[www.niso.org](http://www.niso.org)), National Federation of Advanced Information Services (NFAIS—[www.nfais.org](http://www.nfais.org)), CrossRef ([www.CrossRef.org](http://www.CrossRef.org)) and the newly formed consortium Open Researcher and Contributor ID (ORCID—[www.orcid.org](http://www.orcid.org)), with a purpose to develop unique researcher identifiers. OSA would use its specific knowledge with these organizations/initiatives to help federal agencies standardize

their data policies specific to content for the optics and photonics scientific community.

**ii. *Discovery tools to facilitate journal content mining:***

1. Content mining can be especially useful to the scientific community in driving interdisciplinary research and supporting the identification of new areas of discovery, and publishers are committed to managing content in modern digital formats to ensure that users gain maximum benefit.
2. As part of the content mining work that STM publishers are already undertaking or are planning to pursue, they should work with funding agencies to develop pilot projects for journal content mining that would create thesauri, using their expertise to identify, organize, and analyze content to create conceptual links within and between highly technical subject matter. Although there are various ways to perform this type of processing, certain elements are common to all methods, including an automated way to process all sizes and types of content in which to identify relevant information and facilitate its extraction and analysis.

**iii. *Possible pilot project that federal agencies and publishers could collaborate on that would drive access, use, and innovation from research results:***

Linking to/from Research Reports—OSA encourages federal agencies to fund a pilot project that would seek to determine whether and how publisher content derived from agency-funded research could be mapped against agency research reports and other content. Specifically, the pilot would send users from publisher websites to the agency website to view free government-sponsored research reports and would, likewise, send users from the agency websites to publisher sites to view free abstracts and links to the Version of Record of articles connected to a particular research report or funded project.

If successful, this would result in interoperability between onsite agency content and publisher platforms. This is of interest to scholarly publishers because they would like to work with major research funders to identify, organize, evaluate, and highlight published results from federally funded research, as well as identify relationships, projects, and offerings that might be applicable to other research funders.

Possible outcomes of the pilot could include:

1. The ability to identify all agency-funded research within publisher offerings and the ability to deliver associated metadata to agencies.
2. The ability to establish mechanisms and approaches that could be implemented (for all research funders) across the industry.
3. A capability to report to major funders on the impact of the research they fund, e.g., through bibliometric and other tools.
4. A “research dashboard” capability or the ability to contribute to one already in existence, e.g., <http://rd-dashboard.nitrd.gov/>.
5. A mechanism for low-cost content rental access to published articles (Versions of Record) and a mechanism to explore its impact.

6. Subject area content portfolios of agency-funded research articles for internal agency use (e.g., study sections).
7. The possibility to use the DOE-OSTI platform (the <http://www.science.gov/>) to extend this pilot to other federal funding agencies.
8. Models to illustrate how traditional publishing systems can coexist with self-archiving.

**(6) How can federal agencies that fund science maximize the benefit of public access policies to US taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, federal agencies, and libraries?**

- a) Publishers understand that federal agencies want to maximize public access to the federally-funded research in which taxpayers invest. It is important to note that publishers heavily invest in the peer-reviewed literature. The federal investment is in research, not in the publication of that research, and it is the publisher that adds significant value to the research through its efforts and expenses. U.S. federally funded research agencies should not expect nor require publishers to provide the products they have produced at significant expense for free public access. Such mandates jeopardize the sustainability of a robust peer-review publishing system which the vast majority of scientific researchers consider to be first-rate and which helps ensure U.S. leadership in scientific research.
- b) An excellent mechanism to ensure public access to federally funded research results is by providing access to final agency reports. Every federally funded research project is required by law to provide a detailed final report. The research reports are a condition of the government contract and should be indexed and archived and made easily accessible to the public.

Some science funding agencies currently make these reports freely available via the web while others do not. Making all such reports available and accessible in a comprehensive and systematic way would solve an essential public access problem. One leading example is DOE's Office of Scientific and Technological Information, which publishes final reports online in a portal called Information Bridge. These reports are not journal articles. Rather the final reports are often much longer than the resulting journal article (if such articles exists—researchers typically publish only positive results and then have to meet the publication standards of the journals in their field) and provide more information.

- c) NSF instituted a new reporting requirement as a result of specific legislation in the America COMPETES Act (Section 7010: Reporting of Research Results), which required that “all final project reports and citations of published research documents resulting from research funded in whole, or in part, by the Foundation, are made available to the public in a timely manner and in electronic form through the Foundation’s Website.” For several years, publishers have proposed working with authors to develop short abstracts for a lay audience to accompany each research report.
- d) Publishers are partnering with federal agencies to develop policies that maximize public access to research results and provide easy links between research reports (detailing research results, perhaps including lay summaries) and the peer-reviewed Version of Record, including complete access to the abstract or summary. Such projects would result in interoperability between funder and publisher content, ensuring access and better reporting on the results of funding.

In addition, please see the response to Question 5 above for specific agency initiatives.

**(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

- a) No. Publishers also invest in these other types of content used by researchers, often by conceptualizing the project, commissioning the content, and investing heavily in its development. Any kind of mandated access to that content is an expropriation of that content.

**(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

- a) OSA believes that a uniform access policy or mandate for scholarly publications would be an ineffective approach. An overarching government-wide policy or embargo period would fail to accommodate such key factors as the specific needs of any given agency, the rapidly changing nature of scholarly publishing, and the unique considerations of the various fields of science and the journals that serve them.
- b) OSA analyzed related industry data using the “cited half-life” metric as a relative indicator for how long journal titles within scientific categories are being accessed and cited. The cited half-life for a journal is the median age of its items cited in the current year and reflects how many years that content is considered of critical importance to a particular field of study. The longer the cited half-life, the bigger the value to the publisher from a revenue standpoint. The findings noted in the chart on the next page could help inform considerations related to embargo periods and the associated financial impacts on publishers.

### Cited Half-Life of Physics/Optics Journals

The cited half-life for the journal is the median age of its items cited in the current year. Half of the citations to the journal are to items published within the cited half-life.

| Scientific Categories      | Avg Cited Half-Life within Category (Years) | Avg Cited Half-Life of AIP/OSA Journals within Category (Years) | AIP/OSA Journals in Category                                                                                                                                                                 |
|----------------------------|---------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applied Physics            | 5.6                                         | 7.8                                                             | AIP: <i>Applied Physics Letters, Journal of Applied Physics, Journal of Low Temperature Physics, Review of Scientific Instruments</i>                                                        |
| Chemical Physics           | 7.1                                         | >10                                                             | AIP: <i>The Journal of Chemical Physics</i>                                                                                                                                                  |
| Physics - Fluids & Plasmas | 6.6                                         | 7.6                                                             | AIP: <i>Physics of Fluids, Physics of Plasmas</i>                                                                                                                                            |
| Mathematical Physics       | 6.5                                         | >10                                                             | AIP: <i>Journal of Mathematical Physics</i>                                                                                                                                                  |
| Optics                     | 5.3                                         | 7.5                                                             | OSA: <i>Applied Optics, Journal of the Optical Society of America A, Journal of Lightwave Technology, Journal of Optical Society of America of America B, Optics Express, Optics Letters</i> |

**Source:** Thomson Reuters, ISI Web of Knowledge, Journal Citation Reports, Year 2010. Data provided for journals published by the American Institute of Physics (AIP), an umbrella society for physics publishers in the U.S., and OSA.

- c) Based on the evidence related to OSA journals and to journals covering physics and related sciences, significant economic uncertainty remains with the assignment of minimum embargo periods. In looking at a sample of several physics and optics journals within those categories, AIP and OSA found that physics and optics journals have very long cited half-lives. **While some disciplines reflect data that shows that the cited half-life is within the first year or two, for physics and optics the cited half-life ranges from 7-10+ years. This is a significant finding as it relates to establishing an embargo period for federally funded research** and one that OSA strongly recommends that federal agencies give careful thought and consideration to when discussing this issue.

In summary, OSA appreciates the opportunity to have input on this important topic via the OSTP RFI, and we look forward to continuing to work with OSTP and other federal agencies to develop mutually agreeable guidelines relating to the public access of federally funded peer-reviewed scholarly research.



**American Society for Investigative Pathology**  
*Investigating the Pathogenesis of Disease*

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**ASIP Response to OSTP Request for Information (FR Doc. 2011-28623):  
Public Access to Peer-Reviewed Scholarly Publications Resulting from  
Federally Funded Research**

**To:**

Office of Science and Technology Policy (OSTP)  
[publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

**From:**

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January 10, 2012

## **ASIP Response to OSTP Request for Information (FR Doc. 2011-28623): Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research**

The American Society for Investigative Pathology (ASIP), a nonprofit educational 501(c) 3 society, publishes *The American Journal of Pathology* (AJP) and co-publishes *The Journal of Molecular Diagnostics* (JMD) with the Association for Molecular Pathology (AMP), which is also a 501(c) 3 society. AJP has been published for over 100 years and was commercially managed until 1992, at which point ASIP assumed the role of self-publisher until last year. JMD was founded in 1998 as a self-published journal, which was a joint venture between ASIP and AMP. We have the experience of successfully managing both journals during revolutionary change, including the commercialization of the internet, web-based journal distribution, online Continuing Medical Education associated with the journals, electronically managed peer review, digital file-based production workflows, programming language changes from SGML and HTML to the NLM-DTD, and user-driven features and functionality only possible through the development of electronic tools and internet accessibility.

As a small biomedical society, ASIP faced significant challenges to continue self-publishing two high-profile pathology journals through this turbulent period. We have 6 staff members working full-time for the journals to manage peer-review and production, and had 5 executive staff members contributing a combined total of 2.3 FTEs to manage the day-to-day business and strategic planning for the journals' access and visibility, content and user value, and financial viability. AJP has been the #1 or #2 journal in Pathology (according to ISI rankings) for all of the years during which ASIP self-published. JMD has climbed steadily up the ISI rankings since 2000 and is now #14 in Pathology among 69 journals. We believe our journals are run efficiently and effectively and their institutional pricing is reasonable. In fact, the journal prices were not raised for the three-year period 2008-2010, in part to rule out price as a factor in analyzing subscription renewals. Yet subscription renewals declined precipitously in recent years- a period of time coincident with the free access embargo policy of AJP being reduced from 12 months to 6 months. As a consequence, ASIP moved its free access embargo on AJP from 6 months to 12 months in 2009 (the embargo for JMD was and remains 12 months), on both the official journal site and on the PubMed Central archive. Two years after returning to the 12-month embargo period, AJP subscriptions have now started to increase.

Also as a consequence of declining subscription revenue and staggering demand for more specialized mobile access and enhanced online features, ASIP contracted with Elsevier in late 2010 to manage the journals' business operations. This decision to no longer self-publish came after long and hard consideration by ASIP's leadership and review of a variety of proposals from commercial publishers.

In responding to the eight sets of questions submitted for response by OSTP, ASIP would like to first state that we believe our Society, as the publisher of the journals, is the best guarantor and

guardian of the scientific literature published in our journals. We generally do not support the growth and proliferation of national repositories that are redundant of the content we already provide on our website and in print. We also believe that our system of a mixed model of revenue is the best model, because it gives authors and libraries the economical ability to publish in and access the journals. Through the member benefits ASIP offers and reasonable page and color charges, authors can pay considerably less to publish in our journals than they would pay for Open Access fees to publish in most Open Access journals. Our annual institutional subscription rates have been consistently lower than our competitors and the average price per article is less than \$2.00. Therefore, we take issue with many of the assumptions made by OSTP in their questions and ask that you keep an open mind toward the traditional publishing model and toward working with ALL publishers, including those of us who have not moved away from that model.

**(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

As referenced in the Association of Learned and Professional Society Publishers' response, we agree with their following comments:

Scholarly publishing is an international enterprise, with around 1.5 million articles published annually<sup>1</sup>. U.S. researchers dominate this output with a 29% share of the total.

Current markets for peer-reviewed publications exist globally and publishers have invested heavily to ensure that there are many channels of access to publications. The markets are already well-served and a recent survey from the Publishing Research Consortium found that 97% of researchers in North America have very or fairly easy access to research journals<sup>2</sup>. This study also demonstrated that North America enjoys one of the best 'access to information' versus 'importance of that information', profiles of any of the regions investigated.

Publishers have recognized the needs of the myriad communities they serve and have responded appropriately, leading the way with technical tools and services to enhance the access, usability and analysis of published research, collaborating widely with various stakeholders in the process.

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<sup>1</sup> <http://www.stm-assoc.org/industry-statistics/the-stm-report/>

Publishers provide free or very low cost access to universities and colleges, research institutes, schools, hospitals, governmental offices and national libraries in the lowest gross national income per capita countries throughout the world through self-initiated systems.

It is clear that publishers are keen to ensure that the needs of different markets in accessing scholarly information are met appropriately and are keen to do so in collaboration with other stakeholders. Publishers are keen to engage with the U.S. Government to address the further gaps it has identified in public access. It would be useful for agencies to detail the particular needs of such user groups and to collaborate with publishers to establish the most efficient and appropriate ways in which to address those needs.

The need for archiving digital information has been recognized by publishers, librarians, funders and researchers. Collaborative projects already exist to ensure the long term preservation of scholarly information through initiatives such as Portico<sup>3</sup>, LOCKSS<sup>4</sup>, CLOCKSS<sup>5</sup> and the National Library of the Netherlands (Koninklijke Bibliotheek) eDepot<sup>6</sup>.

Very careful consideration needs to be given to archiving and public access policies, if these are to be tied to growth in the U.S. economy and improving output of the U.S. scientific enterprise. Public access cannot be restricted to one local region. Ensuring public access to publications resulting from federally-funded research will result in global access, therefore benefiting researchers and other users all over the world (and potentially also their economies), not just the U.S. This removes any competitive advantage for the U.S. economy and research output. Furthermore, ASIP would go so far as to say that free global access puts the U.S. at a relative disadvantage since the proportion of research output by the U.S. surpasses all other countries, and all research articles made available through open access are equally available to all countries.

Data from the National Institutes of Health reports that more than half of all PubMed Central users are from outside the U.S. This repository is therefore reducing the export market for the U.S. publishing industry which, in total, employs around 50,000 people and contributes about \$3.5 billion to the U.S. balance of trade.

**(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

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<sup>3</sup> <http://www.portico.org/digital-preservation/>

<sup>4</sup> <http://www.lockss.org/lockss/Home>

<sup>5</sup> <http://www.clockss.org/clockss/Home>

<sup>6</sup> <http://www.kb.nl/index-en.html>

As referenced in the Association of Learned and Professional Society Publishers' response, we agree with their following comments:

The U.S. government is clearly aware that allowing global public access to the peer-reviewed published output from federally-funded research has the potential to open such content to piracy and other unauthorized dissemination.

Such piracy undermines the income that scholarly publishers require to continue their investment in the aforementioned projects, tools and collaborations for the benefit of the scholarly community.

The most efficient way to ensure appropriate protection of intellectual property interests of all stakeholders would be to make the final Research Report freely available. This would allow a rapid and very broad dissemination of the research results obtained directly from federal funding. This would also facilitate such reporting to be tied back to the original grant made by the federal agency. Final project reports could also be linked to the peer-reviewed published research, available online whether free, via rental, or for full purchase as the publisher business model dictates.

Like ALPSP, ASIP is not in favor of mandated deposit to centralized open repositories. In addition to significant concerns about long-term sustainability and piracy, open repositories have deleterious effects on the publishing model; for example, NIH does not currently provide publishers with full, detailed usage statistics from PubMed Central, which means publishers are unable to supply libraries with the complete picture with regard to their institution's use of a wide range of journals. Such usage data is crucial in determining renewals and while this situation persists, subscriptions are being cancelled based on incomplete usage data.

**(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

As referenced in the Association of Learned and Professional Society Publishers' response, we agree with their following comments:

Studies have demonstrated that researchers prefer to access the publisher-created Version of Record (VoR) from a peer-reviewed journal as the authoritative, definitive version, over versions in subject or institutional repositories<sup>7, 8</sup>.

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<sup>7</sup> <http://www.peerproject.eu/reports/> D4.2 PEER Behavioural Research – Final Report

<sup>8</sup> <http://www.publishingresearch.net/projects.htm> Research Publication Characteristics and Their Relative Values

In an interconnected age, with current and ever-improving technology, centralization is not required and moreover, requires unnecessary duplication of effort at considerable expense. Indeed the report from the Scholarly Publishing Roundtable in January 2010<sup>9</sup> recommended decentralization to achieve the interoperability needed to “enhance the impact of the scholarly literature and ignite the generation of new knowledge”.

Publishers have gone to considerable lengths in developing tools to ensure interoperability between different access systems. For example the Digital Object Identifier (DOI<sup>10</sup>) system, to provide persistent identification of digital objects, the CrossRef<sup>11</sup> organization and its various ongoing projects aimed at connecting users with primary research content and the Open Research and Contributor ID (ORCID<sup>12</sup>) initiative, to solve author name ambiguity in scholarly communications and latterly resolving institutional naming ambiguity.

Publishers are also continuing to invest in the development of discipline-specific tools to enable users to interact with and analyze specialized content. Such tools would be lost with centralization.

Publishers are continuing to invest in metadata standards, which improve the ease with which relevant articles can be discovered. With such excellent standards, search tools are all that is required to connect users with the most appropriate content for their needs, and importantly to the VoR. Such metadata standards include those developed by EDItEUR<sup>13</sup>, IDEAlliance (PRISM)<sup>14</sup> and NISO<sup>15</sup> (see also paragraphs 33 and 34 below).

**(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

As referenced in the Association of Learned and Professional Society Publishers’ response, we agree with their following comments:

In addition to the many public-private partnerships already mentioned, publishers are keen to engage further with Government and its agencies. Proposals have already been put to NSF for collaborative projects to enhance the public access, utility and preservation of publications resulting from federally-funded research.

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<sup>9</sup> <http://www.aau.edu/WorkArea/DownloadAsset.aspx?id=10044>

<sup>10</sup> <http://www.doi.org>

<sup>11</sup> <http://www.crossref.org>

<sup>12</sup> <http://orcid.org>

<sup>13</sup> <http://www.editeur.org/>

<sup>14</sup> <http://www.idealliance.org/specifications/prism/>

<sup>15</sup> <http://www.niso.org/standards/>

Such proposals include standardizing the collection, display and use of metadata to indicate the federal grant supporting the research from which a scholarly publication derived and potential linking back to the Federal Agency website. A further example is the proposal for a project to understand the requirements for and benefits derived from content mining and to establish a methodology for overcoming current barriers, such that publishers can facilitate such content mining with sustainable business models. These are just two of the proposals under discussion with the NSF.

**(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?**

As referenced in the Association of Learned and Professional Society Publishers' response, we agree with their following comments:

As already mentioned above, publishers are already undertaking a project with CrossRef and the Department of Energy (DoE) to standardize the way funding information is collected publishers and included in article metadata. This would enable Federal agencies to easily obtain information about publications resulting from federally-funded research.

Such collaborative projects enable cost-effective standardization across all Federal agencies and publishers.

Metadata allows users to discover information and find related information without the requirement of accessing the full text. Two initiatives are important in this regard.

The Dublin Core Metadata Initiative<sup>16</sup> provides key specifications and best practice regarding the use of metadata for the description of various digital resources (including books and journal articles). It enables interoperability of different applications and vocabularies and optimizes the metadata for searching.

CrossRef<sup>11</sup> provides a cross-publisher linking network. This allows readers to easily link to other resources of interest on other publisher platforms. This works seamlessly through DOIs and metadata which are embedded in articles and other content as part of the value-added publication process.

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<sup>16</sup> <http://dublincore.org/>

**(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

As referenced in the Association of Learned and Professional Society Publishers' response, we agree with their following comments:

Federal agencies funding scientific research should maximize the products that they invest in, that is the research reports required by Federal agencies from the research scientist. Some already make such research reports available (e.g. the DoE Information Bridge<sup>17</sup>), but others do not. Making all such reports freely available would solve the "public access" issue.

Federal agencies do not invest in peer-reviewed journals. Publishers add significant value to peer-reviewed publications and this is reflected in researcher preference for the VoR<sup>7,8</sup>. Publishers should then be at liberty to employ appropriate business models by which they may recover their investment and to reinvest.

**(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

As referenced in the Association of Learned and Professional Society Publishers' response, we agree with their following comments:

No. Publishers invest considerably in all types of content they produce to add value to the scholarly and academic community that utilize them. Such publications should not be appropriated without rightsholder permission and compensation. To behave otherwise would compromise the sustainability of high quality publication, dissemination and preservation of the research results.

**(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

As referenced in the Association of Learned and Professional Society Publishers' response, we agree with their following comments:

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<sup>17</sup> <http://www.osti.gov/bridge/>

There is no single “appropriate” embargo period. Federal agencies should not impose inappropriate embargo periods on non-federally funded businesses. Individual publisher business models are not arbitrary, but are carefully calibrated to meet the needs of the market. For example, of ASIP’s two journals, AJP is published monthly and JMD is published bimonthly. As referenced above (page 2), the embargo for both of our journals was one year for several years. We experimented with decreasing the AJP embargo period from 12 months to 6 months. (Because JMD is published bimonthly, we fortunately and conservatively did not change its 12-month embargo period.) We experienced a precipitous decline in AJP institutional subscriptions within one year of our decision to shorten the embargo period to 6 months. After analysis and policy correction in 2009, we experienced our first increase in institutional subscriptions in 2011, proving to us that for AJP, a 6-month embargo period is too short and endangers the fiscal stability of our journal.

The most common current embargoes range from zero, for gold Open Access material, to 12 months, as a result of the NIH-mandate. Publishers, however, should be able to set their own appropriate embargo, depending on the material they publish and the market for which they publish, and this may be more or less than 12 months. Flexibility is particularly important for journals that publish less frequently than monthly.

An indication of the length of usage an article in a given discipline received, the journal half-life forms a useful measure. For example, the American Physiological Society reports journal half-life from 4.3 to over 10 years<sup>18</sup>. The quarterly journals of the American Anthropological Association also have a cited half-life of over 10 years and 90% of downloads occur 12 months after the date of publication. In mathematics papers published in 2009, 50% of citations were found to be to papers originally published before 1999, with 20% of citations to papers published before 1985<sup>19</sup>.

Imposing mandates on the potential to recover investment from such usage further undermines publishers’ ability to continue to innovate and add value for the benefit of the scholarly and academic community.

In the current economic climate, recovering investment is all too important. Journal budgets are being squeezed and foreshortening the length of time a publisher is able to recoup their investment has the potential to seriously damage publishers and therefore the overall economy.

As already referred to, the lack of transparency demonstrated by NIH has the potential to undermining the entire system. Librarians utilize usage statistics as part of their considerations

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<sup>18</sup> [http://www.the-aps.org/publications/journals/info/impact\\_factors.htm](http://www.the-aps.org/publications/journals/info/impact_factors.htm)

<sup>19</sup> <http://www.msri.org/attachments/workshops/587/MSRIfinalreport.pdf> Donald E McClure (2011) Dynamics of Mathematics Journals, 2000 to 2009

for journal renewals. Whilst publishers have worked with NIH to assist authors in fulfilling their mandated deposit, NIH has been unwilling to provide publishers with usage statistics, which would allow publishers to provide a more accurate picture to librarians of the usage of journals by their faculty. (Note: This is the fundamental reason why ASIP pulled out of its PMC publishing agreement at the end of 2011.)

In closing, we primarily and resoundingly disagree with the assumption that free access in any way facilitates economic advantage for the U.S. If anything, it facilitates the success of other countries – like China – which are not participating on public archiving initiatives. In the current economic situation in the U.S., where even graduate medical education funding (through CMS) is seriously in jeopardy of being cut by 40%, we encourage OSTP to consider a world where federal archives can no longer be funded by taxpayer dollars and can no longer exist. So little distinctive functionality has been gained by duplicative archiving on PMC that one should ask why the NIH mandate cannot exist without PMC. In this case, NIH's role would be to police compliance with the mandate. More emphasis could be placed where it should be on development of interoperable standards and functionality between publisher archives of both research and data. Further, we invite OSTP (as we previously have) to privately and comprehensively review our journal operations to more accurately gauge the effects of the NIH policy on a typical scholarly society. We would welcome inclusion of our leadership in high-level discussion of how to transition more medical research into clinical success stories and commensurate innovation and competitiveness.

Sincerely yours,



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Re: Federal Reserve Document 2011-28623

The American Society for Pharmacology & Experimental Therapeutics welcomes the opportunity to submit comments in response to the Office of Science and Technology Policy November 3, 2011 Request for Information (RFI) concerning "Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research."

ASPET is a professional society of 4,700 pharmacologists conducting research in academia, industry, and government. ASPET is the leading scientific society of pharmacologists. We publish five journals covering a wide range of pharmacological topics. ASPET is supportive of public access but believes that the business and publishing needs of organizations like ours should not be mandated by Federal funding agencies. Our comments are below.

*JPET* (The Journal of Pharmacology & Experimental Therapeutics) is a leading research journal in the field of pharmacology, and has been named by the Special Libraries Association as one of the "100 most influential journals of biology and medicine over the 100 years of the association's existence". Additionally, ASPET publishes *Drug Metabolism and Disposition*, *Molecular Pharmacology*, and *Pharmacological Reviews*.

- 1. Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

Publishers already engage in many efforts to promote their journals and expand the dissemination of their content, including content that results from federally funded scientific research. Many scientific journals have made their content freely accessible either immediately or after a relatively short period of time for the last 10 years.

**American Society for Pharmacology and Experimental Therapeutics**

At the end of 2011, publishers hosting their content through HighWire Press, a nonprofit online hosting service that is part of the Stanford University Libraries, made available more than 2.1 million free full-text research articles. Mandatory deposit of federally funded research in PubMed Central began in 2009. There appears to be no evidence showing a correlation between public access to scientific content and economic growth as a result of this public access.

Government duplication of publisher efforts to expand dissemination of content is not likely to be effective and may undercut publishers, thereby harming not just the publishing industry but the primary means of distributing the results of scientific research.

Publishers have invested in long-term archiving solutions that anticipate changes in technology. Government support for not-for-profit archiving systems such as CLOCKSS, which are already in place and operating successfully, would be better than creating a new duplicate system. The existing systems archive all content, which is also better than limiting archiving and access solutions to only federally funded research.

A duplicate federal archiving system could undermine publishers. ASPET, for example, is able to generate a modest amount of online advertising income that helps defray the costs of its publications program. Since 2000, ASPET has made all of its content freely available after 12 months. However, duplicate copies of content from ASPET's journals that are hosted by PubMed Central draw readers away and negatively impact advertising revenue for ASPET. Expanding government hosting of content at taxpayer expense could further erode the advertising revenue stream with no additional benefit to the public. The scientific research is already freely accessible and easily found on ASPET's web sites.

- 2. What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

Except for federal government employees, all authors who publish in ASPET's journals transfer the copyright to their manuscripts to ASPET upon acceptance for publication. ASPET performs copyediting and formatting services for all authors as well as preparing articles in Extensible Markup Language (XML) files in compliance with the National Libraries of Medicine Document Type Definition (DTM). These files are coded to make them fully searchable and to add functionality in an online environment for a worldwide audience. ASPET pays to have its content hosted online by a reliable service that is accessible to all. ASPET also pays to ensure that that content is archived for long-term preservation. ASPET allows content from its journals to be republished in research articles and books and to be reused for other noncommercial purposes at no cost and allows articles to be used in classrooms at no cost to students. ASPET supports the use of copyright to recover its costs and continue publication of its journals, which after a short time are made freely available to all. ASPET does not support government mandates that deny authors and publishers the benefits of their copyrights by dictating how and in what form their works are distributed.

- 3. What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

ASPET supports a decentralized approach to managing public access to peer-reviewed scholarly publications. A centralized, federally funded approach will capture only a portion of the scholarly literature. ASPET's journals and those of other publishers include content from authors from around the world, funded by many sources. Even if all articles resulting from federally funded research were put into one repository, the majority of the world's scientific output would be missing.

Publishers have already put in place means of linking articles using Digital Object Identifiers (DOIs), and have invested in archiving solutions for the long-term preservation of online content. Anything the federal government does in this regard is wasteful duplication of efforts that have proven successful.

Putting copies of federally funded articles in a government repository will lead to multiple versions of articles. Any government collection of funded articles should instead link to the article of record on the publisher's web site. This guarantees that readers will see any corrections, updates, retractions, or other actions taken with regard to a research article after its original date of publication. Housing duplicate copies of articles opens the scientific record to errors that could have serious consequences for the public.

**4. Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

There are existing and successfully operating models of partnerships among publishers, librarians, commercial entities, and others to maintain and preserve online archives of scientific research articles. These include the vast array of output from worldwide funding sources, both public and private, and go far beyond federally funded research. Examples include LOCKSS (Lots of Copies Keep Stuff Safe), CLOCKSS (Controlled LOCKSS), Portico, and JSTOR. The federal government could help support these existing efforts rather than try to create a duplicate system that would cover only federally supported research.

**5. What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?**

ASPET provides metadata for all of the content it publishes to various abstracting and indexing services and databases, including PubMed. Those services are best able to answer this question.

**6. How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peerreviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

Freely accessible and widely used internet search engines such as Google, Yahoo, and others already make peer-reviewed scientific literature discoverable to U.S. taxpayers with little to no burden on stakeholders. The federal government could increase public awareness of scientific findings by translating those findings into language that can be understood by the general public and providing that information on government web sites with links to the original research articles.

**7. Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

Book chapters generally rely on previously published literature, and research presented in conference proceedings is usually developed into full research articles later on. ASPET does not believe that these materials need to be covered by public access policies.

**8. What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

ASPET believes, based on over ten years' experience in making articles freely accessible after 12 months, long before the federal government instituted a public access policy, that a 12-month embargo period is necessary. A shorter embargo period will likely result in cancelled subscriptions. Publishers rely heavily on subscription revenue to maintain their publishing programs. A significant decrease in this revenue could lead to journals ceasing publication.

Publishers are in the best position to determine the correct embargo period for their content. Embargo periods will vary among subject areas and will differ for primary research articles and review articles.

ASPET published a review journal named *Molecular Interventions* from 2001 to 2011. It received high impact factors (a generally accepted measure of a journal's quality and value) and was widely read online and in print. Review articles in general are used long after 12 months. In the interest of widely disseminating its content, ASPET made *Molecular Interventions* freely available after 12 months. Many articles from the journal had to be deposited into PubMed Central because they resulted from federal funding. We believe that free access to this content after a relatively short period of time contributed to the journal getting very few institutional subscriptions. Its review articles were considered very useful well beyond the 12 months following publication, and so institutions may have decided they could wait instead of subscribing. After 10 years of consistent financial losses despite the journal being very favorably received and widely cited, ASPET had to cease publication. This could be the fate of other journals if the federal government mandates embargo periods that are too short.

\*\*\*\*

ASPET appreciates the OSTP National Science and Technology Council's Task Force on Public Access to Scholarly Publications review of these comments. ASPET would be pleased to offer any assistance with OSTP as it develops its policy. Please contact Richard Dodenhoff, ASPET Journals Director at 301-634-7997 or [rdodenhoff@aspnet.org](mailto:rdodenhoff@aspnet.org) for any additional information ASPET may provide.

Sincerely,



Lynn Wecker, PhD  
President



James E. Barrett, PhD  
Chair, ASPET Board of Publications Trustees

**From:** Ben Reynolds

**Subject: Request for Information: Public Access to Peer-Reviewed  
Scholarly Publications Resulting From Federally Funded  
Research**

**Date:** January 12, 2012 10:47:21 AM EST

**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

I see the Research Works Act as the reaction of old technology to new technology. The peer review and private publishing model arose as a way to distribute scientific research in a situation of limited resources (paper, ink, postage, etc). Those limits no longer exist. The value of peer review does still exist.

But, to claim that private interests have value-added by virtue of peer reviews that are performed for free is essentially to claim that the value-added is organizing peer reviews, which is to say, several secretaries are creating the value-added.

I support freely distributing research paid for by any government (as long as national security is not involved).

Thank you.

Ben Reynolds

Sr. Program Manager, CTYOnline <http://cty.jhu.edu/ctyonline>

Johns Hopkins Center for Talented Youth (CTY)

McAuley Hall 5801 Smith Ave STE 400

Baltimore MD 21209 USA

**From:** Francis Uy

**Subject: Public Funding: Public Access**

**Date:** January 12, 2012 10:55:27 AM EST

**To:** [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

Allowing the results of federally funded research to be held in private is antithetical to both scientific progress and the public good. If an organization wants to keep their data hidden behind a paywall, then they should pay for the research from their own pocket. If our tax money is spent on science, then that science should belong to the public.

-Francis Uy  
Catonsville, MD

# COGR

an organization of research universities

## COUNCIL ON GOVERNMENTAL RELATIONS

1200 New York Avenue, N.W., Suite 750, Washington, D.C. 20005  
(202) 289-6655/(202) 289-6698 (FAX)

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President

January 12, 2012

Task Force on Public Access to Scholarly Publications  
National Science and Technology Council  
Office of Science and Technology Policy

SUBJECT: Request for Information: Public Access to Peer-Reviewed  
Scholarly Publications Resulting from Federally Funded Research

The Council on Governmental Relations (COGR) is an association of 188 research universities and their affiliated academic medical centers and research institutes. COGR concerns itself with the influence of federal regulations, policies and practices on the performance of research conducted by its member institutions. Our goal is to ensure that federal policy goals can be met in an effective and efficient manner without creating administrative structures that may hinder compliance.

COGR offered written and testimonial comment to the National Institutes of Health (NIH) as it developed its policy to enable public access to NIH-funded research. As we noted in our January 2010 response to the Office of Science and Technology Policy's (OSTP) request for information concerning Federal government-wide public access policies, we support the goal of providing timely, easier and less costly access to publications that result from federally funded research and observed that the public does have such access through various material depositories including traditional libraries and, increasingly, through electronic sources.

This new request for information raises a series of specific questions and we offer the following responses to some of those questions.

**Comment 1:** Growing markets related to access and analysis and using those markets to grow the economy and improve productivity of the scientific enterprise.

Publications resulting from Federally supported research are available to the public. A publication is a synthesis of the activities and findings of research and is generally of greatest use to other scientists working on similar or related problems. Thus, the relationship between access to a publication and scientific productivity is a key component in advancing the scientific enterprise.

However, no single publication is going to spur economic development and it is dangerous to tie an individual publication

directly to economic growth. Like access to research data, access to research publications will not provide a direct link to a new business or activity and to set that as an expectation is unreasonable and unattainable. In addition to this tenuous relationship, some would argue that the discussions concerning immediate public access and the ability of publishers – non-profit as well as private publishing houses – to maintain viable business models undermines the stability and growth of the existing publishing market. It would be important to avoid creating policies or regulations that undermine the markets for those businesses and organizations that provide access including both private and non-profit publishers.

**Comment 2: Protection of Intellectual Property**

The assignment of the ownership of the intellectual property as reflected in a publication, itself, as opposed to the intellectual property reflected in an invention and/or the associated research data is the responsibility of the author; in this case the investigators, scientists, etc. Institutions remind investigators to maintain their rights individually to use the information included in a publication for educational and research purposes. We can provide them with proposed language to insert in copyright agreements to enable access but, ultimately, the responsibility falls to the investigators/authors of the publication.

Without the appropriate protections to the assigned copyright, publishers may be reluctant to include the work of Federally sponsored investigators in their publications. Absent these protections and this outlet, public access will be profoundly undermined.

**Comment 3: Central versus Decentralized Management of Access**

As the most obvious “central” repository, we wonder that the Federal government wants to assume the responsibility of publishing or providing publication oversight to all the published results of Federally sponsored research. It would not be an effective or reasonable use of Federal resources and does not necessarily provide for better stewardship of the scientific resources than the current system. Setting standards for interoperability, search functions, etc., given the global diversity of publishers, disciplines, formats, platforms, etc., is not likely to be productive. Long-term access to publications of enduring value derives from the “scientific marketplace” itself. By that we mean, those publications that provide a foundation for continuing scientific inquiry remain viable and available through reprints, incorporation of the publication itself and/or its salient features into compilations or compendium, etc. Creating requirements for long-term archiving may only create a warehouse of dated information, duplicative of archives maintained by publishers, which do not enhance access.

**Comment 6: Maximizing Benefit while Minimizing Cost and Burden**

For grantee institution, this dilemma is the crux of the challenge. Our concern remains grounded in the nature of the institution’s relationship – or lack thereof – to the process of publication. Institutions do not join in the relationship between authors and journals. However, as the recipient of federal awards, a research institution is obligated to meet the terms and conditions of all its agreements. As such, institutions must act to ensure compliance with any government-wide requirement directed at achieving public access. We can remind our investigators to maintain their rights individually to provide public access and ensure that the published version is available in the appropriate format for search and analysis. We can provide them with model language to insert in copyright agreements to enable access.

Nonetheless, the responsibility falls to the investigators/authors of the publication. It is very difficult for institutions to effectively track compliance with these obligations. Publications that result in whole or in part from a federally sponsored award may appear several years after the completion of the funded research. The investigator/author may have moved to a new institution in the intervening period. Tracking publications from collaborative research with investigators/authors from more than one institution is a monumental task. Over time, one could anticipate that compliance with a government-wide policy will become a usual and customary practice in the research community and, as a result, investigators/authors will meet this obligation as a regular part of the publication process. But in the intervening period, the burden associated with a government-wide mandated process will be significant.

The costs to the institution and/or investigator are real. As NIH has moved forward with its policy on public access, investigators have discovered a shifting of publication costs to the author. There are direct charges for the submission of articles – “article processing charges.” Journal charges to authors for public access for a single article have reached, in some cases, \$3,000. NIH has reminded the community that publication charges are an allowable expense against a grant. However, in many cases publications will be accepted after a grant has closed. As a result, research institutions will be expected to assist investigators in meeting these unexpected costs, putting greater strain on institutions that already provide more than 20 percent of the funds to conduct research in the US. Charging these publication costs to a grant, if possible, will result in a real reduction in funds available to conduct the research itself. Absent a government-wide investment to support the costs of publication, a government-wide policy requiring public access to publications becomes an additional unfunded mandate for the research community.

**Comment 7:** Broaden Coverage to all written publications

Expanding the current public access model from journal articles to book chapters, conference proceedings, etc., will only exacerbate the costs and burden. Books are available in libraries; conference proceedings are often works in progress that may, eventually, be presented in print either in a journal or book. Pursing these research products will not enhance access to the ideas and data.

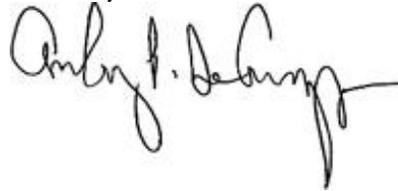
**Comment 8:** Publishing Community Response

The publishers are, in general, the holders of the copyrights to the published article and, as such, are the party responsible for providing public access. We are unaware of any evidence that the customary embargo of twelve months has prevented access to publications, hindered the growth of existing and new markets or undermined the productivity of the American scientific enterprise.

Thank you for this opportunity to comment on OSTP’s continuing consideration of the value of public access to peer-reviewed publications. We would note that the America COMPETES Reauthorization Act of 2010 (PL 111-358) Sec. 103 does not assume that a single, government-wide policy is appropriate and charges the Interagency Public Access Committee with coordinating agency activities concerning access to publications and data.

COGR has long supported harmonization and coordination among the Federal agencies in order to streamline the compliance with Federal mandates and regulations. In the case of access to publications, we would suggest that the challenge to access is not the result of the activities or policies of the research performers. Changes in policies or regulations directed at the performers, as opposed to the providers, that limit publishing the results of Federally funded research is not an outcome that supports access.

Sincerely,

A handwritten signature in black ink, appearing to read "Anthony P. DeCrappeo". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Anthony P. DeCrappeo  
President



## Smithsonian Astrophysical Observatory

January 12, 2012

Submission by Dr. Michael J. Kurtz and Dr. Alberto Accomazzi in response to OSTP Request for Information 2011-28623 of November 3, 2011 (<http://federalregister.gov/a/2011-28623>). For more information please contact: Alberto Accomazzi, Harvard-Smithsonian Center for Astrophysics, 60 Garden St., Cambridge MA, 02138, [aaccomazzi@cfa.harvard.edu](mailto:aaccomazzi@cfa.harvard.edu)

The authors of this letter are the Project Scientist and Program Manager of the Smithsonian/NASA Astrophysics Data System (ADS), a Digital Library portal for researchers in Astronomy and Physics, operated by the Smithsonian Astrophysical Observatory under a NASA grant since 1992. The ADS maintains bibliographic databases containing more than 9.2 million records covering Astronomy and Physics. The main body of data in the ADS consists of bibliographic records and full-text scans of much of the astronomical literature which can be browsed or searched via a sophisticated search interface. Integrated in its databases, the ADS provides access and pointers to a wealth of external resources, including electronic articles hosted by publishers, data catalogs and archives. ADS is used daily by every working astronomer and by an increasing number of other scientists. The ADS is available at <http://ads.harvard.edu>

*(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

Because virtually all working astronomers have access to the the modern and historical literature in the field, and open access can be defined as having free access to content, an analysis of the field of Astronomy research can be used as a proxy for what the benefits of open access can be. Our 2005 study [1] of the field finds that open access to the journals combined with an efficient retrieval system increases the research efficiency of the entire field by about 5%. Open access enhances the discoverability of the literature, and accounts for a substantial fraction of this increase in research efficiency.

*(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

Intellectual property issues are orthogonal to the matter of open access and should be addressed separately. We have no specific recommendations on this matter.

*(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

Our experience has shown that a centralized approach, where a single repository is in charge of maintaining content for an entire discipline is preferable. Scientific research takes place in a discipline-centered environment rather than in an institution-centric one. 10,000 chickens can't pull the wagon that a single horse can.

*(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

Yes! ADS is one such system. Our collaboration with private (publishers) and public (federal agencies) partners is an example of the collaborative environment which supports research in Astronomy and Physics. ADS filled a very practical research need when it was introduced 20 years ago. Its success was due to a variety of reasons, among them that the community behind it has been technically adept at handling digital information and willing to share its findings and data.

*(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

Federal agencies should ensure that basic publication metadata is open and accessible to all parties involved in scholarly publication. At a minimum, Dublin Core metadata (title, authors abstract, publication information) and references should be made available using digital library standards and protocols. Federal agencies should mandate the creation and dissemination of this core metadata, and be prepared to pay for this via the proper funding channels (contracts and grants).

The research enterprise also benefits from the creation and dissemination of discipline-specific metadata which is crucial within a field and which should be supported through the funding of additional curatorial resources.

*(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden*

*and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

Publication fees are but a small percentage of the total research costs, which are for the most part already funded by the Government. Shifting the funding model from subscription-based to author-pays will simplify both access and payment systems. Grants should explicitly and routinely pay for publication charges. Overhead rates which now fund library subscription fees can then be lowered by an equal amount.

*(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

Yes.

*(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?*

The best solution is to have no embargo period, as the cost for publication is already covered in the author-pays system.

[1] Kurtz, M. J., Eichhorn, G., Accomazzi, A., Grant, C. S., Demleitner, M., Murray, S. S. 2005, "Worldwide Use and Impact of the NASA Astrophysics Data System Digital Library," The Journal of the American Society for Information Science and Technology, Vol. 56, p. 36, doi:[10.1016/j.ipm.2005.03.010](https://doi.org/10.1016/j.ipm.2005.03.010)



January 12, 2012

Office of Science and Technology Policy  
725 17th Street, NW  
Washington, DC 20502

**Re: OSTP Request for Information (RFI): “Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research.”**

This letter responds to the Request for Information by the Office of Science and Technology Policy (OSTP) on public access policies for access to peer-reviewed scholarly publications resulting from federally funded research.

The Copyright Alliance supports OSTP’s mission to promote a more educated and informed public. Our members are committed to incentivizing the publishing of and broad public access to creative and scholarly works. Our membership includes publishers who contribute to U.S economic growth – particularly in the highly-skilled, well compensated sector of scientific and scholarly research. We feel strongly that the goal of promoting continued cutting-edge research in the U.S. scientific community goes hand in hand with maintaining the rights of copyright owners to determine the best means for disseminating their works so as to ensure continued funding for the value-added work of publishing.

Although we appreciate OSTP’s goals in this RFI, and do not wish to quibble with phrasing unnecessarily, in considering the important policy goals underlying this RFI it is important to distinguish between “federally funded research” which is supported by public funds, on the one hand, and “peer reviewed scholarly publications” which result from significant private investment by publishers, (including conceptualizing and developing journals as a focal point for niche areas of science and knowledge, ensuring the quality and integrity of the journal articles, and investing heavily in the final product and its distribution), on the other. Thus, it is not accurate to characterize peer reviewed scholarly publications as “result[ing] from federally funded research”.

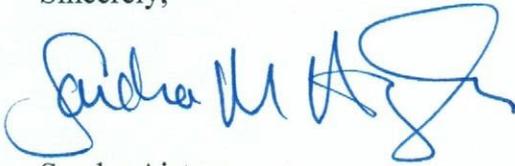
We urge the OSTP to keep this dichotomy in mind as it considers approaches to ensure broader public access to federally funded research. For instance, while it might be appropriate to require free public access to the federally mandated, and detailed, final reports of federally funded research projects, it should not be mandatory for copyrighted peer reviewed journal articles explaining, interpreting and expanding on that research to be made available online without authorization and compensation to the private sector publishers who published them. Such government mandates, in limiting the opportunities for rightsholders to recoup their investments, jeopardize the sustainability of a robust peer-review

publishing system, and limit opportunities for innovation which ensures that U.S. medical and scientific research remains first-rate.

We believe that the best approach to achieving greater public availability is through public/private collaboration with publishers that will result in the broad dissemination of materials that analyze and interpret research. Publishers are already working in partnership with all stakeholders – institutions, scientists, federal agencies, and libraries – to maximize the dissemination of scientific publications, ensure their discoverability, and provide long-term stewardship in order to support the research enterprise. We urge OSTP to help publishers and other stakeholders identify any perceived access gaps through this RFI, and to work collaboratively with stakeholders to develop appropriate means through which to maximize and make even more useful the content made available to audiences seeking it.

We thank you for the opportunity to comment.

Sincerely,

A handwritten signature in blue ink, appearing to read "Sandra M. Aistars". The signature is fluid and cursive, with a large loop at the end.

Sandra Aistars  
Executive Director  
Copyright Alliance

Blaise R. Simqu  
President and Chief Executive Officer



January 12, 2012

Office of Science and Technology Policy  
Re: Federal Register Document 2011-28623

Dear Sir or Madam,

As the CEO of SAGE Publications, Inc., I am writing to respond to OSTP's November 3, 2011 "Request for Information" (RFI) regarding "Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research."

Founded in 1965, SAGE Publications is the world's leading publisher of social and behavioral research journals and books. Located in Thousand Oaks, CA, SAGE directly employs more than 500 people in the U.S., and more than 1,000 people around the world. Last year, the company supported more than 56,000 authors, publishing more than 670 scholarly journals and 800 books.

SAGE currently participates in and strongly supports the free and open dissemination of its published works through Research4Life, the Journals Donation Project, and we also participate in PERii/INASP (Programme for the Enhancement of Research Information/International Network for the Availability of Scientific Publications).

Through our participation in CrossRef, we are able to provide interlinking and cross-linking to all published journal articles and thus its references and metadata, allowing for easy access to bibliographic and must-have research related information.

In order to ensure the availability and access to our published archive and to protect the Version of Record (VoR), SAGE supports CLOCKSS (Controlled Lots of Copies Keep Stuff Safe) and Portico.

As a scholarly publisher, SAGE is uniquely positioned to help the federal government in expanding public access to publications that describe and interpret federally funded research, ensuring the long-term stewardship of these publications, and supporting innovation and economic development derived from scholarly discovery. For example, last year SAGE launched *SAGE Open*, a unique Open Access Journal for social science authors. The response to *SAGE Open* has been very positive with 966 submissions in 2011. *SAGE Open* published 47 articles of the submissions, with many others in various stages of production.

For both traditional published journals and books, and *SAGE Open* products, our company makes a significant investment in the continued integrity and reliability of the scholarly record, formatting this content to make it accessible to users worldwide and preserving the scholarly record for future generations. Access policies that do not take these investments into account could potentially damage the private institutions on which the Federal Government and its scientific enterprise depend.

SAGE Publications Inc  
2455 Teller Road  
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Los Angeles London New Delhi Singapore

SAGE Publications fully supports and will enthusiastically participate in a federal agency public access policy that is sustainable in the long-term and maximizes benefits to researchers and the public at large. Such a policy, however, must maintain a proper balance between access and fundamental intellectual property rights; and respect proprietary contributions of added-value to ensure sustained private investment in innovation. This approach meets the needs of the scientific community by relying on evidence-based assessments and providing access to taxpayer-funded research results through both public and private channels.

We also believe it is essential for federal agencies that provide public access to private-sector published materials to ensure that copyrighted materials are protected from unauthorized dissemination and piracy. Copyright is an essential ingredient in promoting creativity, innovation, and the continued integrity and reliability of the scholarly record. The publishing industry has seen copies of copyrighted material on the National Institutes of Health's PubMedCentral appear on rogue sites, contributing to millions of dollars in annual losses to U.S. publishers.

SAGE Publications strongly supports the view that the Federal Government should be guided by "principles of transparency, participation and collaboration" as noted in the Transparency and Open Government Memorandum and Open Government Directive. We stand ready to work in collaboration with all partners to ensure the continued success, vibrancy, and innovation of the U.S. scientific community.

Sincerely,

A handwritten signature in black ink, appearing to read 'Blaise R. Simqu', written in a cursive style.

Blaise R. Simqu  
President & C.E.O.

cc: S. Eden  
C. Richman

I am a consultant to the biotechnology industry. I read and cite published scientific articles often in my projects.

I have found that corporations like Elsevier have set impossibly high fees to view single articles in their online journals, often around \$30 per download. When I am confronted by this option, I am forced not to read the work I wished to see. The cost for multiple articles would quickly make my consulting practice unprofitable.

Please oppose any legislation that would encourage publishing corporations like Elsevier to further restrict public access to funding paid for with US citizen tax money.

Thank you.

Thomas P Hopp  
206 818-9410

Dear OSTP,

As much as possible we should strive for the results of publicly funded peer-reviewed research to be available for free as soon as possible to as many people as possible.

Publishers have absolutely no intellectual property right to my results as a scientist funded by a mix of private and public funds. We as taxpayers invest billions of dollars every year to fund all sorts of innovative (and not so innovative) research. It is the duty and responsibility of federal agencies to safeguard access to results from this investment and to protect against the wholesale pirating of these results by some private publishers who add minimal value by electronically typesetting scientists' results and then claiming copyright.

As well you must be aware of the huge profit margins of these corporations (see \* below) who are now lobbying for further restrictions on open access. Therefore, you must do whatever possible to increase, not decrease, public and open access to all scientific literature. This openness will benefit all sectors of our society fueling new discoveries and economic growth.

Elias Coutavas, Ph.D.  
Senior Research Associate  
Blobel Lab  
Rockefeller University/HHMI  
212-327-8101

*\*Press Release  
Jan 6, 2012*

*Stamford, CT - January 6, 2012 - Amid budgetary pressures and a slow economic recovery, the combined markets for science, technical and medical (STM) publishing grew 3.4% to \$21.1 billion in 2011. According to a recent report from media and publishing forecast firm Simba Information, journals are the leading delivery medium, but online services posted the fastest growth.*

*The market is split evenly between the medical publishing segment and the scientific and technical publishing segment, with the latter posting a faster growth rate in 2011. Each segment is driven by a need for professionals to stay on top of the latest advances. However, a range of trends, including contracting library budgets against rising journal prices and a decline in pharmaceutical advertising, have deterred growth.*

*"The growth trends for the science and technical segment are found in e-book production and increased output from emerging foreign markets, notably India which is expected to be on par with most G8 nations by 2017," said Dan Stempel, author of the report. "Medical publishing is pushing mobile content delivery, with notable products Doximity and Sharecare."*

*In the scientific and technical segment, journals lead the delivery medium with nearly 42% of the market, while online services (electronic products that link content with other types of data, software and solutions) came in second, but posted the fastest growth at 6.4% in 2011. The delivery medium ranking for medical publishing mirrors its scientific and technical counterpart, with the exception of online services which is the fourth leading medium.*

*"Since researchers, scientists and medical professionals prefer online delivery, journals have been able to remain the leader, as they are easily adapted for online publication," said Stempel. "Online services centered around workflow solutions, have been a major focus of publishers' product development and growth strategies."*

*The report, Global STM Publishing 2010-2011, provides detailed market information for scientific, technical and medical publishing, segmented by delivery medium: journals, books, online services, newsletters/looseleaves, directories, and other (audio, video and CD-ROM). It analyzes trends impacting the industry, including library cost pressures, the use of social networking, the outlook for pharmaceutical advertising and more. The report includes 20 detailed profiles of the leading STM publishers, including Reed Elsevier, Wolters Kluwer, Springer Science+Business Media, Pearson, Epocrates, Hearst and others. It is available*

*at: <http://www.simbainformation.com/redirect.asp?progid=82858&productid=6059305>*

*About Simba Information:*

*Simba Information is widely recognized as the authority for market intelligence in the media and publishing industries. Its extensive information network delivers top quality, independent perspectives on the people, events and alliances shaping the industry. Our monthly newsletter, Professional Content Report (<http://www.professionalcontentreport.com/>), provides frequent updates on STM market trends. Simba routinely assists clients and the press with publishing and media industry analysis. Follow us on Twitter (<http://www.twitter.com/SimbaInfo>) and LinkedIn ([http://www.linkedin.com/groups?gid=2469881&trk=hb\\_side\\_g](http://www.linkedin.com/groups?gid=2469881&trk=hb_side_g)).*

*Please direct all media inquiries to:*

*Steven Aldrich*

*[press@simbainformation.com](mailto:press@simbainformation.com)*

Dear Science and Technology Policy Office,

I would like to take this opportunity to make a short statement on Open Access.

The worth of Open Access becomes immediately recognizable to me locally if I try to access my first two publications - I couldn't at my last institute because they didn't have subscriptions to these journals. My own work - not accessible. I don't even know if I could here - but of course I don't even want to check because it just might frustrate me. I submitted my third paper to an Open Access journal, and had a great experience. Unfortunately, there aren't many of these journals yet in my field, and I'm hoping for strong political support of Open Access.

But apart from that local recognition, it is clear to me that Open Access is the only possible way. This is research paid for by public money, be it German or US money, science doesn't even care about these boundaries. It is public, and I value free access to the knowledge I help or helped piece together a basic human right. I won't even make the argument that it is tax money and should therefore be open - I find that a pathetic argument. It is information we research for the benefit of mankind, and should therefore be freely accessible to everyone on the planet.

Sincerely,  
Joerg Rings

The  
Ornithological  
Council



PROVIDING  
SCIENTIFIC  
INFORMATION  
ABOUT BIRDS

American Ornithologists' Union  
Association of Field Ornithologists  
CIPAMEX (Sociedad para el Estudio y  
Conservación de las Aves en México)  
Cooper Ornithological Society  
Neotropical Ornithological Society  
Pacific Seabird Group  
Raptor Research Foundation  
Society for the Conservation and  
Study of Caribbean Birds  
Society of Canadian Ornithologists/  
Société de Ornithologistes du Canada  
The Waterbird Society  
Wilson Ornithological Society

Ellen Paul  
Executive Director  
5107 Sentinel Drive  
Bethesda, MD 20816  
Phone (301) 986-8568  
Email: ellen.paul@verizon.net

12 January 2012

Ted Wackler  
Deputy Chief of Staff  
Office of Science and Technology Policy  
Attn: Open Government  
725 17th Street, NW.  
Washington, DC 20502

*Submitted via e-mail to [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)*

Dear Mr. Wackler,

The Ornithological Council, a consortium of twelve scientific ornithological societies in the Western Hemisphere, submits these comments in response to the request by the Office of Science and Technology Policy (OSTP) for input on the Administration's interest in enhancing public access to scholarly publications resulting from federally funded research. Seven of our member societies — all not-for-profit — are based in the United States and publish peer-reviewed journals. One of those journals is fully open access; the others are not. The society publishers have voluntarily made the full run of those six journals and other publications (such as monograph series) available online at no cost to the public but due to lack of funding, some were unable to post volumes post-2000, despite their intent to continue making full content freely available subject to a four-year rolling window.

Much of the literature in those journals reports research funded in whole or in part with federal funding.

We share the Administration's view that increased access to scientific information benefits society. Scientists want to increase the dissemination and impact of the information they generate. As members of the *Washington DC Principles for Free Access to Science* (DC Principles), we support broad access to the scientific and medical literature. However, we are concerned about the impact of free access on scientific societies, and in particular, the idea that one model is appropriate to all scientific publishers, regardless of size, revenue, or current publishing model.

We are grateful to OSTP and the House Committee on Science and Technology for convening the Scholarly Publishing Roundtable. Notwithstanding the diligent efforts of the DC Principles, we have worried that the voices of small, nonprofit scientific societies have been drowned out in what has been an acrimonious debate that seemed destined to produce a single-model result that would be very

harmful to many scientific organizations. The Scholarly Publishing Roundtable report acknowledges the differences among scientific societies, but we would like to explain exactly what is at stake. The unintended consequences of an otherwise laudable activity — increasing the dissemination of science — could include the demise of many scientific societies. As these scientific societies serve society in many other ways — such as nurturing the development of new scientists and offering impartial expertise to guide government policy — it is critical that enhanced access to scholarly publications not be achieved by sacrificing these other important benefits to society. We suggest options to prevent those negative outcomes.

In the public notice, OSTP asked:

*(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

We would like to begin by reminding OSTP of the costs of mandated, one-size-fits-all open access publishing. The very small not-for-profit societies such as those we represent rely heavily on the revenue generated by the publication of journals. That revenue derives from membership dues and library subscriptions. We have already seen declining membership resulting from the fact that university students and faculty members have virtual open access because they can obtain online, full-content papers from hundreds of journals through their university libraries. The convenience of having one's own copy so as to avoid a trip to the library once had value; without that value, some forego membership. Library budgets at most universities and colleges — particularly the state-funded universities — have declined significantly over the past three years and that has caused a reduction in subscription revenue.

We have warned over the years that mandated open access would lead to the extinction of many small not-for-profit societies, and that the loss of a society means the loss of a journal and perhaps other publications, such as monograph series. We are sad to report that what we predicted is beginning to occur, even without government-mandated open access to most of the papers published in their journals. Two of our societies are already contemplating a merger in part because the decrease in revenue of one of those societies has jeopardized its continued existence. Mandated open access could be the final blow to many small nonprofit scientific societies and their journals.

Fewer journals means fewer papers published. That is the cost of a mandated one-size-fits-all open access policy. There will be less scientific information published. Some might be self-published, but self-publication is no substitute for peer-reviewed publications that have passed the scrutiny of expert review and editorial review. While peer-review is not perfect, its failures are few and the vast majority of published papers are improved by this valuable process. Publication in established journals also increases accessibility because these papers are simply easier to find and are more likely to persist than those self-published on websites that may or may not be maintained over long periods of time.

It has been suggested by the proponents of open access that scientific societies undertake other activities and services to members that will attract membership and other sources of revenue. However, small not-for-profit societies typically do not have sufficient revenue to hire staff and undertake alternate activities that might generate revenue to replace the loss of publication revenue.

For these reasons, we reiterate what we said to NIH in 2004 and to OSTP in 2010 in calling upon the Administration to allow researchers and scientific societies the freedom and flexibility to increase access to scientific literature in the manner that best suits the circumstances of each society. We remind OSTP that a similar recommendation was made by Scholarly Publishing Roundtable, an ad hoc working group convened by OSTP and the House Committee on Science and Technology (January 2010). That working group recognized that a twelve-month embargo might not be adequate for some scientific disciplines. Our member societies publish quarterly journals. Protecting the revenue associated with access to what is considered current or recent content might require delaying public access for several years. The cited half-life of the journals published by our member societies ranges from 4.6 to 10 years. Nonetheless, all but one society participates in a fee-free archive with the intent to maintain a four-year moving wall. We note that other scientific societies have reduced the length of embargo periods over time. That may prove feasible for our member societies, too. Several publish through for-profit or nonprofit publishing houses or distributors and so can obtain statistical information on the demand for papers as a function of publication date. If they determine that revenue loss associated with access to papers not yet available in their own fee-free archives would be minimal, they may choose to decrease the duration of the embargo. Therefore, we suggest that the policy exempt papers published in the journals of small not-for-profit societies. The threshold for mandatory deposit into a public access repository could take into account the annual revenue of the society or the extent to which revenue associated with the publication comprises that revenue. Alternatively, allow a much longer embargo period for those papers, so those journals will still be able to derive some revenue for a period of years.

We also wish to remind OSTP of the cost associated with publication. The journals published by our member societies charge very low publication fees; none are higher than \$100 per page and all will waive some or all of the publication cost if the author is unable to pay for publication. Unlike other societies that are able to maintain relatively low page charges because membership fees are sufficient to subsidize the cost of publication, our member societies charge, at most, \$90 per year. Others charge as little as \$25 per year. All offer substantially reduced rates to students and young professionals. Increased page charges would erode research grants and increased membership dues would likely result in fewer members, and, in turn, reduced membership revenue. As membership revenue is a substantial part of overall revenue, this decrease would further jeopardize the existence of the society.

One key premise of public access has always been that public funds are used to fund the research and that therefore, the public should have access to the product. The public, however, does not seem to realize that there is always a cost associated with the transmission of information, whether on paper or on websites. There are costs associated with reviewing, editing, formatting, and publishing that the research funding does not cover. The other key premise of public access is that the information is valuable to society. If indeed this is the case – and we agree that it is – then the public should not object to the use of additional federal funds to develop the mechanisms needed to make this information very easy to access. In essence, the costs of access are shifting from the users who are saving the time and cost to go to a library or write to a publisher or author to obtain a copy of a paper,

to the producer. It follows that the users should then be understanding of the fact that additional federal funds are needed to provide what they are asking for. The oft-used analogy of the federal superhighway system is apt. Tax dollars pay for superhighways that make it easier and faster to travel by car, but we don't have free access to these highways. Tolls are charged to generate funds for maintenance. We make this point because the current political climate is such that the use of federal funding to support public access seems unlikely. If funding is not available, then a mandate seems inappropriate.

We have few recommendations to OSTP or the government to “*grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research?*” except perhaps to underwrite the creation and maintenance of the online public access websites so that societies such as ours can continue to make content freely available. As noted above, some of our member societies that would like to make more volumes available online, free-of-charge, have been unable to do so for lack of funding. We also suggest the creation of an online directory of public access websites and a mechanism to maintain orphaned open access websites. Finally, we suggest that the creation of an open-access citation system is essential to realizing the full value of open access scientific literature. Readers of a paper can of course determine which papers were cited by that particular paper, but the ability to find subsequent papers citing that particular paper is still limited to those able to afford access to an online citation system such as the Thomson-Reuters Science Citation Index. And more than a mere citation system, a set of discipline-specific annotated bibliographic databases would be invaluable to anyone delving into the enormous body of literature.

*(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

Any public access policy must include a provision that the original copyright holder retains all intellectual property rights conveyed by law. To the extent that a publications database is maintained by a federal agency, the agency should require that those accessing its holdings read and acknowledge the intellectual property rights of the holder. These acknowledgments should be maintained by the agency providing public access and made available to the copyright holder upon request. Without access to this information, the copyright holder has no means of enforcing the copyright, because there will be no means to track the use or misuse of the protected material. The online citations index, suggested above, would not suffice unless attribution is given – and in the case of misuse, that seems unlikely. Plagiarists rarely identify the source from which the material was taken.

*(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

Centralized websites may be of value to societies that do not have sufficient funding to create and maintain their own public access websites, and are essential for housing orphaned websites, but no publisher or author should be forced to deposit a paper in a centralized system. Had Congress wanted to mandate a central repository, it could have done so when reauthorizing the America COMPETES Act. Instead, the legislation directed the working group to look for standards to maximize interoperability and to take into account existing standards. We also note that the assumption that a central repository created and maintained by an agency will be perpetual is a faulty one. At this moment, the U.S. Geological Survey is terminating the National Biological Information Infrastructure. Some of the databases will be incorporated into other programs (though not necessarily made available to the public) and some will be lost. A repository maintained by a federal agency may be more resistant to collapse than a privately maintained repository, but it is not entirely immune.

That being said, there should be a registration system whereby every repository that holds federally funded papers is reachable through a central directory and a provision that if a repository becomes orphaned, the central agency repository may take it over. Even then, the society should be permitted to first try to find another organization to maintain its holdings.

In our field, the development of metadata standards for data repositories is quite mature. From the development of the Darwin Core, first issued in 1998, to the 2009 release of the metadata standard, this body of standards now supports numerous extensions for use across organismal biology. It is recognized internationally and in wide use. Requiring this large body of literature to be deposited into a centralized database would impose an undue burden if that database uses different standards. It would also make it more difficult to retrieve data associated with the literature and vice versa.

*(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

We note that the kind of research generated by the scientists who are members of our societies is most likely of interest to agencies that are already struggling with insufficient funding for core operations and are unlikely to be able to engage in partnerships for the creation and maintenance of literature repositories. A public-private partnership assumes that there are users who are willing and able to contribute funding to the endeavor. There are some industries whose interests would be affected by the research generated by our members. However, it is often the case that those interests would be affected in an adverse manner. It is unlikely that they would be interested in making scholarly research more accessible. Indeed, the subject has already been broached with at least one industry and to this date, the industry has declined to even post these publications on its website, much less contribute to the development of a formal repository.

*(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

Metadata standards for publications should be consistent with the metadata standards currently in use for the data generated in a given discipline. Interoperability should include the ability to move between the publication and the underlying data as well as between publication repositories. Each repository that is registered with a central registry should indicate which metadata standard it uses. The central registry can maintain documentation pertinent to that metadata standard.

In addition to the metadata assigned to a given paper, each repository should have a set of metadata that can help users to find repositories likely to hold publications of interest.

*(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

Two kinds of burdens will be imposed on researchers and scientific societies. First, researchers will be required to learn and apply the metadata terms in order to deposit their publications into the repositories, and, in some cases to find an appropriate repository. This is already a barrier to the sharing and archiving of data and will likely be as much of a burden for the deposit of a published paper. Further, the assignment of metadata must be done correctly in order to make possible the retrieval of all papers on the subject of interest. Those who dismiss the burden of assigning metadata probably do not realize that it is not just a matter of clicking on a few drop-down lists. Entering metadata in such a way that it actually enhances the ability of others to find the information and evaluate its suitability for their purpose requires careful and complete entry of information in dozens of fields including geographic and taxonomic descriptors, date and time descriptors, and many others. The less information entered, the less useful the outcome. Users will find far too many datasets meeting if those datasets are described in a more general way.

It may be necessary to create and fund – perhaps within the grant-making agencies – a training and assistance program to aid researchers. These groups might also undertake to assign metadata to literature published prior to the imposition of any public access mandate so as to make it possible for those who wish to do so – i.e., on a purely voluntary basis – to deposit these papers into the repositories. The more publications held and classified with standardized descriptors, the more useful the repository will be.

It would probably be best if the researcher could simply associate the publication, using the digital object identifier, with the metadata associated with the underlying dataset. That way, the metadata would be created only one time for both the dataset and all publications associated with it. Even if the underlying dataset is not yet publicly accessible, the metadata will be accessible and the associated publications can be located.

The financial consequences could be ameliorated by increasing grant size, reimbursing universities that pay publication costs for their faculty members and students, and subsidizing the cost of creating and maintaining repositories.

Government-mandated public access has been based on the premise that the research was funded with taxpayer money. The literature has always been available to the public. This discussion is really about

convenience – making the literature available without a trip to a library or requesting a copy from the author or the publisher. If the public wants this government-mandated convenience, it should also be willing to pay for that convenience.

*(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

In our field, conference proceedings (where they exist) rarely consist of the full text of a talk along with the associated slides or other media. Proceedings are more commonly a listing of talks and perhaps abstracts. Full-text or not, they are rarely peer-reviewed. It is probably a waste of resources to require that these materials be made open access or that any society or agency maintain a public access repository for these materials.

Book chapters are commonly published as papers in a volume dedicated to a specific topic. The legislation pertains to “scholarly publications” and does not distinguish between journals and books. For the purpose of allowing the society that publishes the book to receive the revenue associated with that volume, there is no difference between a journal and a book. The small, not-for-profit societies depend on this revenue and if all the papers can be accessed by the public at no cost, the value of that volume drops nearly to zero. If societies can not derive revenue from these publications – even to the extent of recouping their costs – they will cease to publish. The end result is less science that could be made publicly accessible at some point.

*(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?*

As previously stated, the Scholarly Publishing Roundtable recognized that a twelve-month embargo might not be adequate for some scientific disciplines. Our member societies publish quarterly journals. Protecting the revenue associated with access to what is considered current or recent content might require delaying public access for several years. The cited half-life of the journals published by our member societies ranges from 4.6 to 10 years. Nonetheless, all but one society participates in a fee-free archive with the intent to maintain a four-year moving wall, finances permitting. They may eventually determine that a shorter embargo period will not reduce the level of paid access, but the point is that they should be able to determine the appropriate embargo period. Establishing an upper limit or a sliding scale that takes into account the extent to which the society relies on journal revenue is reasonable and fair, if these metrics are established in consultation with scientific societies.

Currently, there are numerous journals in organismal biology, wildlife biology, and ecology that offer no public access, even for material that is decades old. This may be as much a function of the cost to convert older formats and maintain a website as it is about the loss of revenue. Societies that do not have the financial resources to provide public access to older volumes should be given assistance to make access available.

Again, we thank OSTP for considering the concerns and views of the scientific societies we represent and we hope that our comments prove helpful.

Sincerely,

A handwritten signature in black ink that reads "Ellen Paul". The signature is written in a cursive style with a large, prominent initial "E".

Ellen Paul  
Executive Director

[Assigned ID #]

[Assigned Entry date]

Mary M. Case, [marycase@uic.edu](mailto:marycase@uic.edu)

University Librarian

University of Illinois at Chicago

Chicago, IL

Response to “Request for Information: Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research, November 2011”

The University Library at the University of Illinois at Chicago (UIC) would like to thank the White House Office of Science and Technology Policy (OSTP) for this opportunity to comment on the development of policies ensuring long-term stewardship and public access to peer-reviewed scholarly publications resulting from federally funded research. The UIC University Library supports the development of a federal policy that provides free, public, and immediate access to the results of taxpayer-funded research, along with the rights to fully reuse these works in a digital environment. Providing public access—without commercial restriction—to the complete body of publicly funded research is a reasonable request and achievable goal. The public is entitled to access the results of the research their tax dollars fund. Developing new policies in support of this access ensures that the public receives the vast and wide benefits of its investment.

### **Comment 1**

*Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publicly accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

Given the tens of billions of dollars of research funded each year by the public, the federal government should set up policies providing free, immediate, unhindered access to the research and publications that are developed through tax payer (public) funds. Agencies, thus, should require full and complete open access to the scientific research articles produced as a result of publicly funded research. This requirement should ensure that the complete collection of articles is made freely accessible with full public use and without commercial restriction.

The NIH Public Access Policy is a good example of a method to increase and improve access to federally funded research. The NIH Public Access Policy requires that grantees of NIH funding deposit either the final peer-reviewed manuscript or the final published version of articles into PubMedCentral, which is a publicly available digital repository. The success of the NIH Public Access Policy demonstrates the ability and the value of such endeavors. However, the NIH public Access Policy stops short in terms of addressing the rights for reuse that should also be placed on research funded through public funds. Limiting the ability to reuse (copy, amend, or redistribute) diminishes the potential impact of the research.

Research demonstrates that openness in the academic community has led to an increased rate of exploration and more diverse research. The same findings were not found in situations where information was restricted for intellectual property reasons. Open access to research drives

scientific innovation and productivity. Open access can enable computers as a new category of readers and users, opening up vast, previously unobtainable new research pathways, and making new connections possible. In addition, open access ensures that scientists can quickly and broadly identify relevant articles to facilitate their own research. It improves educational opportunities, allowing important research to be integrated rapidly into the teaching and learning process, providing students, researchers, and the public with access to critical, timely information. It spurs new and follow-on research, encourages faster application of research, and leads to the creation of new tools to incorporate research results more quickly. Open access to publicly funded research also allows those in the private sector to stay on top of cutting-edge ideas. It generates innovation and supports the creation of new products and businesses, while also speeding their launch into the marketplace. Faster commercialization spurs economic growth, creating new jobs across broad sectors of the economy.

Let me reference NIH as an example once again. The NIH Public Access Policy emanates from its recognition that it must leverage research expenditures to improve human health by decreasing the time from basic scientific discovery to clinical application. Through its Clinical and Translational Science Awards (CTSA) Program, NIH is channeling funds to promote research, collaboration, infrastructure, and a culture of information sharing (<https://www.ctsacentral.org/>). As a recipient of a CTSA, UIC has witnessed firsthand NIH's commitment to speeding up the research and discovery process in order to maximize health benefits for the greatest number of people. Open access to the basic science research results and the results of clinical trials can lead more rapidly to both the development of new drugs, instruments, and tests, as well as to improved health outcomes. While NIH's application of open access is not perfect, it does strongly support the notion that open access ought to be applied across the disciplines to help address other major issues of our time, from environmental conditions to the economy to our decaying infrastructure to violence, among many others. The importance of open access to the rapid translation of research to practical application cannot be overstated.

The following research publications provide evidence for the increased rate of exploration and discovery, the increased diversity of research, and the increased speed with which the products are launched into the marketplace as a result of making the results of research openly available:

Williams, Heidi. *Intellectual property rights and innovation: Evidence from the human genome*, December 2009, p. 25. Available at [http://deugarte.com/gomi/Williams\\_jmp.pdf](http://deugarte.com/gomi/Williams_jmp.pdf). *This study demonstrated that restricted access to gene-level scientific research resulted in 30% less scientific research and product development compared to open access gene-level scientific research.*

Lakhani, et al., *The Value of Openness in Scientific Problem Solving*, October 2006, p. 2. Available at <http://www.hbs.edu/research/pdf/07-050.pdf>.

*This study demonstrated that reaching out to researchers in communities beyond the primary research community resulted in one-third more problems solved than research and development firms had been able to solve on their own.*

Murray, et al., *Of Mice and Academics: Examining the Effect of Openness on Innovation*, October 2008. Available at <http://www.hbs.edu/units/tom/seminars/2007/docs/Of%20Mice%20and%20Academics%20Stern.pdf>

*This study demonstrated that limits on access to research because of intellectual property restrictions resulted in less research while open access resulted in a greater diversity and a greater quantity of research building on the research.*

As the Lakhani et al. article highlights, researchers can contribute significantly to solving problems outside their specialty. However, most researchers only purchase access to the journals in their own fields. If researchers can contribute to innovation outside their domain, then open access across the disciplines is paramount to success.

When a full open access policy is adopted, it speeds the potential for scientific research and discovery for those institutions receiving federal funding because they will have open access to the research results (in addition to the added benefit that they will be giving back by sharing their research). Government agencies will also benefit because they will have access to federally funded research publications. It is important to keep in mind that no institution can afford to buy access to all journals and the same is true for government agencies.

See <http://www.wired.com/threatlevel/2009/12/doj-pacer/>. (In 2009, the Department of Justice paid more than \$4 million for access to documents in the public domain.)

Here are some additional papers demonstrating the economic benefits of open access to research:

Houghton, J.W. & Oppenheim, C. (2009) The Economic Implications of Alternative Publishing Models. *Prometheus* 26(1): 41-54.

Houghton, et al., *Economic and Social Returns on Investment in Open Archiving Publicly Funded Research Outputs*, July 2010, p. 7-8. Available at <http://www.arl.org/sparc/bm~doc/vufrpaa.pdf>.

## **Comment 2**

*What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

NIH again demonstrates that a new, government-wide open access policy is realistic and can be built upon existing infrastructure, maximizing the contributions it has already made. NIH provides a simple method for public access without copyright infringement. It requires its grantees publishing peer-reviewed articles to retain the right for NIH to provide public access to that research. NIH grant recipients are, therefore, protected from inadvertently transferring the complete package of copyrights to the publisher, ensuring that their work may remain publicly accessible.

This simple and effective model demonstrates that a public access policy providing immediate access and full rights for reuse can be created within the current copyright framework. Much like the NIH, when granting funds for research, federal agencies should obtain the right to make that research public. Publishers should not be granted exclusive rights that would give them the

authority to limit access to that publicly funded information. While the publisher adds value, it does not warrant the protection of rights to the degree that impedes the greater public interest.

Mechanisms to enable full use (i.e. distribution, reuse, text mining, data mining, computation, creation of derivative works, etc.) should be part of any government wide public access policy. This can be accomplished by respecting and working within the current copyright framework by implementing appropriate licenses, such as the Creative Commons Attribution (CC-BY) license that permits any and all uses with attribution.

### **Comment 3**

*What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

The federal government has a unique opportunity right now to create policy that ensures that the results of publicly funded research are permanently accessible and usable. However, it is unlikely that a single centralized approach will be sufficient to manage the broad scope of publications. Institutions, organizations, agencies and disciplines have already invested in building digital repositories that could play a role in a distributed infrastructure governed by federal standards. The best approach would provide flexibility, allowing agencies to host their own publicly accessible repositories or grantees to place their work in digital repositories that meet standards for open access, interoperability, and long-term preservation. The previously proposed Federal Research Public Access Act (FRPAA, S.1373 in the 111<sup>th</sup> Congress) provided for such a flexible and effective model.

It is surely the case that it will be difficult and time-consuming to determine the minute details for managing public access to peer-reviewed scholarly publications that result from federally funded research. Ensuring that publicly funded research is permanently accessible and usable is an extremely large and complex task. However, these details and the complexity of the problem should not prevent the federal government from moving forward on the issue and implementing immediate measures towards a comprehensive federal open access policy.

### **Comment 4**

*Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

Under a new federal open access policy, public/private partnerships can still be encouraged as long as resulting repositories meet standards for public accessibility, use rights, interoperability, and long-term preservation of publicly funded articles. Universities and libraries have extensive experience in this area and would serve as ideal partners in establishing and maintaining the archive infrastructure required under a federal open access policy. ICPSR, ArXiv, and the HathiTrust are examples of large-scale collaborations of universities and libraries focused on access and preservation of scientific and scholarly content. None of the 50+ research funders who currently have public access policies are using proprietary sites as the final archives. Under no condition

should publisher sites be the single point of access for these articles.

### **Comment 5**

*What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

Existing standards should be used to inform a broader metadata specification. Metadata should be viewed as a means for enabling specific actions, rather than simply item description. It should facilitate use, reuse, and analysis of published works. It should be machine-readable and machine-interoperable.

### **Comment 6**

*How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

A federal public-access policy needs to ensure consistency of requirements. Currently, research universities have faculty members and researchers who hold grants from all federal funding agencies and some of them have grants from multiple agencies concurrently. Requirements and procedures regarding deposit of peer-reviewed literature need to be uniform. Establishing standards for these requirements across all funding agencies would be a strategy for reducing the complexity and cost, while also supporting and encouraging compliance.

Policies can also create opportunities to create or enhance productivity management tools, such as the opportunity for universities to better measure research output, and promote branding of research. For example, at UIC, we have an institutional repository to highlight the publications of our researchers. However, we are limited in what we can add to the repository because of publisher limitations, despite the fact most of the research is federally funded. Even the current NIH policy does not allow the University to post those publications in our own repository, but is limited to archiving in PubMedCentral. It is important to us to have the ability to archive these materials in our own repository in order to highlight and measure our own scholarly output and provide free and continuing access to them.

### **Comment 7**

*Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

Educational materials resulting from publicly funded research, such as chapters from books, conference proceedings, and other texts, should also be readily accessible to the public. However,

since different conditions apply, the policies developed for educational materials may need to differ from policies covering journal articles.

### **Comment 8**

*What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?*

Immediate access is ideal to optimize scientific and commercial utility of information contained in these articles. However, to accommodate those journal publishers who continue to rely on subscription income, an author determined embargo period of 0-12 months has proven effective across multiple disciplines. There is no evidence that this embargo period has harmed any publisher—primarily because the publishers themselves are the ones with this information. If such an embargo period is harmful to publishers, they bear the responsibility of demonstrating that. At this point, they have failed to do so.

Embargos of 12 months or less are the norm in research funder policies around the globe. Embargos of 12 months or less have been adopted by hundreds of journals. Even publishers who previously expressed concern that opening access to back content would result in loss of revenue have now changed practices. Ideally, we support an embargo of no more than six months.

Public access to the published results of federally funded research should be a requirement across all agencies. In order to make this effort as cost effective and smooth as possible, implementation of a single federal public-access policy should be closely coordinated across all agencies. Within this policy, we strongly believe that articles should be made freely accessible within six months of publication, if not immediately. While the preference would be to have immediate access to the final published version of an article, at a minimum it is crucial to require the author's final, peer-reviewed draft be deposited in the author's institutional repository immediately upon acceptance for publication and that access to the author's final manuscript be immediate.

Once again, we thank OSTP for solicitation of our feedback on this issue and for facilitating a discussion of this important opportunity. We encourage the development of a federal open access policy that will provide free, public, and immediate access to tax payer-funded research, along with the rights to fully reuse these articles in a digital environment.

Sincerely,

Mary M. Case

University Librarian

University of Illinois at Chicago

12 January 2012

To: Office of Science and Technology Policy

From: Eugene Arthurs  
CEO, SPIE  
Bellingham, WA 98225  
[Eugene@spie.org](mailto:Eugene@spie.org)

Re: SPIE response to "Request for Information" (RFI) by the Office of Science and Technology Policy, Executive Office of the President, regarding "Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research"

### **SPIE Background**

SPIE (Society of Photo-Optical Instrumentation Engineers) is a not-for-profit society serving the international optics and photonics community. Our mission is to foster knowledge transfer, education, and networking among researchers, technology leaders, educators, and students engaged in the broad interdisciplinary sectors we serve. SPIE's goals to support technical innovation and the development of a well-educated and highly trained work force are concordant with those of the America COMPETES Reauthorization Act of 2010.

SPIE publishes seven peer-reviewed journals covering the fields of optical engineering, electronic imaging, biomedical optics, microelectronics, nanophotonics, remote sensing, and energy. We organize over 300 technical conferences annually in a diverse range of fields and publish proceedings for each of those. Combined, SPIE publishes 18,000 journal and proceedings research papers annually. We also publish 20 or so books each year and one print and two online magazines. We have a balanced distribution of members (currently 16,200) and authors from the academic, industrial, and government sectors as well as significant geographic diversity. About 40,000 individuals participate with SPIE each year. Our current estimate for the lower bound of the global photonics market is just under \$500 billion. The enabled market and services is much greater-the entire internet is photonics enabled.

SPIE has already made a reasonable commitment to open access to support the education and research needs of our community. We publish two fully open access virtual journals containing letters, review articles, and tutorials (*SPIE Letters* and *SPIE Reviews*). SPIE fully subsidizes these two journals so there is no required fee for either authors or readers. Our subscription-based journals provide authors with an immediate open-access option with payment of a modest publication fee. In addition, for the *Journal of Biomedical Optics* we deposit NIH-funded articles with PubMed Central on the authors' behalf and make articles for which other authors pay voluntary page charges open access 12 months after publication. Finally, all articles published in our magazines are open access at no cost to readers or authors.

While we have some measure of commitment to open dissemination of our publications, we also face the reality that there is a substantial cost to maintain a diverse, innovative, and healthy program. SPIE has followed the open access dialogue closely for the past several years and recognizes the polarity of the issue and the significant implications that government policies could have on the scholarly publishing community. We appreciate this opportunity to provide input.

### **General Comments and Viewpoints**

Society publishers are indeed fortunate for the volunteer support we receive from the expert editors and reviewers who vet and improve the content we publish. Many of these volunteers are our members and Society leaders and help define SPIE's organizational priorities, strategic direction, and altruistic activities. Their contributions do not appear on financial statements. The majority of our costs, therefore, are incurred in the administrative, editorial, and production functions that transform manuscripts into cogent journal articles, in the costs of disseminating this information to a global readership, in archiving published materials, and in making them findable and available in current media formats.

SPIE believes that an unfunded, broad-based free public access policy would result in unnecessary challenges and dilemmas for publishers, scholars, institutions, and potentially the funding agencies themselves. We offer the following perspectives for your consideration and discussion:

- Except for some recent examples of successful author-funded open access journals, subscriptions are the most common and time-proven way to provide access to technical information and to compensate publishers. Papers of particular interest to researchers and the public are accessible via subscriptions, pay per view, document delivery, public access libraries such as state universities, interlibrary loan, author websites, or directly from authors, most of whom welcome interest in their work. They can be obtained almost immediately for a reasonable fee or sometimes at no cost at all. Access to a journal article via the parent publication ensures that a cited article can be easily found via DOI link, OpenURL link, search engine, or some other referral source. Once journal articles are dispersed to other locations such as government or university repositories, they become more difficult to find and their long-term integrity and preservation become indeterminate.
- Those publishers that already have open access journals charge authors or their institutions a publication fee. This model biases science, discriminating in favor of researchers who can afford to have their work published in these journals, and those that can often allocate funds from their research grants to cover this publishing fee, thus cutting into available funding for the research itself.
- Public access to research funded by the United States Government will intrinsically be accessible to the entire world, not just the citizens and organizations whose taxes have funded the work. Therefore, many beneficiaries of this paradigm will not have contributed in any way to the research, nor will they have contributed to the cost required to publish and make it available. In effect, U.S. taxpayers, authors, and publishers will be subsidizing the research itself and providing the results to the rest of the world with no reciprocal contribution to the cost. There are good arguments for open science for the life sciences and medical research. Less so for the science and technology we serve, much of which turns into products and markets. We believe there already is an unbalanced net flow of publications of funded scientific research from the U.S. Open access will add to this, undermining of U.S. competitiveness.
- Patents and other forms of intellectual property rights are permitted for federally funded research, providing future income streams for funding recipients, universities, government contractors, small businesses, etc. This is a positive thing for U.S. competitiveness. We do not believe that the income stream generated from the publication of research should be differentiated from other forms of IP commercialization by beneficiaries of research funded in whole or in part by the U.S. Government. In fact, much of the published work funded by federal agencies is subject to copyright and all the protections afforded by U.S. Copyright Law, and a public access mandate may actually countermand

those protections. This potential dichotomy between public interest and private intellectual property rights should be considered carefully in formulating any public access policy.

- Recipients of U.S. Government research grants submit progress and final reports to funding agencies. These reports represent the most complete and comprehensive record of research outcomes available. Several agencies such as DOE and NASA already make some or all of these reports publicly available through databases such as Science.gov, Information Bridge, DTIC, etc. A unified effort by the agencies to integrate this abundance of research output in a U.S. Government database or portal would provide a far more complete, comprehensive, and timely public record of funded research than any form of required open-access publication in widely dispersed journals or repositories. While PubMed Central might be a model for such a repository, the NIH requirements on authors and publishers are increasingly burdensome and the cost and effort to establish and maintain similar sites would likewise be burdensome to the agencies, the researchers whose work they fund, and to the publishers that have to meet deposit requirements. A sweeping open access policy would be administratively challenging, and costly, to execute and to monitor. Why not entrust publishers and the information economy to continue to assume that responsibility and let the agencies focus on what they do best?
- A policy that focuses on papers published in peer-reviewed journals can only partially fulfill the goal of providing public access to all unclassified research funded by the U.S. Government. To the best of our knowledge there is no requirement that funded authors publish their research in a peer-reviewed journal. We are not aware of statistics related to how much of this work is actually published. Even if a research paper is submitted to a peer-reviewed journal, there is no assurance that it will be accepted. Undoubtedly, some fraction of the research is simply inappropriate or premature for journal publication. For example, the failure of a new drug is not normally published in the medical literature, yet negative studies can be very valuable. What is the best way to expose this information?
- Despite recent improvements in timeliness of peer-reviewed journals, there is still a time delay between completion of research and journal publication. Add to that a potential embargo period, and the results of publicly funded research are less than timely enough to satisfy the ongoing research needs of other practitioners, including those working on projects funded by the U.S. Government. A more immediate and direct dissemination of project reports and data would do a lot more to advance the innovation and competitiveness goals of America COMPETES.
- In addition to support provided by government grants, researcher teams are supported by their universities, companies, and labs in the form of facilities and equipment, support personnel, and information resources, each of which is essential to sustaining a successful R&D program. Information is neither more nor less essential than the other needs. Information acquisition is part of an organization's business cost, and journals are no less a commodity than many of these other research needs and have similar economic realities. It is difficult to imagine a model where the cost to the information consumer is subsidized by the information creator, but isn't that effectively the result of open-access publication?
- Publishers add substantial value to the papers published in peer-reviewed journals, from the peer-review process itself to copy editing, typesetting, and production to global dissemination. This process occurs subsequent to the research itself and is funded primarily through subscriptions. Journal papers are derivative products of research, not the grant deliverable. There is no

justification for the government to claim IP rights to the journal article, with the value-added investment made by publishers. There is no dispute that the government owns the research reports and the data and it is this information that the government should seek to publish, again with some preferential access for the U.S. taxpayer.

- In addition to peer review, copy editing, and composition services, publishers ensure that journals are properly archived and preserved via services such as Portico and CLOCKSS. We ensure that content is indexed in A&I databases such as Web of Science, Inspec, Medline, Scopus, etc., and covered by search engines. Publishers make substantial investments to ensure the long-term integrity and access to content. This infrastructure ensures the long-term wide accessibility and preservation of the scientific research literature and is the result of significant investment and commitment within the private sector. We believe the needs of U.S. science and scientists are well served by these programs and that it would not be practical or productive for government to attempt to replicate them solely for taxpayer-funded research.
- Free public access to federally funded research will disrupt the economic model of many society publishers. Our subscription fees relative to most for-profit publishers are moderate and reasonable. While some economic reform within the information industry overall might be warranted, this is not the way to get there. A healthy economic system should be self-regulating and balanced by the usual supplier/consumer dynamics.

The Internet is a wonderful thing, putting information literally at the fingertips of those who need it, sometimes at a cost and sometimes for free. Where there is a cost, the consumer must decide whether the cost is justified, whether it is likely to provide value. Where information is free, there is usually another income option available to the provider, or another motivation.

Scholarly publishers like SPIE provide a level of rigor and objectivity that aims to ensure the provenance, quality and integrity of information published under our auspices. This sort of reliability is not always assured with information that is freely available on the Internet. The web contains a plethora of “open-access” information of questionable authenticity and value alongside an alarmingly large body of pirated and plagiarized content. The reputation of Society as well as the respectable commercial publishers depends on the public’s trust in the quality and provenance of information we deliver.

A government policy that requires open access publication will inevitably disrupt a system that has served the needs of scholars and inventors, classrooms and laboratories, publishers and librarians, through a long and fruitful period of amazing scientific and technological advancement. We don’t presume to believe that free public access or some disruption of publishers’ business models will be the undoing of any of this. Some would argue that such a disruption is needed. We assert, however, that the contemplated action will have the effect of imposing a new and not necessarily fair or sustainable economic model on the enterprise of scholarly publishing and have additional implications as suggested above. We appreciate the opportunity to submit this input and urge the Task Force to look closely at alternatives to mandated open access publication of journal articles derived from federally funded research.

## **Comments on OSTP Questions**

**(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

All U.S.-based science and technology publishers and societies are stakeholders in a productive scientific enterprise within the United States. SPIE is a society first and a publisher second and our priorities lie with supporting growth in optics and photonics science and industry and the constituents we serve. The U.S. is the world leader in aspects of our field, and research supported by the U.S. Government is essential to retaining technology leadership; therefore our goals are closely aligned with America COMPETES. Analogously, access to information is essential to enduring progress in science and technology. In our publisher role, our first goal is wide dissemination and availability at reasonable cost. The majority of our subscribers are U.S. institutions. We are continuously seeking ways to expand access to our publications and have reduced prices to meet that objective. Our pricing history is starkly different to that of commercial publishers, as are our goals.

The key is to get the right information into the right hands at the right time. With today's pace of development, that means immediately. Therefore, we believe a comprehensive public research report repository posted on acceptance by contract managers is the correct approach. If laypersons want access, for example, to medical information, that's an ancillary benefit. The key is to enable the people who need it most to be able to access information quickly, including all the methodology and data. We live in an information-rich world and it's challenging to navigate this abundance. Therefore, it would also be beneficial to consider how the information could best be filtered, or even to consider some standardized reporting using XML templates in order to facilitate dissemination, alerting, etc. If U.S. funded research is publicly available, inevitably it will be available to anyone anywhere. Perhaps some additional information filtering or user authentication layers should be developed to provide an advantage to U.S. constituents.

We do not see it being economically practical for the U.S. Government to replicate the NIH PubMed Central model for a host of disciplines and contend that formal publication and dissemination is best left to publishers. It seems to us that the most economical way to achieve the access goals of America COMPETES is to invest in a robust integrated database including all publicly funded research and to invest in the technology to facilitate access to this information by those who need it most—our researchers.

**(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

This is an important topic for the fields we cover as much of what makes up SPIE's area of interest has or might be commercialized or applicable to national security. We recognize that what is covered by other societies is valuable in expanding human knowledge, and different considerations apply for IP. Allowing grant recipients broad patent and other IP freedoms encourages innovation and commercialization. Competition and free enterprise are the mainstays of the U.S. economy, and any measures that

discourage innovation and commercialization will only impede progress. This applies to technological enterprise and to publishing as a competitive business. The pace of change in the information industry over the past two decades has been extraordinary. Just as labs and companies need resources and incentives to fuel investment and innovation, so too do publishers. Policies that destabilize the economic foundation of the publishing industry put that industry at risk of consolidation through mergers and acquisitions that can only give advantage to the wealthiest commercial publishers, a large number of which have their origins and base of operations outside the U.S. If an analogous situation were true for the science and technology industrial base, competition would be undermined and the pace and direction of innovation would inevitably slow, or move elsewhere. There is great advantage in providing incentives and opportunities to start-ups and to entrepreneurs because often those are the pathways to innovation. We do not believe anything that weakens a vigorous competitive environment in science and technology or in publishing is in anyone's best interest.

**(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

The agencies already have the documents needed to disseminate the results of federally funded research. What is lacking is an integrated database or portal to enable access to this corpus and the infrastructure to manage and maintain it. Even if the government were to centrally host agency-funded journal articles, because these comprise only a fraction of all published articles researchers would still need access to the body of information not directly funded by the U.S. Government. Therefore, subscriptions would still be necessary. Using Google Scholar or Web of Science or Inspec would still be necessary. A central repository of federally funded U.S. papers will not sufficiently meet the information needs of U.S. scientists, engineers, teachers, and students. There's no clear evidence that such a repository will catalyze an industry-wide paradigm shift toward open access journals and therefore it really can't truly meet or transform the information needs of the U.S. research community.

Search is best left to entities for which search is their core competency and business. Publishers are not in the search engine business—Google, Microsoft, Endeca, and others do it far better than we ever could. The reality is that most researchers use Google or Google Scholar, even when they have other resources available to them. We would not advise reinventing the wheel but rather deploying a good search engine within a government portal as well as exposing the data to all major search engines.

Most publishers have long-term archiving strategies. We understand the need and our institutional customers expect it. For example, SPIE participates in both Portico and CLOCKSS because we believe it's our responsibility to ensure long-term ("perpetual") availability of our publications. A large number of STM publishers already participate in one or both of these programs. There is a nontrivial cost for these archiving solutions, which is a reminder that publishing needs to be more than an altruistic activity. It would not be efficient for the U.S. Government to assume yet another archiving role that would ensure preservation of only a portion of the published literature. Publishers take this responsibility seriously and have implemented strategies to preserve all of it.

**(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

There are many examples of cooperative ventures in publishing. Publishers strive to standardize their data using protocols such as the NLM DTD so that content can be easily shared and rendered in a common format. CrossRef has perhaps been the most visible and impactful publisher collaboration. Our data can be easily aggregated in key index databases such as Summon, Web of Science, and Scopus. The OpenURL standard and CrossRef are fully interoperable, and new initiatives such as ORCID continue to reflect a common need for interoperability across publisher databases. COUNTER is another example of publishers assuming responsibility to develop industry-wide standards. None of these focuses specifically on federally funded research but all federally funded content benefits from these ongoing publisher initiatives to improve the interoperability and discoverability of STM information.

In the end, putting information derived from federally funded research and research funded by other governments and organizations in different delivery systems will only fragment these efforts to improve standardization and interoperability, at significant cost.

**(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?**

The response to question (4) above addresses this in part. Publishers have been mostly self-regulating about metadata standards creation and DTD uniformity and the situation is steadily improving. Even though publishers more or less compete, we recognize the importance of interoperable content elements to our customers and consequently to our businesses. Through CrossRef and other alliances, publishers have taken the initiative to fund and develop protocols that benefit not only the publishers themselves but also customers and users. We would hope that government input would focus on how information sharing might be improved to better serve our common interests. However, we don't believe that any sort of independent government standards or initiatives are warranted or desirable.

**(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

Peer-reviewed papers are only some fraction of the research funded by the federal government, and even those that are published generally include only a portion of the data from that research. In our view, the best means to maximize public access to all the information is to make the reports quickly available in a comprehensive database and to standardize metadata and formats by providing templates to researchers. Journal peer review and publication is a step beyond the research itself and is undertaken by researchers for a variety of reasons. It might be out of social responsibility to the community or it might be for career advancement and recognition. Regardless of the incentive, preparing and publishing a journal article requires a significant amount of additional effort, time, and cost on the part of the author and the publisher.

Awardee institutions already have IP and access rights to the work of their employed researchers. Most publishers permit authors to deposit their papers in a local repository and/or post their work on their own website. For most federally funded research, the U.S. Government already retains the right to use the information for government purposes and in fact holds the primary information from that research

in the form of research reports. Derivative publication in a peer-reviewed journal does not change the results, only the articulation of the work and its impact. Libraries have been the traditional conduit for this information. They are also publishers' primary revenue source. It's an economic model that has worked for the scholarly community for a long while. It is true that costs have escalated and in a few cases publisher profits may seem excessive, mainly in the commercial publishing world. Libraries are beginning to push back and have had some influence on pricing. How libraries themselves are ultimately funded is a complex question in itself. Ultimately someone has to bear the cost of journal publishing. So, what is the most fair and least disruptive model, and the one that best ensures access to primary users and to authors? It could be argued that access has never been greater than it is today, either through the auspices of an institution's library, personal access through membership or low-cost subscription, free availability on the web, or simply requesting something from an author. The current model provides a good balance so that most, if not all, interested readers either have access or can obtain what they need for a modest cost or for no cost. It also provides the needed revenue to publishers to produce high-quality products and to encourage and fund innovation and technical progress.

A federal open-access mandate will ultimately work against the interest of the U.S. taxpayer and U.S. science and technology enterprise because the knowledge flow is unbalanced, with the outbound flow of U.S. research and innovation exceeding the inbound flow and providing advantage to non-U.S. competitors. The current means of disseminating research creates a more level playing field.

**(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

We believe the same arguments regarding public access apply to other publication formats. SPIE publishes both proceedings and books. Proceedings are often preliminary reports of work in progress and their primary value is to other researchers. In a few fields, proceedings are the preferred format. Books and book chapters typically serve an educational purpose and typically do not report on specific research projects. We believe that the report approach would include much of this information and be far more comprehensive and complete.

**(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

Since we are recommending against adopting a policy that requires journal articles to be open access either on publishers' site or in a system developed and managed by the U.S. Government, we cannot recommend an appropriate embargo period. No embargo would be necessary or even desirable for a government managed report database.

Response to FR Doc No: 2011-28623

**American Society of Human Genetics  
Bethesda, MD 20814**

**Contact:** Joann Boughman, PhD, Executive Vice President  
[jboughman@ashg.org](mailto:jboughman@ashg.org)

The American Society of Human Genetics appreciates the opportunity to respond to the Request for Information from the Office of Science and Technology, Executive Office of the President on “Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research”.

The American Society of Human Genetics (ASHG), founded in 1948, is the primary professional membership organization for human genetics specialists worldwide. The Society’s nearly 8,000 members are scientists, health care professionals, and others with an interest in the field of human genetics. Our members work in a wide range of settings, including universities, hospitals, research institutes, and medical laboratories.

The ASHG Mission Statement reads:

**ASHG serves research scientists, health professionals, and the public by providing forums to:**

- Share research results at annual meeting and in *The American Journal of Human Genetics*
- Advance genetic research by advocating for research support
- Enhance genetics education by preparing future professionals and informing the public
- Promote genetic services and support responsible social and scientific policies

As you can see from our mission statement, publication of *The American Journal of Human Genetics (AJHG)* is one of the primary activities of ASHG. As a highly valued and widely read publication in the rapidly advancing field of Human Genetics, ASHG takes the ownership and appropriate support of the *Journal* very seriously. This publication is a central part of our core values of sharing scientific results and is also an essential part of our Society’s operational plan.

Without presenting great detail about our publications process, we can simply assure the public that all submissions to the *AJHG* receive an initial review, and those published have been through rigorous peer-review in a well-controlled process. Our editorial office has a reputation of publishing the highest quality while making sure that articles are published as quickly as possible. Subscription to the *AJHG* is a benefit of membership, and has both on-line and print versions. The Table of Contents and abstracts are available on line and subscriptions are available to many through their institutional library.

We would like to provide some basic responses to the questions posed in the RFI:

(1) Regarding questions about new markets, archiving publications and public access to improve the productivity of the scientific enterprise and maximizing US economic growth ASHG responds:

The new markets being penetrated by our publications are mainly foreign markets, providing scientific results as a type of export of expertise. Our major new markets are the rapidly developing countries with governments investing very heavily in scientific research. Our current subscriber pays business model provides economic input into America while sharing the results of federally funded research in a timely manner. Providing immediate free access through mandating submission of material to a central database in a very tight timeframe undermines the current model that is working well, providing free access to contents of published versions the *AJHG* in a six-month period from publication. Our provision of the published versions of manuscripts to PubMed Central, ensures that the public has access to the final versions of papers, and not ones for which an author might not have updated the manuscript following acceptance (*e.g.*, changes made by copy editors or authors in reviewing galley proofs) This time frame protects the integrity of the professional system, provides access to almost any person who needs these results quickly, and supports an economic model that supports jobs and the professional society. We believe that support of this model as well as a variety of other publishing models, rather than mandates of immediate free access would be the best policy course for the federal government.

(2) With regard to intellectual property rights:

ASHG believes that the protection of intellectual property rights of individual scientists and institutions are initially the responsibility of those entities, with each assuring that publication and full access to the information does not undermine the processes put in place to protect such property. The rights to the content of any journal must be in the purview of that publisher with policies that include a reasonable time period before free access is provided by the owner of that intellectual property. The ASHG has found that a six-month period prior to deposition in a public data base (in our case PubMed Central) has provided sufficient protection for the Journal to flourish. Other groups may believe a longer period is necessary, but our model has been working for us for more than a decade. Appropriate to add anything here about the public access option to authors? We also provide a mechanism whereby authors may choose to make their manuscripts accessible to the general public during this 6 month interval by paying a modest fee. Some authors have chosen this option.

(3) In response to questions of the pros and cons of a centralized data base and federal long-term custody and stewardship of publication, ASHG believes:

We have concerns about the federal government taking control and custody of our Journal contents. It could become especially onerous for some journals to meet certain criteria (formats for example). We think that seemingly small things (like errata) could be lost and could create real issues

with the integrity of a mandatory federal system. There is in the scientific community the basic underlying belief in openness to a wide variety of ways to express views about research that is at the basis of progress in science.

- (4) Current models of cooperation between private publishing and entities providing public access are working for AJHG at this time. Our authors must disclose the sources of funding for the work presented, but the cross-checking with those sources would have to be developed in some manner.
- (5) Our current model is working well. We are concerned that more mandates for journals and hence complications for authors would diminish the will to publish quickly. This result would make the mandates the obstacles to the very access that is the goal.
- (6) The maximization of benefit to the public comes from the research moving as quickly and smoothly between bench and clinic, not from creating a burdensome system. The rapid sharing of data and results among scientists is the appropriate way to achieve the ultimate goals.
- (7) To include conference proceeding and book chapters in a regulated disclosure process would create additional barriers to the writing, editing and presentation of these materials. Much of the material in any of these sources is actually based on the original research published in the primary literature.
- (8) While many of our sister societies support a one year embargo period, the *American Journal of Human Genetics* continues successfully with our own six-month embargo period. The human genetics community is engaged in very rapidly advancing science, and our ASHG leadership has been firm about this shortened embargo period in negotiating final terms with our (initially reluctant) publisher. Our genetics community continues to lead in the development of policies and procedures that enhance and support the sharing of data and publications as well.

The American Society of Human Genetics (ASHG) is appreciative of the opportunity to comment on these important issues regarding public access to scholarly publications.

Joann A. Boughman, Ph.D.  
Executive Vice President  
American Society of Human Genetics  
(301) 634-7307



**American Association of Physicists in Medicine**

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<http://www.aapm.org>

***Office of the President***

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January 12, 2012

Ted Wackler  
Deputy Chief of Staff  
Office of Science and Technology Policy  
Executive Office of the President  
725 17th Street Room 5228  
Washington, DC 20502

**Re: Response to November 4, 2011, Federal Register Notice of Request for Information, Office Of Science And Technology Policy, “Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research; FR Doc No: 2011-28623” [76 FR 68518, dated November 4, 2011]**

Dear Dr. Wackler:

The American Association of Physicists in Medicine<sup>1</sup> (AAPM) is pleased to respond to the Request for Information (RFI), regarding “Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research.” AAPM appreciates the extension to the public comment period to January 12, 2012.

Medical Physics is the official scientific journal of the AAPM. The journal is published through an agreement with the American Institute of Physics (AIP), which submitted a response to the request for information (AIP Comments dated December 22, 2011). The AAPM fully supports the AIP’s response and wishes to expand on several points related specifically to Medical Physics and the medical physics community it serves.

**About AAPM**

The AAPM is a scientific, educational, and professional nonprofit organization dedicated to the applications of physics to medicine through research, education, and clinical service. The

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<sup>1</sup> The American Association of Physicists in Medicine (AAPM) is the premier organization in medical physics; a broadly-based scientific and professional discipline encompassing physics principles and applications in biology and medicine whose mission is to advance the science, education and professional practice of medical physics. Medical physicists contribute to the effectiveness of radiological imaging procedures by assuring radiation safety and helping to develop improved imaging techniques (e.g., mammography, CT, MR, ultrasound). They contribute to development of therapeutic techniques (e.g., prostate implants, stereotactic radiosurgery), collaborate with radiation oncologists to design treatment plans, and monitor equipment and procedures to insure that cancer patients receive the prescribed dose of radiation to the correct location. Medical physicists are responsible for ensuring that imaging and therapy facilities meet the rules and regulations of the U.S. Nuclear Regulatory Commission (NRC) and various State regulatory agencies. AAPM represents over 7,500 medical physicists.

AAPM's membership comprises nearly 8,000 medical physicists, most of whom specialize in the applications of physics to acquire diagnostic information (such as medical images) or to enable therapeutic intervention (such as radiation therapy for cancer). Many of AAPM's members are actively engaged in clinical practices serving patient populations. In this engagement, quality and safety of medical procedures are the responsibility of medical physicists.

### **Role of the Medical Physics Journal in AAPM**

The journal Medical Physics is, in many ways, the lifeblood of the AAPM. It is a scholarly communications vehicle for medical physicists worldwide that describes important research findings through scientific papers, informs clinical practice through special reports, and provides discussions of scientific and educational issues facing medical physics through journal features such as Point/Counterpoint columns, Vision 20/20 and review articles, Medical Physics Letters, editorials and correspondence.

The journal is also an important component of the economic vitality of the AAPM. In addition to membership dues and income generated by AAPM meetings, the journal is a key source of revenue for the organization. Like many nonprofit organizations, the AAPM operates in a careful balance of income, services and volunteer efforts.

### **Making the Medical Physics Journal Happen**

The AAPM relies on a large and complex community to create, improve, and distribute Medical Physics to the worldwide community of medical physicists. The process involves hundreds of volunteer reviewers, an editorial board of more than 50 members, a business management committee, a full-time editor, two deputy editors, and several professional staff members working with the AAPM's partner team at AIP. This effort is sustained by the AAPM through revenue generated by the journal and other sources. In addition, there are substantial costs associated with composing, printing and distributing (even electronically) Medical Physics. All of these expenses and efforts would have to be curtailed to a corresponding degree if revenue to the AAPM were diminished.

### **Implications of Free Public Access to Medical Physics**

The AAPM is sympathetic to the desire to make the findings of publicly funded research available to the public without charge. The AAPM agrees that some level of access to Medical Physics articles is consistent with that desire. At the same time, the AAPM wishes to avoid unintended consequences that could negatively impact the journal, its ability to disseminate high-quality scientific findings (vetted through a peer-review process) to the national and international medical physics communities, and its ability to help sustain the financial viability of the AAPM. One of the major reasons that medical physicists join the AAPM is to gain immediate access to scientific articles and other informative features of Medical Physics that are published both electronically and in print. Immediate access is essential to progress in medical physics research and important to improving the quality and safety of clinical procedures in which medical physicists are involved. Not all research described in Medical Physics is funded by federal sources, but a considerable fraction is. Making articles in Medical Physics freely accessible to everyone immediately upon publication would substantially diminish the incentive to join the AAPM. This consequence would drastically reduce the revenue AAPM has available to support the work of councils, committees and task groups, much of which ultimately yields scientific papers and technical reports published in Medical Physics. The consequences of this diminished revenue would be a reduction in the guidance available to medical physicists to advance research

AAPM Response to 76 FR 68518  
January 12, 2012

and to improve the quality and safety of clinical procedures.

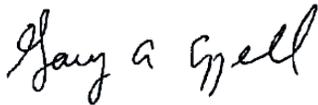
The AAPM believes it is in the best interest of all stakeholders, including the public, to establish a balance between providing free public access to research information and protecting the viability of scientific organizations such as the AAPM that serve as a major source of the information. This balance could be preserved by providing a 1-year latency period between publication of scientific articles in Medical Physics and making those articles publicly accessible. This latency period would enable the AAPM to sustain its commitment to adding value to the practice of medicine through advancing research and improving the quality and safety of health care.

### **Summary**

The AAPM urges a bit of caution to those charged with developing public-access policy to ensure that the AAPM is able to sustain its commitment to research, quality and safety. The AAPM believes it is in the best interests of the public to provide a one-year latency period between publication and public access of articles in Medical Physics in order to maintain an economically sound AAPM that can continue its contributions to medical research and healthcare quality and safety.

Thank you for your consideration. If you have questions, please contact Lynne Fairbent, AAPM's Manager of Legislative and Regulatory Affairs, at 301-209-3364 or via email: [lynne@aapm.org](mailto:lynne@aapm.org).

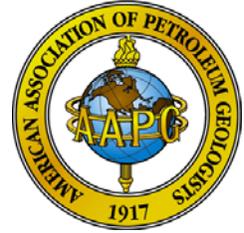
Sincerely,

A handwritten signature in black ink that reads "Gary A. Ezzell". The signature is written in a cursive style with a large initial "G" and "E".

Gary A. Ezzell, Ph.D., FAAPM

# AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

*An International Geological Organization*



Dr. Paul Weimer  
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January 12, 2012

To: Office of Science and Technology Policy  
[publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

1. The following comments are submitted by the American Association of Petroleum Geologists, a not-for-profit scientific society, with over 36,000 members worldwide, whose mission is to advance the science of petroleum geology. Publishing is one means of fulfilling that mission. Our publications are based on research stemming from a combination of industry, private and in some cases government supported research – such as NSF, USGS, or DOE. As a publisher AAPG adds value to the research via the peer review, production, printing and distribution of the final paper. We pay the full cost of this effort, and depend in small part on membership dues, and contributions, but most importantly on sales revenue of the publications to try and recoup the cost of publishing, which does not always happen.
2. While the concept of ready access to government funded research should be encouraged and embraced, the publishing and internet community are partnering to develop technology solutions which have lowered the barriers to access and as a result, accomplished this goal. For example, our journal the AAPG Bulletin is available to researchers worldwide digitally, via a number of online subscription mechanisms, to researchers and students who need it in nearly 800 government, academia and industry institutions worldwide. Our papers are also searchable and attainable to the general public on 2 online Pay-Per-View sites for downloads as low as \$10. This is in addition to online access by our 36,000 members who are students, researchers and practitioners.
3. In developing policies on open access there are several issues that need to be considered, from the point of view of a small publisher, in order to avoid creation of unintended negative impacts to the publishers and ultimately the publishing process. It is hoped that new policies on open access of publications consider and provide solutions to these factors. Comments to specific questions posed by OSTP are outlined below, with original questions in **bold**.

**(1 ) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies?**

4. A policy requiring “free to the public” could negatively impact, and in a worst case scenario, destroy the financial viability of some non-profit publishers, without an offsetting revenue source. To implement a “free to the Public “ or open access model for non-profit publishers, and not damage their economic viability, would require a mechanism for research funds to be allocated in advance, as part of the original research grant, to cover ultimate publication costs by 3<sup>rd</sup> party non-profit publishers. This would hopefully offset part of the revenue loss to the publisher for moving toward open access.

**(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

5. While even if copyrights are in place, open access effectively degrades the enforceable economic value to the Intellectual Property on the part of the publisher.

**(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities?**

6. Centralized control of publications is incompatible with the business model of our Association and likely most publishers. The ability to structure a user friendly and logical site that meets the needs of all Scientific Disciplines (Astronomy, Geology, Medical, etc.) is difficult if not impractical, and unnecessary given the innovative technology within the marketplace to index and search across platforms for scientific data.

**(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

7. A consistent policy would be recommended, recognizing the financial viability of Book publishing may be different from that of Journals. For books in particular a suitable embargo period would need to be in place, so that publishers could attempt to recover portions of their publishing investment.

**(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research?**

8. An embargo period of at 2-5+ years would be needed in order to not jeopardize the economic viability of non-profit publishers; even then it might be a burden depending upon whether other compensatory measures are installed.

**Please describe the empirical basis for the recommended embargo period.**

9. For our Association, Journal and book publishing is already a financially challenging proposition. Scientific books, such as what AAPG publishes, are of small press run and can take 2-5 years or more to recover the investment. Some books never do recover the investment. Geoscience publications generally also have a long shelf life, as compared to medical research for example. One measure of this would be the Cited Half-Life. According to the ISI Web of Knowledge, published by Thomson Reuters, the category of "Geosciences, Multidisciplinary" journals have a cited half-life of 8.1 years (as of 2010). The AAPG Bulletin has a cited half-life of >10 years.

**Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

**Please identify any other items the Task Force might consider for Federal policies related to public access to peer reviewed scholarly publications resulting from federally supported research.**

10. New policies should include clear definitions of what constitutes government research in the context of a publications requirement for open access. This is in regard to the relative percent of government funding that went into the research that was ultimately published. It may not be 100%. For example some papers may result entirely from an NSF funded MS Thesis. Other papers may have been derived in small part from the original research and also incorporate private or industry funding. Would this still be a required open access publication?

Sincerely,

A handwritten signature in black ink that reads "Paul Weimer". The signature is written in a cursive, slightly slanted style.

Dr. Paul Weimer  
AAPG President

I attach below my response to this RFI.

Sincerely yours

Bernard Schutz

**Response to RFI:**

**Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research**

**Responder:**

Bernard Schutz

[Bernard.schutz@aei.mpg.de](mailto:Bernard.schutz@aei.mpg.de)

Director, Max Planck Institute for Gravitational Physics, Potsdam, Germany

As a US Citizen who lives in Europe, as an active research scientist, and as the publisher of an online open access scientific journal (Living Reviews in Relativity), I am glad to have the opportunity to respond to the RFI on public access to scholarly publications. I work in Germany as a director of a research institute of the Max Planck Society, which has a pro-active policy to support Open Access; indeed I represented the Max Planck Society at the recent Berlin 9 Open Access conference in Bethesda, Maryland, November 8-10, 2011. So my perspective combines several points of view: a research performer, an organizer and evaluator of scientific research, and an open-access publisher. My response to the RFI is my personal point of view and does not necessarily represent the policy of the Max Planck Society.

I shall comment on the points as numbered in the request.

1. I believe that public access to peer-reviewed research offers clear economic benefits. These come from two sources: exposing information to more potential users, and creating opportunities for new information-related businesses. There are many potential users currently excluded from useful scholarly research: scholars working in one field who are unaware of related literature in another; small and medium enterprises who cannot afford a wide enough range of journal subscriptions to survey the literature relevant to their business areas; non-academic professionals (doctors, psychologists, lawyers, and others who typically work in small private practices) who could provide more accurate advice to clients if they could access the literature; educators at high schools and small colleges who could make good use of scholarly research and pass it on to their students. It is a fallacy to suppose that scholarly research will not be useful to such people. Much of the literature is not particularly technical, but instead reports surveys, describes experimental results, or provides reviews of research.

It should be noted that information useful for interdisciplinary activities, which are a major frontier for research today, is particularly difficult to access for the above groups because scholarly journals tend to be highly subject-specific; this means that one may have to access two or three times as many journals to learn about an interdisciplinary subject than if one works in a recognized discipline.

The second source of economic benefit is in new information-related businesses. These are business that will deal directly with the exposed information: providing searches, combining information intelligently from multiple sources, filtering out extraneous information. These services could be an additional source of business for existing publishers or they could stimulate the establishment of new enterprises.

To enable these benefits, agencies should insist that scholarly research be published, after suitable rigorous peer-review, with a license that permits the information to be re-used for any purpose, as long as its source is correctly attributed. Agencies should be prepared to pay publishers a fee to do this: an open access publication fee. But paying money should not be carte-blanche. Agencies should define carefully what they expect from publishers in return for the fee: that the license should permit full re-use (even commercial re-use); that high-quality peer-review is expected; that the fee covers the electronic version of the work but does not stop publishers from charging for a printed version; and especially that electronic access to the publication text and data are required. The last point is critical: the full economic benefits of search and discovery will not be realized unless the articles are held in archives that permit full-text electronic searches. Agencies should insist that publishers comply with certain metadata and interface standards in order to receive their fees.

A further policy issue is international cooperation. The scholarly literature, particularly in the sciences, is highly international. In many fields, perhaps in most, US federally funded research accounts for less than half of the published literature. Search tools and other information tools will be less likely to be developed and will be less effective if funding agencies of other nations do not adopt public access policies broadly similar to those of the US government. In fact, in many countries, particularly in Europe, research support agencies are at present more forward than those of the US in supporting public access, so there is certainly the basis for international cooperation. I urge, therefore, that as well as formulating public access policies for federally funded research, federal agencies be obliged to consult with counterparts in other countries to develop coordinated policies in different research fields.

2. Unrestricted public access to scholarly literature does not itself challenge intellectual property rights. If a scholar publishes in a copyright-protected journal today, he or she is still placing their work in the public domain, and the work will be seen by anyone who can buy a subscription. In fact, the scholars cede some of their intellectual property rights to the publisher, who usually asserts the copyright. Public access publishing at least reserves the copyright to the author.

Agencies should, however, not insist that the results of scholarly research (including data) should automatically be placed in the public domain immediately. A limited amount of time should be allowed for patenting (in the case of results that could lead to commercial activity) and further exploitation by the scholars before the results and data are exposed to the wider community. But, once it is published, it should be universally accessible.

3. I favor decentralized approaches to managing public access. I believe that agencies can, with suitable policies, ensure that access to published scholarship is universal. By insisting that journals make full text accessible via standardized search interfaces (see item 5 below), agencies will have ensured that a distributed and decentralized infrastructure can exist for preservation and distribution of information.

I believe that agencies do have a role to play in ensuring that there are archives of "last resort", which will hold information if, for example, a publisher goes out of business. These should be publicly funded. But they do not need to be the places where tools are developed and exploitation of the information happens.

The crucial deciding factor in how much intervention in archiving is required from the US government is the degree of international cooperation that exists in the setting of standards for public access to literature. I have referred to this in point (1) above. If international coordination is effective, then I believe that there will be enough commercial incentives for businesses to arise that provide search and discovery. If the US is alone in requiring public access to federally funded research, then US agencies might well have to be more pro-active in providing search tools, since federally funded research will only represent a fraction of the world literature in many important subjects.

4. No comment.

5. This is one of the most important areas in which government agencies should be active, in my view. Metadata standards are essential if information is to be machine-searchable, which as I have argued above is essential to getting the full economic benefit of public access. Current metadata sets, such as the Dublin Core, are too thin. I believe that the federal government should support an interdisciplinary and international standards committee that should make recommendations about what metadata are required to meet specific policy aims. This is an area where much has already been done, but what is now needed is for federal agencies to incorporate metadata standards into their requirements when they pay public-access publication fees, as I suggested in (1) above.

A further key standard is the electronic interface that an archive offers for a search machine. It is crucial that a minimum standard be defined, what in computer jargon is called an API: an application-programming interface. This is basically a standardized set of queries that a search machine can put and get answered: asking for author, abstract, full text, references, etc. Without such standardization, each publisher and archive could offer search and discovery in a different way, and that would greatly inhibit the development of tools. Just as telephone companies, internet providers, and website providers all conform to agreed communication standards, so should archives. The federal government should be pro-active here; as with metadata, so also with query APIs, the government should set up an international committee to agree an API, and then agencies should insist that publishers conform to it in order to be paid a publication fee.

6. If federal agencies adopt strong policies requiring that scholarly results be published in publicly accessible literature, if they are willing to support the payment of publication fees, and if these policies are sufficiently international, then the federal government will not need to invest in much archive infrastructure, search tool development, or other information exploitation initiatives, because private-sector businesses will do the job. Moreover, the payment of publication fees need not be much of an extra cost to federal agencies, since they should replace subscription fees, and much of the money used for subscriptions paid by universities comes from federally-provided overheads (the indirect cost element of research grants). In my view this is preferable to incurring costs in maintaining archives and providing and maintaining search activities.

I believe that federal agencies should encourage experiments now with public access in specific subject fields in order to assess the costs to the agencies of a large-scale switch from subscriptions to publication fees.

7. I see no reason to exclude book chapters and conference proceedings. These are often valuable parts of the literature that have exceptionally low circulation, so that making them available would be very useful. But they should meet standards of peer-review.

The principal problem, it seems to me, is that books and proceedings are typically circulated in print, not electronically. Federal agencies should encourage publishers to make electronic versions publicly accessible for free, while allowing them to charge extra for printed copies.

8. I believe in zero embargo, which is practical only if agencies are willing to support the payment of publication fees to journals. This clearly maximizes the benefits to society, including the speed with which commercial benefits arise. In many fields, information becomes out of date after a relatively short time, and therefore setting

embargo periods that are adapted to different fields becomes rather arbitrary. A simple policy supporting full public access from day one removes this complication.

My only remaining comment is to reinforce my remarks above on international cooperation. It is of course important for there to be a clear federal policy for agencies to follow. But I would urge that this policy include a duty to work toward developing international standards that are consistent with the policies of the federal government. The scholarly literature is fully international in origin, particularly in key sciences. Moreover, the publishing houses are also highly international, and they market the same products (their journals) to customers on all continents. The benefits of public access will be much greater, and the cost burden to the federal government smaller, if national agencies of the different countries develop compatible policies, so that the entire international literature can be opened to access by the public.

=====  
Bernard F Schutz  
Max Planck Institute for Gravitational Physics  
(Albert Einstein Institute)



**ACS Submission to the  
Office of Science and Technology Policy  
Request for Information on  
Public Access to Peer-Reviewed  
Scholarly Publications  
Resulting from Federally Funded Research**

**FR Doc. 2011-28623**

**Submitted January 12, 2012**

**by:**

John P. Ochs

[j\\_ochs@acs.org](mailto:j_ochs@acs.org)

Vice President, Strategic Planning and Analysis  
American Chemical Society  
Publications Division

The American Chemical Society (ACS) is the world's largest scientific society with more than 164,000 members. ACS advances knowledge and research through scholarly publishing, scientific conferences, information resources for education and business, and professional development efforts. The ACS also plays a leadership role in educating and communicating with public audiences—citizens, students, public leaders, and others—about the important role that chemistry plays in identifying new solutions, improving public health, protecting the environment, and contributing to the economy.

ACS Publications is a division of the American Chemical Society. The Publications Division strives to provide its members and the worldwide scientific community with a comprehensive collection, in any medium, of high-quality information products and services that advance the practice of the chemical and related sciences. Currently, over 40 peer-reviewed journals and magazines are published or co-published by the Publications Division. Over 290,000 pages of research material are published annually, representing over 37,000 research papers. With the introduction of the ACS Journal Archives in 2002 and the C&EN Archives in 2011, we provide searchable access to over one million original chemistry articles dating back to 1879.

ACS Publications offers both sponsored and author-enabled open access to research articles through our ACS Author Choice and ACS Articles on Request programs. In addition, digital data that supports the findings of articles and bibliographic information, including abstracts of research articles, are freely available on our website. Since the beginning of the transition to electronic publishing in the mid- to late-1990s, we have developed, and are continuing to develop, innovative and accessible business models, policies, and practices to support the scholarly communication process and broaden information access.

As a socially responsible organization deeply rooted in the scholarly community, we share the interest of the Federal government in maximizing the dissemination and discoverability of knowledge. ACS believes that success in this area will hinge on these efforts being sustainable for publishers over the long-term. We welcome for the opportunity to respond to the invitation to contribute to the Request for Information (RFI) on Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Scientific Research published by Office of Science and Technology Policy (OSTP) in the Federal Register on November 4, 2011.

Our response is in two parts: first a summary of our overall comments and recommendations, and second, answers to the specific questions posed in the RFI.

## **I. Summary**

The primary “markets” for peer-reviewed articles that analyze and interpret scientific research funded by Federal agencies are the academic, corporate, and governmental research and education communities. These communities are already well served by scholarly societies and scientific publishers like the ACS. In a study conducted by the Publishing Research Consortium and released in 2010, 97% of researchers in North America reported they had “very easy or fairly easy” access to research articles in journals. Over 96% of scientific, technical, medical (STM) journals are globally accessible in electronic form and that many publishers like ACS have retrospectively digitized early hard copy material back to the first volumes.

We believe that it is in the public interest to foster this economically beneficial publishing activity and invest heavily in staff and technology resources required to be successful. This investment contributes both directly and indirectly to U.S. job creation and economic growth. We invite the federal government to support our efforts and close whatever access gaps may exist by funding or licensing free-access to the version of record in collaboration with us, in a manner similar to the Howard Hughes Medical Institute and the Wellcome Trust which allow researchers they fund to use a portion of their grant funds to facilitate immediate open access to their published research. Both organizations recognize the value added to manuscripts by publishers and the peer-review process.

Similar federal arrangements with their researchers would respect our rights in these articles as well as allow us to recover the significant investments we have made in their development and dissemination. This promotes a sustainable scholarly communication enterprise and supports the creation of new jobs and industries that can arise from scientific advances. Such arrangements could consist of direct financial sponsorship to make articles arising from federally funded research immediately publicly available or a licensing agreement through which users of public federal websites could access the published article from its source at the ACS. We encourage the federal government to pursue this strategy on a voluntary basis with other responsible publisher partners taking into account the various models under which they provide access to different research communities.

Policies that require open access publication but that provide no specific funding for such publication are impractical and unsustainable. Green Open Access, or author self-archiving in institutional repositories, lacks a sustainable financial business model and has been found to have significant risks attached to it – see *Heading for the open road: costs and benefits of transitions in scholarly communications* from the Research Information Network available at <http://www.rin.ac.uk/transdynamics>. The assumption that costs for it are “paid through institutional journal subscription fees” is misleading since the presence of free copies of articles in repositories may jeopardize the continued subscription to journals containing those articles. Key stakeholders in scholarly communication are currently engaged in a large-scale project (PEER) to develop credible evidence on this important issue. Until this, or other credible evidence, is available, we believe that Federal agencies should be wary of broad mandates for “Green” open access with the potential for unknown and unintended harmful, long-term consequences.

Our analysis of web usage of ACS content deposited in NIH’s PubMed Central in accordance with the current Public Access mandate has revealed that at the time embargoed ACS copyrighted content becomes openly available on PubMed Central, a measurable and statistically significant diminution of web usage activity for the same content occurs on the ACS’s own web site. Further evaluation of these web usage trends is ongoing; however, ACS shares the concerns of other scientific publisher and societies that federal open access mandates, particularly if modeled on the NIH Public Access policy as currently implemented, would impact adversely our economic interests in copyright, and thus expropriate value in intellectual property investments we have made in undertaking the peer review and publications of scientific research articles.

## II Response to RFI Questions

**(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

The primary markets for peer-reviewed articles that analyze and interpret research funded by Federal agencies are the academic, corporate, and governmental research and education communities. These markets are already well served by scholarly societies and scientific publishers like the ACS and peer-reviewed journals are the overwhelming vehicle of choice through which this material is disseminated, evaluated, and applied. In a global study conducted by the Publishing Research Consortium and released in 2010, 97% of researchers in North America reported they had “very easy or fairly easy” access to research articles in journals.

Currently, over 40 peer-reviewed journals and magazines are published or co-published by the ACS Publications Division. Over 290,000 pages of research material are published annually, representing over 37,000 research papers. In 2009, the Publications Division introduced the *ACS Symposium Series Online* and the *ACS Symposium Series Archives*. With the introduction of the ACS Journal Archives in 2002 and the C&EN Archives in 2011, we provide searchable access to over one million original chemistry articles dating back to 1879.

The journals that ACS publishes form a core part of the process of scholarly communication and are an integral part of scientific research and economic progress itself. ACS journals do not just disseminate information; they also provide a mechanism for the registration of the author’s precedence; maintain quality through peer review and provide a fixed archival version for future reference. They also provide an important way for scientists to navigate the ever-increasing volume of published material. Our journals showcase the world’s finest research in chemistry and related sciences, and the visibility that content in ACS journals receives not only helps scholars achieve new scientific breakthroughs but also leads to practical applications that directly benefit the U.S. economy and human health and welfare.

To enhance the access and use of our publications in primary markets and for the broader public, ACS offers both sponsored and author-enabled open access to research through our *ACS Author Choice* and *ACS Articles on Request* programs. In addition, data that supports the findings of articles, bibliographic information, including abstracts of research articles, are freely available on our website. Since the beginning of the transition to electronic publishing in the mid- to late-1990s, we have developed, and are continuing to develop, innovative and accessible business models, policies, and practices to support the scholarly communication process and broaden information access.

We believe that it is in the public interest to foster this economically beneficial publishing activity and toward that end we invest heavily in staff and technology resources required to be successful in this endeavor – further contributing to U.S. job creation and economic growth.

We invite the federal government to support our efforts by funding or licensing free-access to the version of record in collaboration with us, in a manner similar to the Howard Hughes Medical Institute and the Wellcome Trust which are allowing researchers they fund to use a portion of their grant funds to facilitate immediate open access to their published research through the *ACS AuthorChoice* program (see <http://pubs.acs.org/page/policy/authorchoice/index.html>). Both organizations recognize the value added to manuscripts by publishers and the peer-review process.

Similar federal arrangements with their researchers would respect our rights in these articles as well as allow us to recover the significant investments we have made in their development and dissemination – thereby promoting a sustainable scholarly communication enterprise and supporting the creation of new jobs and industries that can arise from scientific advances. Such arrangements could consist of direct financial sponsorship to make articles arising from federally funded research immediately publicly available or a licensing agreement through which users of public federal websites could access the published article from its source at the ACS. We encourage the federal government to pursue this strategy on a voluntary basis with other responsible publisher partners taking into account the various models under which they provide access to different research communities.

A recently released report by the Research Information Network, *Heading for the open road: costs and benefits of transitions in scholarly communications* (available at <http://www.rin.ac.uk/transdynamics>), supports this approach. Commissioned by the Research Information Network, the Publishing Research Consortium, the Wellcome Trust, Research Libraries UK and the UK Joint Information Systems Committee, the study by Cambridge Economic Policy Associates and Mark Ware Consulting is a substantial and very useful contribution to the debate around the future of scholarly communication. The study examines a number of scenarios surrounding the transition to greater access of the scholarly publishing system in the UK. The "Gold" (or author-pays) route to open access was the only access expansion model that the report considered to be fully sustainable. The "Green" (or repository self-archiving) route was found to have significant risks attached to it. This form of open access lacks a sustainable financial business model, and the assumption that costs for it are "paid through institutional journal subscription fees" is misleading since the presence of free copies of articles in repositories may jeopardize the continued subscription to journals containing those articles.

Our analysis of web usage of ACS content deposited in NIH's PubMed Central in accordance with the current Public Access mandate has revealed that at the time embargoed ACS copyrighted content becomes openly available on PubMed Central, a measurable and statistically significant diminution of web usage activity for the same content occurs on the ACS's own web site. Further evaluation of these web usage trends is ongoing; however, ACS shares the concerns of other scientific publisher and societies that federal open access mandates, particularly if modeled on the NIH Public Access policy as currently implemented, would impact adversely our economic interests in copyright, and thus expropriate value in intellectual property investments we have made in undertaking the peer review and publications of scientific research articles.

Finally, ACS notes that over 96% of scientific, technical, medical (STM) journals are globally accessible in electronic form and that many publishers like ACS have retrospectively digitized early hard copy material back to the first volumes. There is enormous variety and choice in

new and existing markets for peer-reviewed publications. It is estimated that there are about 25,400 active scholarly peer-reviewed journals globally, collectively publishing about 1.5 million articles a year. Some 50,000 U.S. workers are involved in private-sector scientific publishing and global annual revenues generated from English-language STM journal publishing revenues were recently estimated to be c. \$8 billion annually with 45% of this total (\$3.6 billion) coming from outside the U.S. In our case the percentage is even higher; approximately two-thirds of our peer-reviewed journal revenues originate from non-U.S. sources.

**(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

ACS believes that the best way for the federal government to protect the intellectual property interests of all stakeholders in the scholarly communication process is to fund or license free-access to the version of record in collaboration with us, in a manner similar to the Howard Hughes Medical Institute and the Wellcome Trust which are allowing researchers they fund to use a portion of their grant funds to facilitate immediate open access to their published research through the *ACS AuthorChoice* program (see <http://pubs.acs.org/page/policy/authorchoice/index.html>). Both organizations recognize the value added to manuscripts by publishers and the peer-review process.

Similar federal arrangements with their researchers would respect our rights in these articles as well as allow us to recover the significant investments we have made in their development and dissemination – thereby promoting a sustainable scholarly communication enterprise and supporting the creation of new jobs and industries that can arise from scientific advances. Such arrangements could consist of direct financial sponsorship to make articles arising from federally funded research immediately publicly available or a licensing agreement through which users of public federal websites could access the published article from its source at the ACS. We encourage the federal government to pursue this strategy on a voluntary basis with other responsible publisher partners taking into account the various models under which they provide access to different research communities.

Policies that require open access publication but that provide no specific funding for such publication are impractical and unsustainable. Green Open Access, or author self-archiving in institutional repositories, lacks a sustainable financial business model and has been found to have significant risks attached to it. The assumption that costs for it are “paid through institutional journal subscription fees” is misleading since the presence of free copies of articles in repositories may jeopardize the continued subscription to journals containing those articles. Key stakeholders in scholarly communication are currently engaged in a large-scale project (PEER) to develop credible evidence on this important issue. Until this, or other credible evidence, is available, we believe that Federal agencies should be wary of broad mandates for “Green” open access with the potential for unknown and unintended harmful, long-term consequences.

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**(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

There are many who would view with concern the prospect of government control of scientific publications and the tools by which it can be searched and analyzed. An approach that would be more consistent with democratic and free market principles would be to foster the development and growth of interoperable repositories such as those hosted on publisher sites like the ACS. Publishers have already developed and are working on collaborative projects to foster interoperability between different public access systems. Such projects include:

- The Digital Object Identifier (DOI, <http://www.doi.org/>) for persistent identification, managing intellectual content, managing metadata, linking customers with content suppliers, facilitating electronic commerce, and enabling automated management of media. DOI names can be used for any form of management of any data, whether commercial or non-commercial. The DOI System is an ISO International Standard.
- CrossRef (<http://www.crossref.org/>) a non-profit organization whose mission is to be a trusted collaborative organization with broad community connections; authoritative and innovative in support of a persistent, sustainable infrastructure for scholarly communication. CrossRef's general purpose is to promote the development and cooperative use of new and innovative technologies to speed and facilitate scholarly research. Its specific mandate is to be the citation linking backbone for all scholarly information in electronic form and function as a sort of digital switchboard. It holds no full text content, but rather effects linkages through CrossRef Digital Object Identifiers (CrossRef DOI), which are tagged to article metadata supplied by the participating publishers. The end result is an efficient, scalable linking system through which a researcher can click on a reference citation in a journal and access the cited article.
- Open Research and Contributor ID (ORCID, <http://orcid.org/>) a non-profit organization dedicated to solving the author/contributor name ambiguity problem in scholarly communications by creating a central registry of unique identifiers for individual researchers and an open and transparent linking mechanism between ORCID and other current author ID schemes. These identifiers, and the relationships among them, can be linked to the researcher's output to enhance the scientific discovery process and to improve the efficiency of research funding and collaboration within the research

community. A resolution to the systemic name ambiguity problem, by means of assigning unique identifiers linkable to an individual's research output, will enhance the scientific discovery process and improve the efficiency of funding and collaboration.

In its review of the relative merits of centralized and decentralized approaches to achieving interoperability, the 2009 *Report and Recommendation from the Scholarly Publishing Roundtable* noted "Decentralization is critical to achieving this goal, especially with respect to interdisciplinary research...the standards and tools adopted by NIH, which effectively support interoperability within PubMed Central, do not provide broad interoperability with external databases, which are growing in number and size."

ACS, like other publishers, has made arrangements with a trusted third party vendor to ensure the long-term availability of our content in the unlikely event of a lengthy service interruption or cessation of publishing activity. Our arrangements are with Portico (<http://www.portico.org/digital-preservation/>), a non-profit service of ITHAKA overseen by its Board of Trustees which represents all members of the academic community with an interest in the long-term preservation of scholarly content, including university presidents, librarians, publishers, and faculty members. In addition to Portico there are a wealth of other options for the long-term preservation of publications – CLOCKSS, LOCKSS, etc.

**(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

Yes. In May 2011 a group of scientific publishers met with NSF officials to explore ideas about collaborative projects that would enhance the public access, utility, and preservation of the results from NSF-funded research including reports, scholarly publications and data for use by both the research community and the general public. Publishers then followed up with a briefing paper where potential collaborations and partnerships with NSF that scientific publishers can provide to develop and implement were outlined. These projects/pilots included the development of standards and persistent identifiers to enhance the discoverability of NSF-funded research results and to promote interoperability among the NSF, publisher and any third party databases and platforms and possible pilot projects that would drive access, use and innovation from NSF-funded research results. These pilot project examples were offered to NSF as a basis for continuing discussions on collaborative efforts between NSF and the scientific publishing community. Such collaboration has the potential to significantly advance the achievement of joint objectives related to the dissemination and long-term stewardship of research results.

**(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?**

Steps are already being taken. Some funding agencies (e.g. NSF) currently require researchers to acknowledge in publications the support they have received. However, there are no standards on how this should be done. Consequently, federal agencies find it difficult to know and track what publications have arisen from the research they funded. Publishers have proposed to collaboratively develop a means of standardizing funder information and making that information available to the funding agencies in a public-private partnership, titled CrossGrant. CrossGrant was officially launched in fall 2011 by the non-profit publisher-led organization CrossRef and involves a collaboration with DOE-OSTI, which has offered to take responsibility for producing and maintaining a dictionary of funding agency names and associated nomenclature. A working group has been formed to plan and implement the CrossGrant project. It includes the Executive Directors of the CrossRef and NISO, as well as data experts from several publishers and funding agencies (e.g. DOE-OSTI and Wellcome Trust).

We believe that a community-wide solution of this type is easier and far less expensive to construct than each agency developing its own response to the problem. This is because publishers are in the best position to provide a simple way of ensuring that journal articles are accompanied by standardized, high-quality metadata providing information about the agency, program, and even specific grant that funded the research. Agencies lack a full accounting of this information.

**(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

ACS believes that the federal government can best maximize the benefit of public access to articles that analyze and interpret research funded by taxpayers and minimizing the burden and true costs for all stakeholders by funding or licensing free-access to the version of record in collaboration with us, in a manner similar to the Howard Hughes Medical Institute and the Wellcome Trust which are allowing researchers they fund to use a portion of their grant funds to facilitate immediate open access to their published research through the ACS *AuthorChoice* program (see <http://pubs.acs.org/page/policy/authorchoice/index.html>). Both organizations recognize the value added to manuscripts by publishers and the peer-review process.

Similar federal arrangements with their researchers would respect our rights in these articles as well as allow us to recover the significant investments we have made in their development and dissemination – thereby promoting a sustainable scholarly communication enterprise and supporting the creation of new jobs and industries that can arise from scientific advances. Such arrangements could consist of direct financial sponsorship to make articles arising from federally funded research immediately publicly available or a licensing agreement through which users of public federal websites could access the published article from its source at the ACS. We encourage the federal government to pursue this strategy on a voluntary basis with other responsible publisher partners taking into account the various models under which they provide access to different research communities.

A recently released report by the Research Information Network, *Heading for the open road: costs and benefits of transitions in scholarly communications* (available at

<http://www.rin.ac.uk/transdynamics>), supports this approach. Commissioned by the Research Information Network, the Publishing Research Consortium, the Wellcome Trust, Research Libraries UK and the UK Joint Information Systems Committee, the study by Cambridge Economic Policy Associates and Mark Ware Consulting is a substantial and very useful contribution to the debate around the future of scholarly communication. The study examines a number of scenarios surrounding the transition to greater access of the scholarly publishing system in the UK. The "Gold" (or author-pays) route to open access was the only access expansion model that the report considered to be fully sustainable. The "Green" (or repository self-archiving) route was found to have significant risks attached to it. This form of open access lacks a sustainable financial business model, and the assumption that costs for it are "paid through institutional journal subscription fees" is misleading since the presence of free copies of articles in repositories may jeopardize the continued subscription to journals containing those articles.

Our analysis of web usage of ACS content deposited in NIH's PubMed Central in accordance with the current Public Access mandate has revealed that at the time embargoed ACS copyrighted content becomes openly available on PubMed Central, a measurable and statistically significant diminution of web usage activity for the same content occurs on the ACS's own web site. Further evaluation of these web usage trends is ongoing; however, ACS shares the concerns of other scientific publisher and societies that federal open access mandates, particularly if modeled on the NIH Public Access policy as currently implemented, would impact adversely our economic interests in copyright, and thus expropriate value in intellectual property investments we have made in undertaking the peer review and publications of scientific research articles.

**(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

As a socially responsible member of the scholarly publishing community, ACS recommends that the federal government should first ensure that it can fiscally support funding or licensing free-access from affected publishers to other types of peer-reviewed publications before enacting further public access policies. As noted elsewhere in our response to this RFI, funders like the Howard Hughes Medical Institute and the Wellcome Trust allow researchers to use a portion of their grant funds to comply with their public access policies and to facilitate immediate open access to their published research.

**(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications? Please identify any other items the Task Force might consider for Federal policies related to public access to peer-reviewed scholarly publications resulting from federally supported research.**

We caution the federal government against the use of overbroad and simplistic embargo periods. If embargo periods are to be used, they must take into account both the practices of the discipline and the frequency of the relevant journal publications – one-size will not fit all. To date there is no data on the mid or long-term effects of large-scale archiving of peer-reviewed manuscripts, under differing embargo periods, on the health, viability and sustainability of the scholarly communication system. Different disciplines use information at different rates and one-size-fits-all policies (i.e. a single uniform embargo period) will not work. In order to learn what the effect of such policies might be *before* they are implemented, the European Union is currently funding a collaborative study (PEER) involving publishers, repositories, and researchers on the effects of the large-scale, systematic depositing of final peer reviewed manuscripts on reader access, author visibility, and journal viability, as well as on the broader research environment (see <http://www.peerproject.eu/reports> for more information). ACS supports this evidence-based approach to policy-making and recommends a similar approach for the federal government.

Our analysis of web usage of ACS content deposited in NIH's PubMed Central in accordance with the current Public Access mandate has revealed that at the time embargoed ACS copyrighted content becomes openly available on PubMed Central, a measurable and statistically significant diminution of web usage activity for the same content occurs on the ACS's own web site. Further evaluation of these web usage trends is ongoing; however, ACS shares the concerns of other scientific publisher and societies that federal open access mandates, particularly if modeled on the NIH Public Access policy as currently implemented, would impact adversely our economic interests in copyright, and thus expropriate value in intellectual property investments we have made in undertaking the peer review and publications of scientific research articles.

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11<sup>th</sup> January, 2012

Response to FR DOC 2011-28623

Dear Sir or Madam,

On behalf of BioMed Central Ltd, I am writing to respond to the OSTP's RFI on *Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Scientific Research*.

BioMed Central is a leading open access publisher. Since its launch in 2000, BioMed Central has demonstrated that commercially viable business models exist which allow scientific publishers to make the peer-reviewed research articles they publish immediately and freely available online in their official form, with costs typically covered via a publication fee. BioMed Central is a founder member of the Open Access Scholarly Publishers Association (<http://www.oaspa.org/>) and since 2008, has been part of Springer Science+Business Media, the world's second largest publisher of scientific, technical and medical journals (STM).

Results to some of the specific questions in the RFI are given below:

**(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access**

**to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

Innovation in science, technology and medicine is a key driver of economic growth. Making that innovation as efficient as possible, both to increase productivity and to accelerate discovery, can serve to increase the rate of economic growth. When the results of publically funded research are immediately accessible to those who need them, this immediate access reduces duplicated research effort and ensures faster and more efficient dissemination of the latest knowledge upon which further advances can be built. This in turn accelerates the pace of innovation, and the resulting increase in the rate of progress and in the efficiency of the research process allows the tax dollars invested in research by public agencies to go further.

Making research results freely available in machine-readable, openly-licensed form also introduces new avenues for innovation. Scientists are using new text-mining techniques to discover connections and insights that are hidden within the existing corpus of published research. Such text-mining is difficult or impossible in an environment where published research articles are available only to subscribers, under restrictive licensing conditions which prevent the articles from being aggregated, indexed or redistributed.

Public access to research outputs also serves to benefit agencies by increasing public engagement with scientific and medical research, and public awareness of the benefits resulting from the research that has been funded.

Researchers at biotechnology companies often face challenges due to limited access to traditional subscription-based journals. Open access to research results can stimulate economic growth by making more of the latest scientific knowledge available to companies to serve as the basis for commercial innovation.

**(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

Public Agencies fund the majority of scientific research. Scientific publishers, both for-profit and not-for-profit, play an important complementary role by helping to coordinate and manage the validation, dissemination and archiving of research results, which is generally achieved via publication in peer-reviewed journals. There are considerable costs involved in

managing the processes of peer review, copyediting, production, dissemination and archiving of the articles in scientific journals. These processes are carried out by publishers and traditionally the costs have been covered through the publisher being granted exclusive rights to the research article concerned, and then charging a fee to those who wish access it.

However, this is by no means the only way for publishers to recoup the cost of the publication process. There are now many hundreds of successful, high-quality open access journals, including those published by BioMed Central, which operate on a model whereby the publisher does not take exclusive rights and does not charge for access, but instead is paid upfront for the service of publishing the research article. With the costs having been covered upfront, the research can then be made freely and immediately available in its official final form, without undermining intellectual property rights or the financial viability of the scholarly publishing system. The success of BioMed Central as a commercial publisher has provided an important demonstration that open access publishing offers a sustainable model with many benefits for researchers, research funders, and society in general.

Modeling of the economic impact of a move to an open access publishing model has led to the conclusion that the economic benefits would far outweigh the costs that might be incurred in such a transition. Research [<http://bit.ly/zDZO7r>] led by John Houghton of Victoria University, Australia, and Charles Oppenheim of Loughborough University, UK, concluded that “the potential benefits of more open access to research findings suggests that returns to research can also be substantial, and that different scholarly publishing models can make a material difference to the returns realized, as well as the costs faced[..... and that] there are gains to be realized from moving towards open access publishing models and, despite the lag between the costs and the realization of benefits, the transition may be affordable within existing system wide budgetary allocations.”

When funders seek to maximize the return on their research investment, appropriate licensing has an important role to play. Creative Commons licenses [<http://creativecommons.org/>], used by almost all major open access publishers, have emerged as powerful tools for this purpose. The Creative Commons licenses operate through the mechanism of copyright law, and allow copyright holders to reserve certain rights (e.g. the right to be attributed and credited as the author of the work), while also explicitly allowing and encouraging reuse and redistribution. Millions of items on the web have been explicitly shared under Creative Commons licenses (including every page on Wikipedia) and this consistent licensing greatly facilitates the aggregation and redistribution of composite and derivative works which build on multiple sources. For example, Creative Commons licensing makes it possible for a third party to create and distribute interactive educational material, building on content both from Wikipedia and from open access journals.

Under the open access publishing model, a research publisher's role changes to become one of service provision, rather than content ownership, but this has proven, in BioMed Central's case, to be entirely compatible with financial sustainability.

**(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

While entirely distributed solutions to archiving problems are possible, they are not a panacea. Central 'hubs' can greatly enhance efficiency, turning a many-to-many relationship between content creators and content users, into an more easily managed pair of one-to-many relationships, firstly between the content creators and the hub, and secondly between the hub and the content users. Users of open access content would be disadvantaged if they had to assemble content from a wide variety of disparate sources. By acting as a hub to take care of aggregation, consolidation and redistribution, PubMed Central adds a great deal of value and efficiency to the open access ecosystem.

Of course, when considering long term digital archiving, it is not desirable to have all eggs in one basket, and so it makes sense for central public archives such as PubMed Central to maintain relationships with international mirrors and to encourage parallel distributed archiving approaches, such as LOCKSS (<http://www.lockss.org/>), to minimize the risk of permanent loss to the scientific record resulting from policy changes, funding problems, or natural/man-made disasters at a single central archive.

**(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other actors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

Embargo periods of any length will reduce the benefit of open access to the results of federally-funded research. When open access publishing was still an unproven idea, embargo periods served a useful role, as they allowed a compromise to be struck that would allow existing subscription publishing models to be maintained, while delivering some

fraction of the benefit of open access by making a version of the research article freely available after the embargo period has elapsed.

To maximize the benefits of open access to the results of research, however, the ideal would be to have no embargo period at all, and to provide *immediate* access to the final version of the article. Such an approach is feasible, as open access publishers have demonstrated, but only if the costs which publishers incur in managing the research publication process are covered upfront (the so-called 'gold' open access model), rather than relying on unfunded mandated deposit of copies of research articles from subscription journals into open access repositories (the 'green' model).

For these reasons, in order to encourage open access publication, the most important step that federal agencies can take with respect to embargo periods is to ensure that provision is made in all research grants to cover the cost of 'gold' open access publication. This will allow the published results of research to be immediately openly shared without any embargo period. Ideally such funding to support the open communication of published results should be ring-fenced so that researchers are not faced with an either/or choice of whether to spend funds on additional research or on ensuring the open communication of their research results. It serves the wider public interest to ensure that *all* research resulting from federal funding should be immediately shared wherever possible, and so it is important for agencies to ensure that researchers are not financial disincentivized from doing so.

Yours sincerely,



Matthew Cockerill

Managing Director,  
BioMed Central Ltd

Responsibility for the dissemination of publicly funded research results is shared by multiple parties. The comments presented here are intended to apply to primary original research articles reporting novel results, not necessarily to other types of publications such as reviews, commentaries, etc. The latter should be discussed separately, in my view.

A) The public surely has a right to access articles for no or low cost if public funds have paid for the research. For a citizen to have to pay \$30 for an article (for example, regarding a disease that they or a family member has) will rightly be viewed as unreasonable by the public. Researchers often have access through the subscriptions of their institutions, but this is no help to the average citizen who surely has a right to reasonable access.

B) Authors should be expected to take responsibility for their publication decisions and publish so that their work is widely accessible. Authors control submissions, not publishers. Publishers can only choose among the submissions they actually receive. Publicly funded researchers make a decision as to where they publish their results, and thus they need to accept responsibility for understanding what rights they are granting to the publisher when they choose to publish in a given journal. Authors have options. They can choose open access (OA) journals or journals whose publishers charge no or low fees for individual articles that are requested by the public. Or they can choose to publish in journals that charge \$30 for a single article. Legislation should not be needed to ensure broad access at reasonable cost if authors, their institutions and their funding agencies take responsibility for ensuring that submission of manuscripts is consistent with broad, reasonable access.

C) A publisher provides an online system for submission and review that has some value, but that value has a limit and should be evaluated and quantified fairly. Publishers provide typesetting, but self-publishing is inexpensive now, so the value of this too is limited and should be evaluated relative to other publishing options that take into account new technologies. Also, some publishers do copy editing, but it is questionable how much that really benefits authors, or even readers. Authors are responsible for their every word, and can hire their own editors if they need help expressing themselves in the lingua franca of science, English. If editors and publishers want to impose changes in text on authors, authors do have the option to publish elsewhere.

D) OA journals have fixed costs of at least \$1000 and often \$2000 or more per article. Currently, authors pay only part of these costs in most OA journals, and the rest is subsidized with grants, donations, and revenues from other activities of the publisher (non-profit and profit). Long term sustainability of OA journals presumably requires that authors and their institutions may eventually have to pay the full cost of publication.

E) Research that is not published has effectively not been done, i.e., effectively doesn't exist - so publication is a necessary part of doing publicly funded research - research is not complete until published accessibly. Thus, publication is a reasonable cost of performing research and should be factored into funding of research. Authors and research institutions should take responsibility for paying the reasonable costs of publication to ensure their research is widely available. Public funding agencies need to be an equal part of the solution in order to ensure that research they fund is completed, by being published in an accessible manner.

F) It is reasonable for public funders to require researchers to publish in a way that makes the work widely accessible at reasonable cost, including data mining. Guidelines or rules are justifiable. Legislation

should not be needed to create access, and also should not be used to limit access (as is the case for the Research Works Act). What is needed is that public funders make their expectations known to grant recipients and hold them to it. Also, public research institutions can and should direct their researchers to publish their work in a manner that makes it widely accessible at reasonable cost.

In sum, authors, funders and research institutions all share responsibility for ensuring access to research results. By working together they should be able to come up with practices and policies that ensure wide availability at reasonable cost of all publicly funded primary research results. Publishers facilitate the process of disseminating research results, but with enough competition among publishers, including OA journals, sufficient pressure can be applied to ensure fair access, but ONLY if authors, funders and institutions who are the source of the research take responsibility for their publication decisions. Rigid, legislative solutions can be counterproductive, as the RWA is, in my view. Legislation could usefully direct funding agencies to develop policies that ensure fair and reasonable access to citizens and scientists, considering both cost and time following initial publication, but should not specify what those policies should be. Flexibility is important: leaving room for all parties to work together to find workable solutions as technology changes over time is important.

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<http://ibiosphere.blogspot.com/2011/09/ibiosphere-facilitating-creation-of.html>

The Association of Learned and Professional Society Publishers  
*Shaping the Future of Learned and Professional Publishing*



## **ALPSP Response to OSTP Request for Information: Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research**

**To:**  
Office of Science and Technology Policy (OSTP)  
publicaccess@ostp.gov

**From:**  
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January 2012

## **ALPSP Response to OSTP Request for Information: Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research**

1. The Association of Learned and Professional Society Publishers (ALPSP) is the international trade association representing scholarly and professional publishers across all academic disciplines. ALPSP has a broad and diverse membership of over 300 organizations in 37 countries who publish over half the world's total active journals, as well as books, databases and other products.
2. ALPSP's mission is to connect, train and inform the scholarly and professional publishing community and to play an active part in shaping the future of academic and scholarly communication.
3. In the US, ALPSP represents 60 organizations in 14 states employing an estimated 3,000 employees.
4. ALPSP welcomes the opportunity to respond to the Office of Science and Technology Policy (OSTP) Request for Information on Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research. Our response addresses issues relevant to the ALPSP membership.
5. Scholarly publishing is an international enterprise, with around 1.5 million articles published annually<sup>1</sup>. US researchers dominate this output with a 29% share of the total. The majority of publishers (95%) are small, publishing one or two journals. At the other end of the scale, the 100 largest publishers account for 67% of the total number of journals.
6. Publishers are dedicated to providing the widest dissemination of the peer-reviewed results of research and to supporting the scientific enterprise. In addition to investing heavily in staff and technology, not-for-profit learned and professional society publishers redirect their 'surplus' back into the community through organization of conferences, scholarly awards, teaching fellowships, skills transfer through workshops and seminars, enhancing professional standards and benchmarking, travel and other grants, provision of patient information and public understanding of science initiatives. Commercial publishers also invest directly in the scientific community, through grants, awards and other sponsorship schemes.
7. Publishers support any *sustainable* models of access, the most common being the subscription-based model. Gold Open Access, where the author (via the institution or funder) provides payment to fund publication, is gaining popularity, though it should be noted that this is not a fully tested model with regard to long-term sustainability. Publishers are working with funding organizations to investigate the issues surrounding this new access model to ensure it can provide sustainable business models for publishers to continue to disseminate value-added peer-reviewed literature.
8. Policies which require open access publication but do not provide funding for that publication, such as Green Open Access (author self-archiving in openly accessible

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<sup>1</sup> <http://www.stm-assoc.org/industry-statistics/the-stm-report/>

repositories) threatens to undermine the publication system on which it depends, as evidenced in a recent report from the Research Information Network<sup>2</sup>.

9. The PEER project<sup>3</sup> in Europe has been investigating the effects of large-scale, systematic deposit of the Accepted Manuscript (see NISO/ALPSP definitions for Journal Article Versions<sup>4</sup>) in repositories. This project is a rational approach towards defining the problems and thereby identifying potential solutions. It is a broad ranging project encompassing economic, behavioral and usage aspects. The behavioral study has reported and noted that authors value highly peer-reviewed journals and whilst there is still some confusion regarding open access publishing, there were reservations about peer-reviewed papers being held in open-access repositories. It also found that readers were unlikely to go to a repository to search for journal articles.

**(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

10. Current markets for peer-reviewed publications exist globally and publishers have invested heavily to ensure that there are many channels of access to publications. The markets are already well-served and a recent survey from the Publishing Research Consortium found that 97% of researchers in North America have very or fairly easy access to research journals<sup>5</sup>. This study also demonstrated that North America enjoys one of the best 'access to information' versus 'importance of that information' profiles of any of the regions investigated.
11. Publishers have recognized the needs of the myriad communities they serve and have responded appropriately, leading the way with technical tools and services to enhance the access, usability and analysis of published research, collaborating widely with various stakeholders in the process.
12. In this regard, a number of publisher-led initiatives have increased access to many different user groups. For example, DeepDyve<sup>6</sup>, an article rental system, enables anyone to access thousands of scholarly and academic journals. Users may browse an article online and subsequently purchase the article for download if desired. patientINFORM<sup>7</sup> brings up-to-date, authoritative information from the world's leading medical journals to patients and caregivers. Information is provided in a summarized form, with links to free or reduced-price access to the full article on the publisher website. The Emergency Access Initiative<sup>8</sup> is a partnership between the Association of American Publishers (plus other publishers), the National Library of Medicine and the

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<sup>2</sup> <http://www.rin.ac.uk/news/press/heading-open-road-costs-and-benefits-transitions-scholarly-communications>

<sup>3</sup> <http://www.peerproject.eu/>

<sup>4</sup> <http://www.niso.org/publications/rp/> NISO RP-8-2008 Journal Article Versions (JAV): Recommendations of the NISO/ALPSP JAV Technical Working Group

<sup>5</sup> <http://www.publishingresearch.net/projects.htm> Access vs. Importance

<sup>6</sup> <http://www.deepdyve.com/>

<sup>7</sup> <http://www.patientinform.org/>

<sup>8</sup> <http://eai.nlm.nih.gov/docs/captcha/test.pl?url=>

National Network of Libraries of Medicine with the aim of providing temporary and free access to those affected by disasters and those providing assistance to them. It includes public access.

13. In addition to the collaborations in paragraph 12, publishers also provide free or very low cost access to universities and colleges, research institutes, schools, hospitals, governmental offices and national libraries in the lowest gross national income per capita countries throughout the world through initiatives such as Research4Life<sup>9</sup>, eIFL<sup>10</sup> and PERii<sup>11</sup>.
14. It is clear that publishers are keen to ensure that the needs of different markets in accessing scholarly information are met appropriately and are keen to do so in collaboration with other stakeholders. Publishers are keen to engage with the US Government to address the further gaps it has identified in public access. It would be useful for agencies to detail the particular needs of such user groups and to collaborate with publishers to establish the most efficient and appropriate ways in which to address those needs.
15. The need for archiving digital information has been recognized by publishers, librarians, funders and researchers. Collaborative projects already exist to ensure the long term preservation of scholarly information through initiatives such as Portico<sup>12</sup>, LOCKSS<sup>13</sup>, CLOCKSS<sup>14</sup> and the National Library of the Netherlands (Koninklijke Bibliotheek) eDepot<sup>15</sup>.
16. Very careful consideration needs to be given to archiving and public access policies, if these are to be tied to growth in the US economy and improving output of the US scientific enterprise. Public access cannot be restricted to one local region. Ensuring public access to publications resulting from federally-funded research will result in global access, therefore benefiting researchers and other users all over the world (and potentially also their economies), not just the US. This removes any competitive advantage for the US economy and research output.
17. Data from the National Institute of Health reports that more than half of all PubMed Central users are from outside the US. This repository is therefore reducing the export market for the US publishing industry which, in total, employs around 50,000 people and contributes c. US\$3.5 billion to the US balance of trade.

**(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

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<sup>9</sup> <http://www.research4life.org/>

<sup>10</sup> <http://www.eifl.net/>

<sup>11</sup> <http://www.inasp.info/>

<sup>12</sup> <http://www.portico.org/digital-preservation/>

<sup>13</sup> <http://www.lockss.org/lockss/Home>

<sup>14</sup> <http://www.clockss.org/clockss/Home>

<sup>15</sup> <http://www.kb.nl/index-en.html>

18. The US government is clearly aware that allowing global public access to the peer-reviewed published output from federally-funded research has the potential to open such content to piracy and other unauthorized dissemination.
19. Such piracy undermines the income that scholarly publishers require to continue their investment in the aforementioned projects, tools and collaborations for the benefit of the scholarly community.
20. The most efficient way to ensure appropriate protection of intellectual property interests of all stakeholders would be to make the final Research Report, provided by the researcher to the funder, freely available. This would allow a rapid and very broad dissemination of the research results obtained directly from federal funding. This would also facilitate such reporting to be tied back to the original grant made by the federal agency. Final project reports could also be linked to the peer-reviewed published research, available online whether free, via rental or for full purchase as the publisher business model dictates.
21. ALPSP is not in favor of mandated deposit to centralized open repositories. In addition to significant concerns about long-term sustainability and piracy, open repositories have deleterious effects on the publishing model; for example, NIH does not currently provide publishers with full, detailed usage statistics from PubMed Central, which means publishers are unable to supply libraries with the complete picture with regard to their institution's use of a wide range of journals. Such usage data is crucial in determining renewals and whilst this situation persists, subscriptions are being cancelled based on incomplete usage data.

**(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

22. Studies have demonstrated that researchers prefer to access the publisher-created Version of Record (VoR) from a peer-reviewed journal as the authoritative, definitive version, over versions in subject or institutional repositories<sup>16, 17</sup>.
23. In an interconnected age, with current and ever-improving technology, centralization is not required and moreover, requires unnecessary duplication of effort at considerable expense. Indeed the report from the Scholarly Publishing Roundtable in January 2010<sup>18</sup> recommended decentralization to achieve the interoperability needed to "enhance the impact of the scholarly literature and ignite the generation of new knowledge".
24. Publishers have gone to considerable lengths in developing tools to ensure interoperability between different access systems. For example the Digital Object Identifier (DOI<sup>19</sup>) system, to provide persistent identification of digital objects, the

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<sup>16</sup> <http://www.peerproject.eu/reports/> D4.2 PEER Behavioural Research – Final Report

<sup>17</sup> <http://www.publishingresearch.net/projects.htm> Research Publication Characteristics and Their Relative Values

<sup>18</sup> <http://www.aau.edu/WorkArea/DownloadAsset.aspx?id=10044>

<sup>19</sup> <http://www.doi.org>

CrossRef<sup>20</sup> organization and its various ongoing projects aimed at connecting users with primary research content, and the Open Research and Contributor ID (ORCID<sup>21</sup>) initiative, to solve author name ambiguity in scholarly communications and latterly resolving institutional naming ambiguity.

25. Publishers are also continuing to invest in the development of discipline-specific tools to enable users to interact with and analyze specialized content. Such tools would be lost with centralization.
26. Publishers are continuing to invest in metadata standards, which improve the ease with which relevant articles can be discovered. With such excellent standards, search tools are all that is required to connect users with the most appropriate content for their needs, and importantly to the VoR. Such metadata standards include those developed by EDItEUR<sup>22</sup>, IDEAlliance (PRISM)<sup>23</sup> and NISO<sup>24</sup> (see also paragraphs 33 and 34 below).

**(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

27. In addition to the many public-private partnerships already mentioned, publishers are keen to engage further with Government and its agencies. Proposals have already been put to NSF for collaborative projects to enhance the public access, utility and preservation of publications resulting from federally-funded research.
28. Such proposals include standardizing the collection, display and use of metadata to indicate the federal grant supporting the research from which a scholarly publication derived and potential linking back to the Federal Agency website. A further example is the proposal for a project to understand the requirements for and benefits derived from content mining and to establish a methodology for overcoming current barriers, such that publishers can facilitate such content mining with sustainable business models.
29. These are just two of the proposals under discussion with the NSF.

**(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?**

30. As already mentioned above (paragraph 28), publishers are already undertaking a project with CrossRef and the Department of Energy (DoE) to standardize the way

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<sup>20</sup><http://www.crossref.org>

<sup>21</sup><http://orcid.org>

<sup>22</sup><http://www.editeur.org/>

<sup>23</sup><http://www.idealliance.org/specifications/prism/>

<sup>24</sup><http://www.niso.org/standards/>

funding information is collected publishers and included in article metadata. This would enable Federal agencies to easily obtain information about publications resulting from federally-funded research.

31. Such collaborative projects enable cost-effective standardization across all Federal agencies and publishers.
32. Metadata allows users to discover information and find related information without the requirement of accessing the full text. Two initiatives are important in this regard.
33. The Dublin Core Metadata Initiative<sup>25</sup> provides key specifications and best practice regarding the use of metadata for the description of various digital resources (including books and journal articles). It enables interoperability of different applications and vocabularies and optimizes the metadata for searching.
34. CrossRef<sup>20</sup> provides a cross-publisher linking network. This allows readers to easily link to other resources of interest on other publisher platforms. This works seamlessly through DOIs and metadata which are embedded in articles and other content as part of the value-added publication process.

**(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

35. Federal agencies funding scientific research should maximize the products that they invest in, that is the Research Reports required by Federal agencies from the research scientist. Some already make such research reports available (e.g. the DoE Information Bridge<sup>26</sup>), but others do not. Making all such reports freely available would solve the "public access" issue.
36. Federal agencies do not invest in peer-reviewed journals. Publishers add significant value to peer-reviewed publications and this is reflected in researcher preference for the VoR<sup>16,17</sup>. Publishers should then be at liberty to employ appropriate business models by which they may recover their investment and to reinvest.

**(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

37. No. Publishers invest considerably in all types of content they produce to add value to the scholarly and academic community that utilize them. Such publications should not be appropriated without rightsholder permission and compensation. To behave otherwise would compromise the sustainability of high quality publication, dissemination and preservation of the research results.

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<sup>25</sup> <http://dublincore.org/>

<sup>26</sup> <http://www.osti.gov/bridge/>

**(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

38. There is no single “appropriate” embargo period. Federal agencies should not impose inappropriate embargo periods on non-federally funded businesses. Individual publisher business models are not arbitrary, but are carefully calibrated to meet the needs of the market and the investment made.
39. The most common current embargoes range from zero, for gold Open Access material, to 12 months, as a result of the NIH-mandate. Publishers, however, should be able to set their own appropriate embargo, depending on the material they publish and the market for which they publish, and this may be more or less than 12 months.
40. An indication of the length of usage an article in a given discipline received, the journal half-life forms a useful measure. For example, the American Physiological Society reports journal half-life from 4.3 to over 10 years<sup>27</sup>. The quarterly journals of the American Anthropological Association also have a cited half-life of over 10 years and 90% of downloads occur 12 months after the date of publication. In mathematics papers published in 2009, 50% of citations were found to be to papers originally published before 1999, with 20% of citations to papers published before 1985<sup>28</sup>.
41. Imposing mandates on the potential to recover investment from such usage further undermines publishers’ ability to continue to innovate and add value for the benefit of the scholarly and academic community.
42. In the current economic climate, recovering investment is all too important. Journal budgets are being squeezed and foreshortening the length of time a publisher is able to recoup their investment has the potential to seriously damage publishers and therefore the overall economy.
43. As already referred to, the lack of transparency demonstrated by NIH has the potential to undermining the entire system. Librarians utilize usage statistics as part of their considerations for journal renewals. Whilst publishers have worked with NIH to assist authors in fulfilling their mandated deposit, NIH has been unwilling to provide publishers with detailed usage statistics, which would allow publishers to provide a more accurate picture to librarians of the usage of journals by their faculty.

**Please identify any other items the Task Force might consider for Federal policies related to public access to peer-reviewed scholarly publications resulting from federally supported research.**

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<sup>27</sup> [http://www.the-aps.org/publications/journals/info/impact\\_factors.htm](http://www.the-aps.org/publications/journals/info/impact_factors.htm)

<sup>28</sup> <http://www.msri.org/attachments/workshops/587/MSRIfinalreport.pdf> Donald E McClure (2011) Dynamics of Mathematics Journals, 2000 to 2009

44. Scientific research and scholarly communication is an international enterprise. Any efforts to improve “public” access through collaborations, standards or other projects, should necessarily be considered on an international, rather than national scale, if the real benefits of improving access to data are to be efficiently and cost-effectively recognized.
45. Publishers are very willing to enter into collaborative projects to explore the nature of these issues with the aim of producing the most cost-effective and appropriate solutions for all stakeholders.

Dr. Audrey McCulloch  
Acting Chief Executive

On behalf of the ALPSP membership.



**Harvard University**  
**School of Engineering and Applied Sciences**

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January 12, 2011

Office of Science and Technology Policy  
Executive Office of the President  
725 17th Street Room 5228  
Washington, DC 2050

To whom it may concern:

I write in response to the White House Office of Science and Technology Policy request for information on “Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research.” As one involved in the open-access policy discussions at Harvard this year, I endorse the comment submitted on January 4, 2012, by Harvard University, which I reproduce here. Please construe it as my own response to the request for information.

Sincerely,

Stuart M. Shieber  
Welch Professor of Computer Science  
Director, Harvard Office for Scholarly Communication

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January 4, 2012

To: Office of Science and Technology Policy  
Executive Office of the President  
725 17th Street Room 5228  
Washington, DC 2050

From: Alan M. Garber, Provost  
Harvard University

Re: Harvard response to the White House RFI on OA publications

I write on behalf of my colleagues at Harvard University in response to the White House Office of Science and Technology Policy request for information on “Public Access to Peer-Reviewed Scholarly Publications Resulting From Federally Funded Research.” In summary, we strongly support White House action to require and enhance public access to government-funded research. We provide our general recommendations, as well as more detailed responses to the eight particular questions that were called out in the RFI below. However, we emphasize that decisions on many of the detailed issues under discussion here and in the other responses to the RFI are secondary to the general principle of requiring public access.

We endorse the view that every federal agency funding non-classified research should require free online access to the full-text, peer-reviewed results of that research as soon as possible after its publication. There are three powerful reasons to take such a step. First, taxpayers deserve access to the results of taxpayer-funded research. It is their right. Second, public access maximizes the visibility and usefulness of this research, which in turn maximizes the return on the public’s enormous investment in that research. Third, public access accelerates research and all the benefits that depend on research, from public health to economic development, manufacturing, and jobs.

The United States already recognizes the public interest in amplifying the impact of publicly funded medical research. A strong public-access policy has been in place at the National Institutes of Health (NIH) since April 2008. But the same interest calls on us to amplify the impact of publicly funded research in every field, from alternative sources of energy to American history and culture. The NIH policy has been good for professional researchers, good for lay readers, good for medical professionals, good for patients, good for the NIH, and good for taxpayers.

If the NIH policy is flawed, it is for allowing needlessly long delays before the public gains access to this body of publicly funded research, and for allowing needless restrictions on the public use and reuse of this research. The NIH policy should be strengthened in these two respects and the strengthened version of the policy should be extended across the federal government.

Even Harvard University, whose library is the largest academic library in the world, is not immune to the access crisis motivating much of the campaign for public-access policies. In fact, the Harvard library system has had to make a painful series of budget-driven journal cancellations, and we are deciding on a set of further cancellations at this very moment.

With respect to some of the specific questions posed in the request for information, we provide our recommendations below.

*(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

We will separate the economic from the non-economic questions in this cluster, and address them separately.

*Are there steps that agencies could take to grow existing and new markets...? How can policies for archiving publications and making them publically accessible be used to grow the economy? ...What are the relative costs and benefits of such policies?*

Yes, there are steps to grow new and existing markets arising from access to cutting-edge research. The most important step is to require public access (also called open access and free online access) to the final versions of the authors' manuscripts of peer-reviewed articles arising from publicly funded research.

Businesses need access to cutting-edge research to stimulate innovation, for example to develop new medicines, reduce the size and energy requirements of computer chips, strengthen lightweight composite materials, reduce harmful emissions from fossil fuels, increase the efficiency of solar panels, and make food safer. Public access to publicly funded research nourishes R&D in these industries, allowing them to develop new products, improve existing products, and create jobs.

The question is not whether useful, publicly funded, basic or pre-competitive research will continue. Even in an age of budget cuts, it will continue. The question is whether we will make the results of that research easily available to all those who can make use of it, or whether we will allow it to be locked down by a private interest at the expense of the public interest.

In March 2011, the UK Science Minister, David Willetts, held a Roundtable on precisely these topics. (Disclosure: Two members of the Harvard community were invited participants.)

Willetts released the results of his ministry's deliberations in mid-September. One of his chief conclusions is directly pertinent to the current RFI:

<http://nds.coi.gov.uk/content/Detail.aspx?ReleaseID=421232&NewsAreaID=2>

Research stimulates and fuels innovation and economic growth. So, to maximise UK innovation we need to maximise access to and the use of research findings.

Just last month (December 2011) the UK Department for Business, Innovation and Skills converted the Willetts Roundtable results into national policy. From the Department's executive summary:

<http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf>

To succeed in the global innovation economy, the UK must strengthen its ability to accelerate the commercialisation of emerging technologies... We [seek] to ensure that government policies stimulate, rather than hinder, UK innovation through... [i]ncreasing access to public data or to knowledge created as a result of publicly funded research.

In October 2011, the HOST consulting group addressed the same set of topics in a report commissioned by the UK Joint Information Systems Committee (JISC), "Benefits to the Private Sector of Open Access to Higher Education and Scholarly Research," October 2011. Excerpt from the HOST/JISC report:

[http://open-access.org.uk/wp-content/uploads/2011/10/OAIG\\_Benefits\\_OA\\_PrivateSector.pdf](http://open-access.org.uk/wp-content/uploads/2011/10/OAIG_Benefits_OA_PrivateSector.pdf)

A substantial body of research literature establishes the benefits to private sector businesses of publicly funded research. Mansfield (1991,1995,1998), Beisea and Stahle (1998) and other studies provide evidence of tangible economic benefit, in particular in terms of product innovations achieved and revenue gained through enhanced sales. The work of Houghton et al. (2011) confirmed these conclusions and also drew out the benefits of access to research in terms of shortening product and service development cycles. This study confirms the importance placed by businesses on access to scholarly research and its broad impact in terms of product, service and process innovation... Open Access publishing provides a way of opening much more university and scholarly research to the business sector... [M]ost businesses spend considerable amounts of time working around paywalls... The review suggests that, at a time of accelerating pressure on SME [small and medium-sized enterprises] competitiveness, a shift to Open Access would create significant cost savings by enabling businesses to review more quickly the relevance of individual papers and act accordingly. By boosting

discoverability OA may also add value directly to levels and speed of knowledge transfer in this part of the economy.

The HOST/JISC report cites the research of economist John Houghton at Victoria University in Australia. Houghton has done the most extensive and careful research on the economic impact of national open-access policies.

One of Houghton's most recent studies, commissioned by Denmark's Agency for Science, Technology, and Information [Forsknings- og Innovationsstyrelsen, or FI], focused on how public access helps small and medium-sized businesses: "Access to Research and Technical Information in Denmark," FI, April 2011. Among his findings:

<http://goo.gl/pfAf6>

Research articles, patent information, scientific and technical standards, technical and market information were seen as the most important information sources [for small and medium-sized businesses, SMEs]. Forty eight per cent rated research articles as very or extremely important, and among those in research roles a higher 64% did so...More than two-thirds reported having difficulties accessing market survey research and reports and Doctoral or Masters theses, 62% reported difficulties accessing technical reports from government agencies and 55% reported difficulties accessing research articles...[R]esearch articles and market survey research and reports are seen to be both important and difficult to access...Use of Open Access materials is widespread. More than 50% used free institutional or subject repositories and Open Access journals monthly or more regularly, and among researchers 72% reported using free institutional or subject repositories and 56% Open Access journals monthly or more regularly...Access barriers and delays involve costs. It would have taken an average of 2.2 years longer to develop or introduce the new products or processes in the absence of contributing academic research. For new products, a 2.2 years delay would cost around DKK 36 million (EUR 4.8 million) per firm in lost sales, and for new processes it would cost around DKK 211 000 per firm.

An earlier Houghton study focused on the United States: "Economic and Social Returns on Investment in Open Archiving Publicly Funded Research Outputs [in the United States]," SPARC, August 4, 2010. From the summary:

<http://www.arl.org/sparc/publications/papers/vuFRPAA/index.shtm>

<http://www.arl.org/sparc/bm~doc/vufrpaa.pdf>

Preliminary modeling suggests that over a transitional period of 30 years from implementation, the potential incremental benefits of the proposed FRPAA [Federal Research Public Access Act] archiving mandate might be worth around 8 times the costs. Perhaps two-thirds of these benefits would accrue within the US, with the remainder spilling over to other countries. Hence, the US national

benefits arising from the proposed FRPAA archiving mandate might be of the order of 5 times the costs.

These results confirm Houghton's September 2006 study on Australia: "Research Communication Costs in Australia: Emerging Opportunities and Benefits." Excerpt:

<http://goo.gl/Rnnns>

Expressing these impacts as a benefit/cost ratio we find that, over 20 years, a full system of institutional repositories in Australia costing AUD 10 million a year and achieving a 100% self-archiving compliance would show: [1] A benefit/cost ratio of 51 for the modelled impacts of open access to public sector research (i.e. the benefits are 51 times greater than the costs); [2] A benefit/cost ratio of 30 for the modelled impacts of open access to higher education research; and [3] A benefit/cost ratio of 4.1 for the modelled impacts of open access to ARC [Australian Research Council] competitive grants funded research.

Finally, a Houghton study from July 2006 used conservative assumptions to conclude that an OA policy could add billions to the U.S. economy: "The Economic Impact of Enhanced Access to Research Findings." Excerpt:

<http://www.cfses.com/documents/wp23.pdf>

With the United State's GERD [Gross Expenditure on Research and Development] at USD 312.5 billion and assuming social returns to R&D of 50%, a 5% increase in access and efficiency [Houghton's conservative estimate] would have been worth USD 16 billion.

Some publishers have criticized John Houghton's research, and are likely to repeat their criticisms in this RFI. We ask the OSTP to look closely at Houghton's methods and data rather than taking the judgment of stakeholders who have an economic interest in dismissing his conclusions. In our judgment, JISC (on Houghton's behalf) and Houghton himself have adequately answered all these criticisms.

JISC Response [on behalf of Houghton et al.] to: Some comments prepared jointly by The Publishers Association, the Association of Learned and Professional Society Publishers and the International Association of STM Publishers on the report "Economic Implications of Alternative Scholarly Publishing Models: Exploring the costs and benefits" by Houghton et al. & Oppenheim et al., commissioned by JISC (published January 2009)  
<http://www.jisc.ac.uk/media/documents/publications/responseoneiaspmreport.pdf>

John Houghton and Charles Oppenheim, "Widening access to research information: A response," January 2010.

[http://www.cfses.com/EI-ASPM/Comments-on-Hall\(Houghton&Oppenheim\).pdf](http://www.cfses.com/EI-ASPM/Comments-on-Hall(Houghton&Oppenheim).pdf)

Public access not only facilitates innovation in research-driven industries such as medicine and manufacturing. It stimulates the growth of a new industry adding value to the newly accessible research itself. This new industry includes search, current awareness, impact measurement, data integration, citation linking, text and data mining, translation, indexing, organizing, recommending, and summarizing. These new services not only create new jobs and pay taxes, but they make the underlying research itself more useful. Research funding agencies needn't take on the job of provide all these services themselves. As long as they ensure that the funded research is digital, online, free of charge, and free for reuse, they can rely on an after-market of motivated developers and entrepreneurs to bring it to users in the forms in which it will be most useful. Indeed, scholarly publishers are themselves in a good position to provide many of these value-added services, which could provide an additional revenue source for the industry.

The Houghton studies (above) show very high benefit/cost ratios for national publicaccess policies, and we've enumerated (above and below) some of the specific benefits of such policies for research and commerce. For the specific costs of implementing a public-access policy, the Department of Health and Human Services reports that “[a]nnual operating costs for [implementing the NIH policy], including ingest of articles, refinement of the submission system and search tools, staffing of a help desk and a central coordinating office for NIH, are approximately \$3.5–\$4.0 million per year. This represents a small fraction [about one one-hundredth of 1%] of NIH's budget authority of more than \$30 billion per year.”

<http://www.hhs.gov/asl/testify/2010/07/t20100729c.html>

Needless to say, every U.S. federal agency funding non-classified research is significantly smaller than the NIH, and could benefit from the infrastructure and workflow procedures created and refined by the NIH.

*How can policies for archiving publications and making them publically accessible be used to...improve the productivity of the scientific enterprise?*

Public access improves researcher productivity in many ways. By making published literature more visible and discoverable, public access prevents unintended duplication of effort. It prevents delays while researchers try to gain access to relevant articles they have discovered but cannot retrieve. It makes literature available to our hardware and software, not just to ourselves, and supports a fast-growing ecology of computer tools for mining and analyzing data and literature. It makes literature available to researchers outside the academy, such as those based at hospitals, museums, non-profits organizations, and for-profit manufacturing companies. By enlarging the audience for research, public access multiplies the chances that prepared users will be able to make use of the research and translate it into clinical treatments or marketable products and services.

Some of these productivity gains can be quantified. See for example Karim R. Lakhani et al., “The Value of Openness in Scientific Problem Solving,” Harvard Business School Working Paper, October 2006. Excerpt:

<http://www.hbs.edu/research/pdf/07-050.pdf>

Lack of openness and transparency means that scientific problem solving is constrained to a few scientists who work in secret and who typically fail to leverage the entire accumulation of scientific knowledge available....Our study finds that the broadcast of problem information to outside scientists results in a 29.5% resolution rate for scientific problems that had previously remained unsolved inside the R & D laboratories of wellknown science-driven firms.

*What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

One type of public access merely provides research results online free of charge. A second type provides research results free of charge and free of certain copyright restrictions. Only the second type frees research for data- and text-mining, translation, conversion to new formats, integration with other tools and bodies of research, and other value-added services. Hence the second type does far more than the first to amplify the benefits of publicly funded research.

Limiting the reuse of publicly funded research limits the return on our investment. If we are serious about maximizing that return on investment, we must lift restrictions on use and reuse, not just restrictions on access for reading. The public access policy at the NIH does just the former.

In practice, the way to free an article for use and reuse is to include a license or permission statement from the copyright holder explaining what the user may and may not do with it. An “open license” allows uses that would otherwise require the delay and expense of hunting down the rights-holder in order to ask permission.

In August, Phil Malone and Harvard’s Berkman Center for Internet & Society released a report evaluating the copyright licensing policies used by certain public and private funding agencies. The report recommended that research funders require the use of open licenses for funded research. It articulates nine benefits of open licenses for researchers and the funders themselves. Here are the first four:

[http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/OCL\\_for\\_Foundations\\_REPORT.pdf](http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/OCL_for_Foundations_REPORT.pdf)

[1] Furthering the core components of the foundation’s philanthropic mission.

[2] Serving to expand the size and speed of the dissemination and visibility of supported work in ways that mere placement of those works on grantee or foundation websites rarely could, because of the “viral” spread of materials that open licenses allow. The foundation is able to “do more good with the same money.” ...Thus, for example, the Wellcome Foundation sees unrestricted access as a “fundamental part of its charitable mission and a public benefit.” ...

[3] Enhancing distribution and use of foundation works by greatly increasing the ease and lowering the transaction costs of users obtaining “permission” to share and reuse the works. In the absence of open licenses, users have to seek specific, individual approval for most uses or distribution, a process that often delays or deters such uses.

[4] Increasing the impact of the foundation’s funding even more when the open license permits the work to be freely tested, translated, combined, remixed, repurposed or otherwise built upon, potentially by many subsequent researchers, authors, artists or other creators anywhere in the world, as the basis for new innovation, discovery or creation. Allowing broad adaptation and follow-on innovation can provide a magnification or leveraging of the original foundation funding that would be difficult to achieve otherwise.

There are many open licenses. We recommend the Creative Commons Attribution (CC-BY) license, which permits any use provided the user makes proper attribution to the author. We recommend against licenses that bar commercial use (such as CC-BY-NC), in part because they would limit the utility of publicly funded research for businesses and industry.

This type of public-access policy would not be unprecedented for the United States. In January 2011, the Departments of Labor and Education launched the Trade Adjustment Assistance Community College and Career Training (TAACCCT) program, a four-year, \$2 billion funding program for open educational resources to be released under CC-BY licenses.

<http://www.whitehouse.gov/blog/2011/01/20/new-job-training-and-education-grants-program-launched>

*(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

The existing policy at the NIH uses a simple and elegant method to provide public access without copyright infringement. The policy requires grantees publishing peer-reviewed articles arising from NIH-funded research to retain the non-exclusive right to authorize NIH to provide public access to the final version of their peer-reviewed manuscript. Hence, when grantees sign publication agreements, they may not transfer the full bundle of copyrights to publishers, as they formerly could. They may transfer all the rights the journal needs to publish the article, and more, but they may not transfer the right that their prior funding agreement requires them to retain. The result is that publishers do not acquire the full copyright bundle. Public access through the NIH repository, PubMed Central, is authorized by the authors, before they transfer

rights to publishers, not by the publishers, after acquiring rights from authors. Public access is authorized by the rights-holders.

Some publishers dislike the policy because they would like to acquire the right that NIH-funded authors retain. But not even those publishers believe that the policy infringes any rights that publishers acquire. If they did, they would go to court. Instead they have gone to the legislature, and backed the so-called Fair Copyright in Research Works Act (H.R. 6845 in the 110th Congress and H.R. 801 in the 111th Congress), which would amend U.S. copyright law precisely to block the NIH policy and to prevent other federal agencies from following its lead. This is an acknowledgment that the NIH policy is lawful under current copyright law.

We ask the White House to use this sensible and effective method to secure the rights needed to provide public access without infringement. When disbursing public money for non-classified research, public funding agencies should obtain the non-exclusive right to make the results public. Any alternative would leave authors subject to irresistible pressure to transfer their rights to publishers, with the harmful effect of transferring the public-access decision to publishers as well. That would undermine the public mission of our public funding agencies, and put the interests of publishers ahead of every other stakeholder, including researchers, research institutions, and everyone who depends on the benefits of research from medical patients to technology manufacturers and consumers.

Under the NIH policy, publishers retain the fundamental right to refuse to publish any work for any reason, including NIH-funded work. Whenever they believe that the costs of publishing NIH-funded authors exceed the benefits, they may refuse to publish those authors. But to date, 100% of surveyed publishers accommodate the NIH policy.

[http://oad.simmons.edu/oadwiki/Publisher\\_policies\\_on\\_NIH-funded\\_authors](http://oad.simmons.edu/oadwiki/Publisher_policies_on_NIH-funded_authors)

*(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

The NIH policy requires public access through a central repository, PubMed Central.

The Federal Research Public Access Act (FRPAA, S.2695 in the 109th Congress, S.1373 in the 111th Congress) would have provided more flexibility. Under FRPAA, federal funding agencies could host their own public-access repositories, like PubMed Central, or they could ask grantees to deposit their work in any public-access repository meeting certain conditions of open access, interoperability, and long-term preservation. We support this flexibility.

FRPAA has not yet come to a vote. But the Swedish Research Council adopted a policy in October 2009 (taking effect in January 2010) with FRPAA-like flexibility. The SRC requires deposit in a public-access repository, and specifically approves deposit in suitable institutional

repositories hosted by universities. The Irish Research Council for Science, Engineering & Technology (IRCSET) open-access policy of May 2008 positively encouraged the use of institutional repositories (“[t]he repository should ideally be a local institutional repository”), as did the European Commission’s open-access policy of August 2008 (“grantees should deposit their EC-funded work —into their institutional or if unavailable a subject-based repository”). As far as we know, these policies have been implemented without problems.

<http://www.vr.se/inenglish/aboutus/policies/openaccess.4.44482f6612355bb5ee780003075.html>

<http://www.ircset.ie/tabid/142/tabid/102/default.aspx>

<http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/08/548&form>

We support centralized access in repositories like PubMed Central and distributed access in suitable institutional repositories. Both solutions provide the important safeguard that the repositories are independent of publishers who have an interesting in limiting access.

Public access through the web sites of private-sector publishers is very welcome. But it must not be the only source of public access to publicly funded research. The chief problem with publisher-hosted public access is its uncertainty. Public funding agencies like the NIH are in a position to regulate grantees, not publishers. Congress could regulate publishers, but we believe that it should not do so, and should steer clear of creating risks to the freedom and independence of the press. In the absence of the regulation of publishers, however, a federal policy of publisher-hosted public access would inevitably fail to achieve its own objectives. Publishers may assert that they will provide public access. However, their willingness and ability to provide public access would always be contingent and beyond the proper reach of federal power. Because we can achieve assured public access by revising federal funding contracts, or regulating federal grantees, there is no need to depend on uncertain (late, temporary, selective, and unenforceable) public access from publishers.

*(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

A reasonable public-access policy could provide that copies of peer-reviewed articles arising from publicly funded research be jointly hosted by federal agencies and private-sector publishers. However, for the reasons spelled out in response to Question 3, public access should never be available solely through private-sector publishers. There are good reasons to require public access, and not merely encourage it, and there are good reasons for the federal government not to require affirmative acts from private-sector publishers. Moreover, there are good reasons to think that in the absence of legal obligations, public access from publishers would be variable and uncertain, undermining the fundamental rationale for a public-access policy.

Publishers have an understandable interest in traffic and download data from the repositories providing access publicly funded research. But that doesn’t mean that publishers must be the

sole hosts of those repositories. If those repositories are hosted by federal agencies (as the NIH hosts PubMed Central) or by the institutions employing the individual authors (as Harvard hosts DASH, or its Digital Access to Scholarship at Harvard repository), federal policy could require repositories to share traffic and download data with publishers.

*(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

We would like to see the repositories hosting publicly funded research comply with the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), and eventually with its strengthened successor, the Open Archives Initiative Object Reuse and Exchange (OAI-ORE).

We regard the open licenses recommended in response to Question 1 to be a kind of metadata, and would like to see them required for all articles arising from publicly funded research.

But we are not prepared to list all the standards with which publicly funded research results ought to comply. On the contrary, we believe that they cannot all be specified in advance and should be allowed to evolve. One reason is that some promising standards are still emerging, such as Activity data to Enhance and Increase Open-access Usage (AEIOU), Counting Online Usage of NeTworked Electronic Resources (COUNTER), Open Researcher and Contributor ID (ORCID), and Publisher and Institutional Repository Usage Statistics (PIRUS). Public access is urgently needed for research and the economy, and cannot wait for all the relevant standards to emerge.

*(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

To reduce the burden on awardee institutions, different federal funding agencies should adopt uniform public-access policies. Uniformity will not only reduce the burden on institutions, but increase compliance and potentially reduce costs.

We support the approach taken in the Federal Research Public Access Act (FRPAA, see citations in response to Question 3). FRPAA requires different agencies to develop their own public-access policies within the general framework laid down in the bill.

Universities support the FRPAA approach. When FRPAA was re-introduced in 2009, it was publicly endorsed by the presidents or provosts of 120 U.S. institutions of higher education.

<http://www.arl.org/sparc/advocacy/frpaa/institutions.shtml>

Similarly, in the last White House consultation on public-access policies (December 2009 – January 2010), when the question was whether to extend the NIH policy across the federal government, and hence to impose that kind of uniformity across the federal government, the suggestion received overwhelming public support.

<http://www.whitehouse.gov/blog/2010/03/08/public-access-policy-update>

*(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

We could support mandatory public access for any work which arises from publicly funded research, is voluntarily published or presented by the author, generates no royalties for the author, and is not classified.

This would cover many peer-reviewed journal articles (or author manuscripts), book chapters, books, conference proceedings, theses and dissertations, and open educational resources.

However, we think these are secondary issues and must not delay a policy to require public access to peer-reviewed journal articles (or author manuscripts) arising from publicly funded research.

We are not prepared to list all the types of content to which a federal public-access policy ought to apply. One reason to proceed with peer-reviewed journal articles first and consider other categories later is that there may be good reasons for a public-access policy to treat different categories of content differently, just as the White House, in the present RFIs, treats publications differently from data. Another reason — as in our response to Question 5 — is that public access to research articles is urgently needed and cannot wait for the policy nuances for other categories to be hammered out.

*(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?*

Embargoes limit the utility of research both for researchers and for businesses. Embargoes therefore limit the return on the public's investment in research, and compromise the public interest. They may be justified, but only in the ways that compromises may be justified.

Embargoes should be as short as possible. If federal policy initially allows embargoes, then it should reduce their maximum permissible length over time, eventually to zero. We could support a plan to do this gradually rather than suddenly in order give publishers time to prepare.

A zero-embargo policy would not force premature disclosure of patentable discoveries, since the policy would only apply to work that authors voluntarily decide to publish. If publicly funded researchers make a patentable discovery, and wish to apply for a patent before publishing, the public-access policy would only kick in at the time of publication.

If government policy is to allow embargoes, even temporarily, it might allow different embargoes in different fields, on the ground that the demand for articles seems to drop off at different rates in different fields. However, we have not seen good data on these different rates of demand decay. Publishers have this data, and if they wish to support differential embargo periods, they should provide data to justify them. In any case, variable embargo periods would burden universities by making compliance with an agency in one field different from compliance with an agency in another field (in tension with Question #6 above).

Similarly, if publishers believe that short embargo periods would harm them, they should release data showing it. Researchers, research institutions, and taxpayers cannot be expected to prove the negative, or to prove the harmlessness of short embargoes. Until there is data to show harm, we must act in the public interest and provide early or immediate public access to publicly funded research. If publishers provide data showing substantive harm, then it may become appropriate to consider what kind of compromise with the public interest might be justified.

Finally, we should not use the NIH policy as a model on this issue. The NIH policy allows an embargo period of up to 12 months. But while that makes it a conspicuous precedent in the U.S., it is the exception worldwide, not the norm. Even in its own field of biomedicine, it is an outlier.

Every other biomedical funding agency in the world with a public-access mandate caps the maximum permissible embargo at six months: the Arthritis Research Campaign (UK), British Heart Foundation, Canadian Breast Cancer Research Alliance, Canadian Health Services Research Foundation, Canadian Institutes of Health Research, Dunhill Medical Trust (UK), European Research Council, Cancer Research UK, Chief Scientist Office of the Scottish Executive Health Department, Department of Health (UK), Fonds de la recherche en santé du Québec (Canada), Fund to Promote Scientific Research (Austria), Genome Canada, Heart and Stroke Foundation of Canada, Howard Hughes Medical Institute, Joint Information Systems Committee (UK), Michael Smith Foundation for Health Research (Canada), National Cancer Institute of Canada, National Institute for Health Research (UK), Vetenskapsrådet (Swedish Research Council, Sweden), and the Wellcome Trust (UK).



A · M · E · R · I · C · A · N  
A N T H R O P O L O G I C A L  
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Response to November 3, 2011 OSTP RFI - Public Access to Scholarly Publications

Submitted January 12, 2012

*Via electronic mail: [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)*

We are pleased to submit the comments of the American Anthropological Association (AAA) in response to the Request for Information (RFI) issued by the Office of Science and Technology Policy (OSTP) on behalf of the National Science and Technology Council Task Force on Public Access to Scholarly Publications, published November 3, 2011 in the *Federal Register*. We request that these comments in response to the RFI announced at 76 FR 68518 be made an official part of the rulemaking docket.

Founded in 1902, the AAA is the primary professional society of anthropologists in the United States. With more than 11,000 members, we represent a diverse array of professionals who examine humankind in all its aspects through archaeological, biological, ethnological and linguistic research. As the largest journal publisher in our discipline, we are committed to the public availability and dissemination of knowledge – each year we have subsidized our 22 journal publishing program from other revenue sources; and we invested over one million dollars in the establishment of an online archive (AnthroSource) expressly to enhance and increase the availability of our publications.

Section 103(b)(6) of the America COMPETES Reauthorization Act of 2010 requires that interested individuals and organizations provide recommendations on approaches for ensuring long-term stewardship and broad public access to the peer reviewed scholarly publications that result from federal funding. We write today to make the case that while we share the mutual objective of enhancing the public understanding of scientific enterprise and support the wide dissemination of materials that can reach those in the public who would benefit from such knowledge (consistent with our associations' mission)<sup>i</sup>, broad public access to such information currently exists, and no federal government intervention is currently necessary.

We know of no research that demonstrates a problem with the existing system for making the content of scholarly journals available to those who might benefit from it. In a recent article published in the *Journal of the Medical Library Association*, authors Philip Davis and William Walters conducted a literature review and concluded that "...recent studies provide little evidence to support the idea that there is a crisis in access to the scholarly literature."<sup>ii</sup> A separate earlier study found that 93% of the researchers surveyed reported easy access to original research articles in journals. This study surveyed 3,800 researchers and evaluated their access to 18,000 journals. It is worth keeping mind that this same study found that 62% of these scholars enjoyed easy access to data sets, data models, and the research compendium of other scholars.<sup>iii</sup> AAA

independently corroborated these results in a survey about anthropological information with its members, who reported in February 2009 very high levels of access to peer-reviewed journals and scholarly monographs.

In regard to the questions put forward by OSTP at 76 FR 68518, we dispute assertions underlying many of them suggesting that the federal government has the legal right to mandate public access to scholarly journal articles which result from federally funded research. We argue that while the government might have a right to the unfinished work product (i.e., the research data or “findings”) of individual researchers to whom they provide financial support, it does not have the right to journal articles that are the cumulative result of the significant time and financial investment of reviewers, editors, copywriters, designers, technology providers, archivists, publishers and distributors of such journal content—none of which is supported by federal research dollars. Among other things, providing technological support for the publication of our 22 journals requires indexing, coding, hyper-linking, purchase of permanent DOI, producing printable files, assuring accessibility on different platforms and establishing alerting systems, none of which receive federal government financial support.

Mandating open access to such property without just compensation and lawful procedural limitations constitutes, in our view, an unconstitutional taking of private property—copyrighted material—an expropriation without fair market compensation. In our view, such practice cannot and will not withstand judicial review.

While many observers of these regulatory proposals assert that guidance is only directed at journal publishing in the areas of science, technology, engineering and mathematics (so-called STM fields), thus far there appears to be no such distinction in much of the discussion surrounding mandated open access. Discussions surrounding the topic of open access within OSTP and federal agencies have assumed that whatever regulations or guidance emerges from this process will be equally applicable to all federal funding agencies and the research they fund across all academic disciplines. In previous comments sent to OSTP on this issue (see attached), we specifically outlined the ways that journal publishing in anthropology is a very different process than publishing in STM fields, and they bear repeating here.

First, after twelve months much of the content in many STM fields is old news. An embargo period of 12 months often has little effect on the financial models upon which publishing in STM fields is based. In anthropology, however, where over 90 percent of downloads occur after 12 months from the date of publication and the cited half-life of our quarterly journals is over 10 years, a 12 month embargo period does nothing to help protect our subscriptions. Research on the behavior of acquisitions librarians demonstrate clearly that the pattern of user demand for journal content is such that if librarians have only to wait 12 months to access that content free, such journal subscriptions will be readily dropped. Researcher Simon Inger found that “Only when the embargo is extended to 24 months in this model, does the final published article obtain a greater than 50% share of preference.” This was a study of 424 librarians; only 10% of these participants reported a social science focus and 4% reported a humanities focus, so social science and humanities disciplines are under-reported in this study.<sup>iv</sup>

Another major difference between STM journal publishing and that which occurs in anthropology is the fact that those few authors who do get federal financial support for their work receive extremely small grants which do not allow for the support of publishing their work. Many grants, such as those awarded by those entities that frequently support scholars in our discipline such as such as the Wenner-Gren Foundation, the Leakey Foundation, and the National Geographic Explorers Fund do not allow funds to be used for such purposes. If AAA’s publishing program were to lose revenues from library subscriptions, the authors would have very little ability to “pay to publish” such as has been demonstrated to be successful in some STM fields. The elimination of library subscription revenues from the publishing budget of the American Anthropological Association would cripple the society’s ability to continue publishing its 22 scholarly journals.

Finally, scholarly journal publishing in anthropology differs greatly from that in STM fields in that the cost per article is a multiple of that in STM fields. In a report funded by the Mellon Foundation that examined the financing of scholarly journal publishing among social science and humanities societies, researcher Mary Waltham found that publishing costs in social science journals averages \$526 per page, more than double the average \$226 per page cost to publish in STM journals.<sup>v</sup> Because the evidentiary base of ethnography, linguistic anthropology, and archaeology comprises observations and transcripts of human behavior and artifacts, our journals require much longer articles than those published by our STM counterparts, which tend to present studies based on laboratory evidence.

One final note: in anthropology and in the humanities, book-length publication is still a meaningful publication unit. Journals play a critical role in the success of these works by reviewing books and productions. In 2010, AAA's journals published 411 book reviews. If the AAA journal publishing program cannot be sustained, it may be that university presses and other scholarly publishers of book-length works could also be irreparably damaged.

We thank you for the opportunity to submit these comments, and look forward to working with you in the future to protect the dissemination of scholarly research nationwide.



William E. Davis, III  
Executive Director  
American Anthropological Association

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<sup>i</sup> "The purposes of the American Anthropological Association shall be to advance anthropology as the science that studies humankind in all its aspects, including archaeological, biological, ethnological and linguistic research; and to further the professional interests of American anthropologists, including the dissemination of anthropological knowledge and its use to solve human problems.

<sup>ii</sup> Phil Davis and William Walters, The Impact of Free Access to the Science Literature: a review of the literature. *Journal of the Medical Library Association*, July 2011, 99(3): 208-217.

<sup>iii</sup> Chris Beckett and Simon Inger, Self-Archiving and Journal Subscriptions: Co-Existence of Competition? 2006, Publishers Research Consortium. [http://www.publishingresearch.net/documents/Self-archiving\\_report.pdf](http://www.publishingresearch.net/documents/Self-archiving_report.pdf)

<sup>iv</sup> *ibid*

<sup>v</sup> Retrieved from <http://www.nhalliance.org/bm~doc/hssreport.pdf>

**Comments Submitted to the Office of Science and Technology Policy  
Public Access Policy Forum**

**December 18, 2009**

Federally mandated free access to journal articles published by scholarly societies in the social sciences and humanities is very likely to cause irreparable harm to authors, readers and publishers of those society journals.

Social science and humanities journals currently depend on subscription income to finance their publishing programs, and librarians have clearly demonstrated they will drop paid subscriptions if the same content is available free. Thus, mandated free access will deprive society publishers of the ability to continue publishing. The “solution” most often offered by advocates of mandated free access is to finance publication by assessing author-fees. Author-financed publication, however, is not a feasible model for the sustainable financing of journal publishing in the social sciences and humanities.

Scholars in the social sciences and humanities receive research support from various federal agencies, including the National Science Foundation, National Institutes of Health, Departments of Education, Health and Human Services, Transportation, Energy, Environmental Protection Agency as well as the National Endowments for the Humanities and the Arts. Thus public access policies adopted by these departments and agencies will have significant consequences for both authors and publishers in the social sciences.

Earlier this year, the National Humanities’ Alliance (NHA) released a study (report available at <http://www.nhalliance.org/bm~doc/hssreport.pdf>) on the financing of scholarly journal publishing among social science and humanities societies. The eight societies whose journals were included in the study were the American Anthropological Association, American Political Science Association, American Economic Association, American Sociological Association, American Statistical Association, American Academy of Religion, American Historical Association and Modern Language Association

A key finding of the NHA study was that scholarly publishing in the social sciences and humanities differs in major ways from that which typically occurs in the sciences. Moreover open access policies based on assumptions about scholarly publishing in the science, technology, engineering and medical fields, without attending to the particular characteristics of social science and humanities publishing, will almost certainly create economic havoc for trusted means of communication among scholars in these latter fields.

Why is it unreasonable to assume that open access publishing of scholarly journal content could be provided free of charge if the cost of peer review, printing, distribution, mailing

and other associated fees were paid by article authors? The NHA study provides some clear answers.

First, researchers in the STEM world are often able to charge the cost of publishing their work to their federal research grants. However, grant-funded authors in the social sciences and humanities do not have the same ability to “pay to publish” as their colleagues in the STEM fields. Unlike grants to support STEM research, grants supporting social science and humanities research typically do not allow authors to use that support to pay author fees charged by publishers.

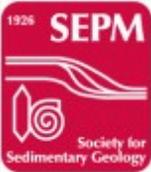
Second, the length of articles in the social sciences and humanities journals averages 19 pages, substantially longer than the average article length of 12 pages in STEM journals. This added length together with the more robust peer-review process typical of social science and humanities journals result in significantly higher publishing costs than is the case with STEM journals. Publishing costs in social science journals averages \$526 per page, more than double the average \$226 per page cost to publish in STEM journals. Without research support adequate to pay those costs, an author wishing to publish in a social science journal which charges author fees would face a personal expenditure (over \$9,000 per article for my own society’s journal) clearly prohibitive for most individual scholars.

Third, there is a much longer “half-life” of content published in social science journals than is the case in many of the “hard” sciences. In the STEM world, where the pace of the research process is very rapid, it is sometimes argued that content 6 months or even a year old has relatively little continuing value to other researchers and thus brings little subscription income to publishers of that content after such a period. Unlike the STEM world, however, journal content published in the social sciences and humanities continues to be accessed for many years, thus providing a continuing stream of subscription income to support the publishing operations of scholarly societies.

Fourth, we have already seen that the practices of one federal agency (in this case NIH) create powerful forces to adopt similar practices among other federal agencies as well as non-governmental institutions such as research supporting private foundations. Federally mandated free access to scholarly content would undoubtedly invite all funders of scholarly work to adopt the same requirement of grant recipients.

Thus, while free access to the results of scholarly work is a laudable goal, and the author-pays publishing model may appear to be a viable alternative to a subscriber-pays model, such a model clearly fails to constitute a basis on which to finance journal publishing in the social sciences and humanities. Without alternative sources of revenue—revenue that have yet to appear-- federally mandated free access to this journal content could well result in the demise of the very journals that mandated open access advocates seek to make more freely available.

Bill Davis, American Anthropological Association



# SEPM Society for Sedimentary Geology

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**January 12, 2012**

*publicaccess@ostp.gov.*  
Dear OSTP OA RFI,

This letter contains the official response of SEPM Society for Sedimentary Geology ([www.sepm.org](http://www.sepm.org)), which is and has been since 1927 a non-profit publisher of research journals and special publications about sedimentary geology. The responses are based on discussions by the elected, ruling body of the society, the SEPM Council, and compiled by the Executive Director. From an overview perspective, the society leaders are very concerned about the impact on non-profit society publishers if an unfunded federal mandate is forced upon the publishing community without a well thought out transition from the currently dominant 'subscription' financial model to an open access 'author pays' model in order to reach the goal of an open access mandate for federally funded research. While the time to discuss RFI was very short and the interval included the major winter holiday season, where many people are not easily available, SEPM leaders have tried to address the questions posed in the RFI. There are always unintended consequences of any mandate and we hope that this topic will have continued open and thoughtful discussions which need to include all of the stakeholders involved.

Sincerely,

Howard E. Harper, Jr.  
Executive Director  
[hharper@sepm.org](mailto:hharper@sepm.org)

## **Specific Responses to Questions (in bold)**

The Task Force is now seeking additional insight from “non-Federal stakeholders, including the public, universities, nonprofit and for-profit publishers, libraries, federally funded and non-federally funded research scientists, and other organizations and institutions with a stake in long-term preservation and access to the results of federally funded research,” as described in Section 103(b)(6) of the ACRA. Specifically, OSTP seeks further public comment on the questions listed below, on behalf of the Task Force:

**(1)** Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research?

How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise?

**There will be little affect in the US - professional top level researchers today al-**

ready have direct access one way or another via personal or library subscriptions or e-prints; professional researchers at smaller institutions also have good access via inter-library loan or e-prints for those articles they cannot access directly but they will have a larger financial hurdle to publish if the author pays financial model for open access publication becomes the dominant financial model for publishers. Finally, 'amateur' scientists, which would have the least direct access but can always request e-prints, are a very small % of this scientific enterprise.

What are the relative costs and benefits of such policies?

**Free access has costs – someone still has to pay for all the creation and production costs of the publications. If there is no longer cost recovery from journal subscriptions revenues (all articles are free), then the federal government will have to pay for its mandate one way or another. Either authors pay from their federal grants thus grants will need to be larger to get the same amount of 'research' per dollar, or some type of separate grant program would be needed to fund publishers directly. The main benefits are only political - the government can claim they are giving more 'stuff' to the tax payers, but is it useful 'stuff' for the average tax payer?**

What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?

**Overall public access really means global access - so would it help or hurt the US economy and markets and jobs? Other countries around the world, whether friendly or not, could freely access the results of US funded research and build on it , with no revenues or benefits returning to the US. Intellectual property rights are difficult to enforce now without 'open access'.**

(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research?

**Most non-profit publishers, such as SEPM, do not copyright or license material for financial gain but rather to protect the scientific integrity of the material and guard against misuse. Permissions to re-use the material are required mostly to track who and how it will be used.**

Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?

**Most research is done under specific intellectual property contracts or rules, whether at an academic institution, federal institution or commercial enterprise and should not be violated. The mixing of funding from several sources as some researchers do and any federal mandate on publication will of course complicate the matter legally. These issues are in the legal area and are not really addressable by SEPM.**

(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities?

**Centrality will certainly not breed improvement - it will more likely stagnate after the initial implementation and become too big to change quickly or cost efficiently. Currently there are often multiple ways to access online research articles and this has been created by needs of the market place. Forcing centrality is non-productive.**

Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

**No Federal agency should try to maintain custody, particularly since not all published content is federally funded and history has shown that large scale federal efforts are both poorly managed and overly expensive. Non-profits efforts have many success stories and have rules to pass on assets to other non-profits if they disappear. Commercial publishers treat them as assets with value both now and for the future. There are also non-profit efforts such as LOCKSS and CLOCKSS and JSTOR, which are specifically archiving online publications. Again the market place is currently dealing with such issues.**

(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?

**Several non-profit aggregates are successful (GeoScienceWorld, BioOne, JSTOR) and there are specific archiving efforts (see CLOCKSS). But how adequate funding will be maintained in free access - who pays - is still the main question. Federal funding agencies will have to include 'publication' costs in new and existing grants in order to fund the federal mandate or make grants to non-profit efforts to keep them going when subscription revenue disappears.**

(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives?

**This is really a non-issue in the online world today. Google, Bing, Yahoo, Adobe, xml, html, etc. - the market place forces interoperability and updating.**

What are the minimum core metadata for scholarly publications that must be made?

**This is a more detailed technical question - however we believe the minimum is small and involves - titles, authors, abstracts, grant number, doi. These are now usually included in articles. CrossRef (another non-profit) might make a good partner for 'look-up'.(see #4).**

How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?

**Federal agencies don't have too - again market place forces it. (see CrossRef).**

(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?

**The simplest option is to add funding to every grant in order to pay the publication costs (author pays). However, be prepared for less research to be done per dollar and global access to result in decreased US competitiveness in research. Also be prepared for the**

costs to go up--more federal money means there is more incentive for others to find ways to get some of that money from the pathway to publication. This will mean a need for policing how any publication funds are calculated within grants and how they are used.

(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?

**Basically 'no' – in geology and across many sciences the non-journal publications content is highly variable. Conference proceedings are not really peer reviewed. Many books do not contain first published research comparable to research journals, but some edited and peer reviewed research volumes do contain such material. So either those types of books (containing peer-reviewed research results) are covered, or federally funded research will not be allowed to appear in such books. Losing such content would have a negative impact on the financials of all non-profit scientific publishing societies. Science book publications are also still strong in producing print versions, which makes 'open access' are much more complicated issue.**

(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research?

**If each publication is fully funded via author grants, no embargo period is needed. However, if not fully funded, each scientific field is likely to define an embargo that would allow subscription revenue to pay for initial publication costs followed by a free access period. Some publishers do this already (make archives freely available), most do not as maintaining online access databases of older articles has its own costs.**

Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence based arguments that can be made that the delay period should be different for specific disciplines or types of publications?

**While there are definitely varying 'shelf' lives for different sciences this is a non-question if question 8 is answered with full funding. An embargo period is only needed if there is no funding to publish the work in free access or if some publication funding model is used that supplies only a fraction of the actual publication costs. Those options force a combination of early subscription funding followed by partial cost recovery from federal funding. This will result in an embargo period which balances the two revenue sources. The smaller the federal funding the longer the embargo and it will change based on changes in the subscription funding and costs through time.**

**A citation based numeric used for geoscience literature to identify useful shelf life is 8 years.**

**Please identify any other items** the Task Force might consider for Federal policies related to public access to peer reviewed scholarly publications resulting from federally supported research. Response to this RFI is voluntary. Responders are free to address any or all the above items, as well as provide additional information that they think is relevant to developing policies consistent with increased public access to peer-reviewed scholarly publications resulting from federally funded research. Please note that the U.S. Government will not pay for response preparation or for the use of any information contained in the response.

**From the viewpoint of the leaders in our organization, public access to their work is a non-issue and is seen as a complication to their ability to continue to publish their work without regard to their individual financial situation. The vast majority of online science publishers whether commercial or non-profit make titles, authors and abstract metadata freely available. This is the basic amount of information that is relevant to most of the public.**

**Once an article of interest is found - anyone can contact an author for an e-print - given freely or often posted for free downloading on author pages for any individual that requests it. While this might be slightly more work - two added steps once an article is found (1. contact author 2. download or receive e-print from author) - this time honored system, developed long ago in the print only world, makes any modern science article available to anyone without charge (free access but not instantaneous). Libraries, public and private, use inter-library loan to handle situations when authors are no longer available. Non-profits offer very inexpensive pay-per-view options (a few dollars to a few 10s of dollars) to access articles from their sites for faster access. Perhaps a simple solution is to try to set some nominal fee (\$15) for this type of access for federally funded articles.**



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January 11, 2012

To

Office of Science and Technology Policy  
Executive Office of the President  
725 17th Street Room 5228  
Washington, DC 2050

From

Bernard Yu, Founder  
Enguin Design, LLC

Re

Response to White House RFI on Open-Access

Government-funded research should be publicly accessible, for free and without restrictions. Public access to publicly-funded research is limited. If an article is not open-access, many publishers charge between \$15 and \$50 for access to a single article (a few charge even more). In other words, taxpayers would have to pay to read the results of research they already funded through their taxes. But that is not the only reason that the results of publicly-funded research should be available for free: open-access policies can be used to encourage collaboration and increase academic communication.

Although the Association of American Publishers argue that requiring open-access publishing would deny them fair compensation, for-profit science, technology, and medicine publishers already enjoy massive profits at little cost. *The Economist* notes that in 2010 Elsevier—the biggest publisher—made "£724m (\$1.1 billion) on revenues of £2 billion—an operating-profit margin of 36%." In a chapter of her thesis on scholarly communication, Heather Morrison notes that high profits and low operating costs are common in the industry:

Anon. 2011. "Academic publishing: Of goats and headaches." *The Economist*.  
<http://www.economist.com/node/18744177/>.

Morrison, Heather, "Scholarly Communication in Crisis" <http://pages.cmns.sfu.ca/heather-morrison/chapter-two-scholarly-communication-in-crisis/>

Springer's Science + Business Media reported a return on sales (operating profit) of 33.9% or € 294 million on revenue of € 866 million, an increase of 4% over the profit of the previous year. In the first quarter of 2012, John Wiley &

Sons (2011) reported profit of \$106 million for their scientific, medical, technical and scholarly division on revenue of \$253 million, a profit rate of 42%. This represents an increase in the profit rate of 13% over the previous year. The operating profit rate for the academic division of Informa.plc (2011, p. 4) for the first half of 2011 was 32.4%, or £47 million on revenue of £145 million, an increase of 3.3% over the profit of the previous year.

Eisen, Michael. 2012. "Research Bought, Then Paid For." *The New York Times*, January 10. <http://www.nytimes.com/2012/01/11/opinion/research-bought-then-paid-for.html>.

As others have written (including Michael B. Eisen, the founder of the Public Library of Science), academic publishers enjoy very low overhead costs for the journals they publish. They do not need to fund research, neither do they fund the researchers who review articles (reviewers volunteer their time as part of their employment).

Slothuus, Rune, and Claes H De Vreese. 2010. "Political Parties, Motivated Reasoning, and Issue Framing Effects." *The Journal of Politics* 72 (03): 630-645. doi:10.1017/S002238161000006X. [http://www.journals.cambridge.org/abstract\\_S002238161000006X](http://www.journals.cambridge.org/abstract_S002238161000006X).

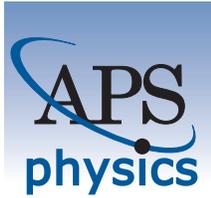
Government policy does not just set rules for what is to be done, it sets policies that people believe are right and wrong. When policy supports the status quo, people believe that the status quo is right and change is wrong, even when all evidence suggests otherwise. When we set policies that discourage sharing, people are less likely to share. But when policies are made to encourage sharing and open-access publishing, it changes the mindset. People become more willing to share their knowledge, research, and communicate with others. Policy does not merely set what people can and cannot do: It shapes the collective consciousness. It shapes how we think about ourselves and act towards each other.

In the last few years academics in every field of study have been discussing new ways to publish research including reforms to the peer-review process and entirely new methods for review and publishing. This is an area where government can not just set policy, but promote innovations in academic communication. Along with requiring open-access publishing, government can set policies to foster intra-laboratory collaboration by requiring that publicly-funded research is not only published open-access (many for-profit journals now also publish some articles as open-access), but

also require that raw data from publicly-funded research also be published online (e.g. through open APIs) so others may analyze and contribute to their data in new and novel ways.

Today, many researchers are insular and secretive, protective of their domain, funding, and laboratories. Many refusing to share their discoveries until they are published. This hinders progress and goes completely against the role of government in society. Many of the best discoveries and innovations occur not in a single laboratory, but in the intersections of disciplines which does not happen easily in closed academic environments: Medical imaging leading to advances in astrophysics. Social psychology and pedagogy. Network theory and public medicine. Further, scientists unaffiliated with any institutions or businesses can still access and contribute to public research.

When we set policies to encourage sharing, researchers will be more willing to collaborate. Some may resent the intrusion, but most will turn around and those who do not will eventually retire. Many of the new generation of scientists are already trying to do new work in this paradigm: through projects just as [openthesis.org](http://openthesis.org), blogging and other social media. We need to support what they are doing in policy, it is the future of academic scholarship. Promoting an open-access policy for government-funded research is not just about the giving taxpayers access to information that we paid for, it is about open collaboration and encouraging new forms of communication in our community.



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## **The American Physical Society's response to the OSTP's request for information on "Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research," FR Doc. 2011-28623**

### Introduction

The American Physical Society (APS) was founded in 1897 with the objective to advance and diffuse the knowledge of physics. While this objective is now understood to include physics education and outreach, public affairs, scientific meetings, and international collaborations, the publication of significant advances in physics has been central to APS since 1913, when we became the publisher of the *Physical Review*, a journal founded at Cornell University in 1893. Since that time, APS physics journals have grown tremendously. We now publish ten journals: *Physical Review A-E* (each journal dedicated to a particular subject area in physics), *Physical Review Letters*, *Reviews of Modern Physics*, *Physical Review Special Topics – Accelerators and Beams*, *Physical Review Special Topics – Physics Education Research*, and *Physical Review X*. The last three are Open Access journals whose peer-review and other operating costs are covered by contributions or publication fees. Our other journals are available through subscriptions held by a variety of individual institutions and consortia around the world. The *Physical Review* journals and *Physical Review Letters* (our flagship journal) allow authors or their sponsoring institutions to pay an article-processing charge to have an individual article made freely available. All APS Open Access articles are available under the Creative Commons Attribution 3.0 License, and we no longer hold copyright to these articles. All APS journal content (back to 1893) was made available online by the end of 2001, making us one of the very first publishers to put our entire corpus online.

The APS journals are broadly international in scope. Only about 30% of our submissions (and published articles) come from authors within the U.S. Similarly, only about one third of our subscription revenue comes from the U.S. The remaining submissions and revenues are roughly equally divided between Europe and the Asia-Pacific region.

The APS has a long history of support for Open Access initiatives. In 1998, we became the first fully "green" publisher when we amended our copyright transfer statement to explicitly allow authors to post their manuscripts (both new and previously published) on e-print servers, such as arXiv.org, and to post PDFs of their APS-published articles on their home pages or institutions' web sites. Indeed, the recent content of one of our journals, *Physical Review D*, is essentially completely available on arXiv.org because of submissions by the authors themselves. *Physical Review Special Topics – Accelerators and Beams* was one of the earliest "gold" Open Access journals. It started publication as an Open Access journal in 1998 and is supported by contributions from accelerator laboratories around the world. Authors and readers incur no fees for this journal. In November 2009, the APS Council adopted the following statement:

*The APS supports the principles of Open Access to the maximum extent possible that allows the Society to maintain peer-reviewed high-quality journals, secure archiving, and the Society's long-term financial stability, to the benefit of the scientific enterprise.*

In keeping with our objective, APS also recognizes the importance of making the research published in our journals as widely available as possible, even to the general public. We believe that it is essential for the general public to have access through our web site to the full, final, peer-reviewed content of all APS journals. This ensures that the public sees the official "version of record," including any updates or corrections. Thus, in July 2010, we pioneered a program that allows any U.S. public library to sign up for free subscriptions to all of our journals. After a librarian at a public library completes a simple online form, agreeing to straightforward terms and conditions, we grant access promptly (usually in one business day). Any person visiting a participating public library can access the full content of our journals dating back to 1893. We are pleased that the Library of Congress was the very first public library to sign

up under this program. This program was subsequently extended to all U.S. high schools, and to date well over 500 libraries from around the country have taken advantage of this opportunity.

Finally, APS prides itself on subscription prices per article and per page that are among the lowest in the industry. We were the first publisher to introduce tiered pricing, allowing smaller institutions with little research activity to pay substantially less than the leading research institutions. Subscription prices for our highest and lowest tiers currently differ by more than a factor of two, and we continue to increase (gradually) this ratio. Our article-processing fees for Open Access articles cover the actual cost of reviewing and publishing an article (without charging for submissions not accepted for publication), plus a very small margin that supports our the education and outreach activities. Twice in the most recent decade we have actually decreased our subscription prices as our expenses decreased (most recently in 2009). When we increase our prices the primary driving forces are inflation and growth in the number of manuscripts submitted for review (by 3-5% annually for many years).

## OSTP Questions

*(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publicly accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

In physics and closely related fields, U.S. federally funded research typically accounts for only one-third of peer-reviewed publications. Thus maximal U.S. economic growth and scientific productivity require access not only to results from federally funded research, but to the full output of the global scientific enterprise. American science benefits greatly from cost-effective society publishers such as APS who (at least in physics) currently publish the best science from the entire international scientific community. Maintaining stable business models for non-profit society publishers is crucial to the continuing success and growth of American science. Unfunded mandates or similar policies that jeopardize the modest revenue stream of scholarly society publishers threaten the scientific enterprise with increased costs for researchers to access global peer-reviewed scientific output. With the explosive growth of online information, one pressing need is for tools and resources to help researchers find efficiently the most relevant and most reliable information of interest to them. PubMed for the biomedical sciences is a good example of such a resource, but duplicating this resource for the physical sciences would be very costly (there is no physical-science equivalent to the National Library of Medicine to provide a pre-existing infrastructure). Furthermore, past efforts (PubSCIENCE by DOE's Office of Scientific and Technical Information) were closed down as a result of lobbying by commercial interests. One simple but effective measure would be a joint effort between publishers and funding agencies to adopt a standardized format for acknowledgments of federal grant support in the metadata of all peer-reviewed publications, which would provide easier identification of results from federally supported research for funding agencies, scientists, and the general public. More generally, common interfaces and standards for article metadata, established by agencies and international bodies, could serve the scientific enterprise by facilitating more efficient electronic search and discovery.

*(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

There are business models that protect the intellectual property of publishers and other stakeholders, but that still allow for full public access to all content. As mentioned in our introductory text, the APS makes its current content and its complete archive freely available to every public library in the US and every high school in the US, for in-house use. However, universities and laboratories still must maintain subscriptions to gain online access, and these subscriptions ultimately fund the management of the peer review process, XML composition, and the maintenance in perpetuity of all published content. This shows that it is possible to give full access to the public without making everything centrally accessible as in the PubMed Central model, which requires deposit of accepted peer reviewed articles, but not the version of record. Publishers make large investments in bringing articles to the point of acceptance, and PubMed Central requires that this be done, but provides no funding for this essential activity, and then frequently duplicates publishers' contributions such as conversion to XML.

A model that might be amenable to more publishers and that would be far less expensive than PubMed-type agency repositories would be to (1) require all federally supported papers to have an acknowledgment of the funding agency in the metadata in a standard form; (2) require granting agencies to use this to automatically harvest the metadata for all of the papers that they have supported and to put this metadata into an open, well-indexed, easily searchable database, including links to the publishers' versions of record (VoR); (3) require that in addition to a link to the VoR, the Principal Investigators (PIs) supply a link to an Open Access version of each federally supported paper (on arXiv, an institutional repository, an author's web site, etc.). The PIs' contributions to this system could be required as parts of annual and final reports, with penalties for noncompliance.

*(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

A decentralized approach would charge the government with establishing and enforcing standards to facilitate interoperability, and would then rely on the enterprise of publishers to develop new and powerful tools for users. This could be done with little cost to the government, and would be consistent with our country's confidence that private enterprise and competitive markets, not government-controlled bureaucracies (no matter how well-intentioned), are the best sources of innovation and efficiency.

On the other hand, a centralized approach can be quite expensive. Even NIH, building from the world's largest medical library, has needed considerable funding to establish and maintain PubMed Central.

As a scientific society devoted to our field, we take the stewardship of our publications to be a deep and central obligation. We have made the full archive of our journals, spanning 118 years, available on our web site, and we maintain complete duplicate copies of this electronic archive at three geographically dispersed mirror sites. In addition, we pay Portico, an independent, community-supported digital archive (one of several such organizations) to maintain a widely distributed and redundant "dark archive" of our content, to be made available in the event of an unforeseen loss of our services. All of our content is also available in the Library of Congress, and can be viewed freely by anyone physically in the Library. Since preservation and stewardship are the traditional business of libraries, and not of funding agencies, another approach might be to assign this responsibility to the Library of Congress, along with adequate funding and staff.

We further note that government control of the primary public archive of scientific literature would raise unavoidable concerns about possible restriction or suppression of access to scientific results contrary to the beliefs of the government at a particular time, and hence runs counter to the principles of our free and open democratic society.

The current decentralized system has served science and society very well. Interactions among publishers, librarians, scientists, and entrepreneurs have produced powerful tools such as the CrossRef/DOI system and distributed archives such as Portico and CLOCKSS and continue through new initiatives for researcher identification such as ORCID and discovery services such as Mendeley.

*(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

PubSCIENCE, operated by DOE for a few years before it was closed, provided a central index of government supported research work that linked to publishers' sites. This type of service was a public-private partnership that might be rethought in light of new technological developments. It has the advantage of not requiring a costly central repository of articles that duplicates the work already done by publishers. However, as noted above, in the past such efforts have been hobbled by lobbying by commercial interests. Article rental schemes such as DeepDyve are a new way to provide modest levels of use to members of the general public, at reasonable cost per article, without threatening the heavily-used institutional subscriptions that support the peer review, composition, and online hosting and archiving provided by publishers. The APS public and high school library initiative described in our introduction and under question (2) provides another new model of public-private partnerships for public access. An extension of this model would be for research universities with federal funding above some threshold to provide public e-reading rooms with access to their online collections of scientific journals.

*(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

The publicly available core metadata for all APS journals consists of: Title, Authors, Affiliations, Abstract, Search/Semantic/Keywords, License information, Funding agency information, Digital Object Identifier (DOI), and Bibliographic References. Federal agencies could request that this metadata be deposited in a central location for all research funded by the agency. Availability of this data to the public would allow publishers to include it in their search engines, and Google Scholar could also facilitate searching the data.

*(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

Answers to this question are woven through many of the responses given above, but we also want to emphasize our conviction that system-wide mandates would be counterproductive on account of the widely varying research cultures, traditions, conventions, and approaches across scientific disciplines and the distinct missions, opportunities, and constituencies of different funding agencies.

*(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

[No comment]

(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?

The APS has download data that tell us directly how the use of articles varies with time since publication. Figure 1, the graph to the right, shows the downloads/article in 2009 of articles published during the period 1980-2009. There is a steep falloff with time, and we have fit the distribution with two exponentials, using a short half-life of 1 year for 75% of the articles and a long half-life of 34 years for 25% of the articles that are presumably more important. The net result is that 77% of the downloads of articles occur after the first year of publication, so requiring articles to be free after one year as in PubMed Central would deprive a physics publisher of 77% of the “interest” in its articles.

A crucial question raised by the current NIH policy is: “Will the funding of the peer review process by journal subscription income be lost if all content in a journal is freely available through repositories?” The APS download data can help to answer this question. One of the 10 APS journals, Physical Review D (PRD), covering elementary particle physics, field theory, gravitation, and cosmology, has 97% of its articles available in preprint form on the subject repository arXiv {<http://arxiv.org/>}. Figure 2 shows the download statistics for PRD and for three other APS journals in different fields of physics from 1980 to 2009. Note that significantly fewer authors of articles in topics covered by the three other journals, PRA (atomic, molecular and optical physics), PRB (condensed matter and materials physics) and PRC (nuclear physics), post their papers on the arXiv before submitting them for peer-review and publication. Thus this comparison of downloads is a direct comparison between content that is largely available on a central repository and content that is centrally available only by subscription.

The graph shows that PRD is downloaded from the APS journal site about 66% less frequently than are the other APS journals for the years where PRD pre-print articles appeared on the arXiv (1993 to the present). Note that the pre-arXiv (before 1993) downloads are about the same for PRD and the other journals.

We also note that APS has not lost subscriptions to PRD relative to our other journals. We believe that the main reason is that we provide a package of all of our journals, “APS-ALL”, and the cost of the package is less than the cost of buying separately each of the remaining journals without PRD. Also, because our prices are the lowest of all physics journals, the cost/download is still lower than for more expensive journals.

Librarians carefully monitor download statistics and frequently cite them to justify the cancelation of underused subscriptions. Based on the long-term data for PRD, we conclude that significant subscription income will be lost if all content of all journals is freely available through a repository. **The consequence for APS would almost certainly be a financial crisis that would eliminate many services to its members and to the global physics community together with vitally important contributions to physics education and public outreach.**

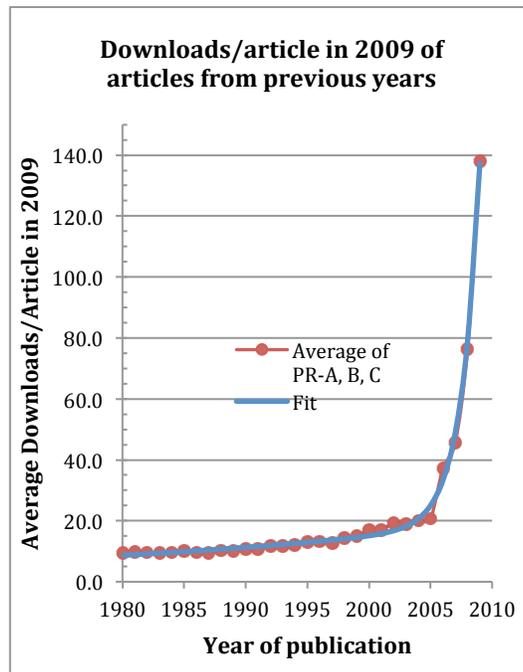


Figure 1. Downloads/article in 2009 of previously published articles, as a function of the year of publication.

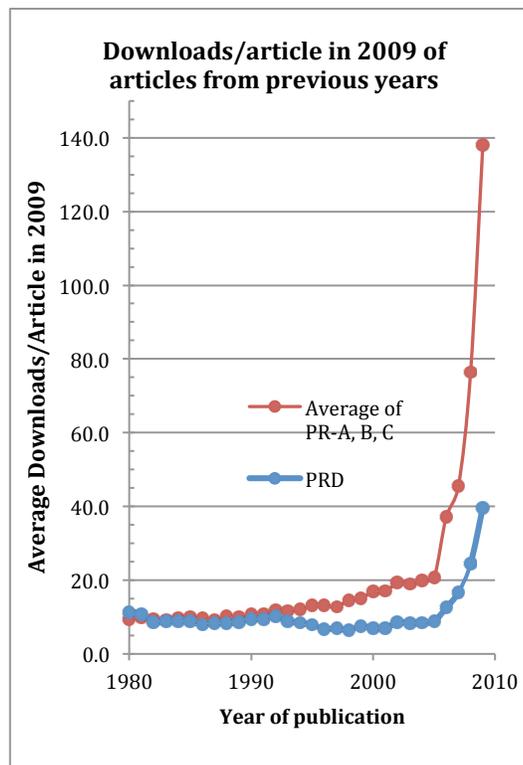


Figure 2. Same data as in Figure 1, with the addition of Physical Review D, a journal whose content is almost completely available on the arXiv.



January 12, 2012

Alan I. Leshner  
Chief Executive Officer and  
Executive Publisher, *Science*

REF: Public Access to Peer-Reviewed Scholarly Publications Resulting from Federally Funded Research

Submit to: [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

Deadline: January 12, 2012

On behalf of the American Association for the Advancement of Science (AAAS), we are submitting a response to the Request for Information (RFI) on Public Access to Peer-Reviewed Scholarly Publications. Improving access to scientific and technical information is a longstanding commitment of AAAS and its journals, such as *Science*, one tied closely to our mission of advancing science and innovation throughout the world for the benefit of all people.

AAAS believes it is important that the discussion surrounding public access must clearly distinguish between access to research results in support of scientific progress and access to scientific information as a crucial element of public engagement to enhance the understanding of science and/or to inform public policy. The primary target audience for the technical research papers published in the scientific literature is the research community that utilizes the information to replicate, reproduce and expand on that knowledge base.

**Question 1-Areas of Economic Growth.** Given the advent of immediate access to digital information that we are witnessing in many sectors of the global market, one area of potential economic growth is the establishment of data aggregators created in the private sector that build upon existing federal depositories (e.g., DNA Sequencing, Climate data). Such aggregation of data could offer scientists powerful resources to support and expand their research. However, while this may be viewed as an area of new growth, it could result in a decline in usage of traditional non-aggregated sources such as non-profit, scholarly publications.

**Question 2-Intellectual Property.** One mechanism that federal agencies should use to protect the interests of publishers, scientists, and federal agencies is to allow researchers to post only a copy of the “accepted version” of a research article. This can serve to highlight the added value and content that journals bring to articles. AAAS journals allow authors who are required by their funding agency to make their research publicly available to post in the repository the accepted version of a paper six months after publication, provided the posting is linked back to the original published version and includes the published paper’s full reference citation. The accepted version is the version of the paper accepted for publication after changes resulting from peer review, but before AAAS’s editing, image quality control, and production. Errors are corrected in final, copy-edited versions of manuscripts, and additional corrections to some research articles may arise several months after publication. Our journal *Science* currently takes responsibility for clearly linking supplementary materials, corrections, retractions, letters and technical comments to the original paper posted on [www.sciencemag.org](http://www.sciencemag.org). The version of record on our site may also have links to news analysis and commentary articles that provide the reader with context for understanding the research.

**Question 3-Centralized versus Decentralized.** In this question, OSTP asks if there are reasons why a federal agency “should maintain custody of all published content” in addition to asking the pros and cons of supporting a centralized and decentralized approach to public access. AAAS believes that the term “custody” may carry several meanings and it is not clear in the RFI how the term is being used. Giving “custody of all published content” to the federal government raises serious questions about public access in its own right, and would require very clear ground rules for delineating the government’s authority to “control” publication access if this concept were to be adopted. All effort should be made to discourage any real or perceived abuse of authority over control of content. AAAS favors a more distributive approach.

**Question 5-Interoperability and Core Metadata.** AAAS recommends that OSTP carefully consider the importance of establishing taxonomy standards that are uniform and that will allow for changes across the many vendors and platforms that currently exist as well as those that may emerge in the future. Establishing taxonomy standards will greatly enhance the capacity to facilitate interoperability between disciplines, as well as support the development of semantic Web sites that could be utilized by researchers and scholarly publishers.

In regards to setting accessibility for minimum core metadata, OSTP should consider the policies established by the journal *Science*. An overarching goal, for example, should be to ensure that “all data necessary to understand, assess, and extend the conclusions of the manuscript” be made available. Furthermore, all reasonable requests for data and materials by scientific researchers must be fulfilled. At the same time, any federal policy must recognize that some limitations and restrictions may exist, for example, data obtained from other sources and restricted by Material Transfer Agreements. Any public access policy must require that authors disclose all such restrictions and limitations.

**Question 6-Maximizing Benefit of Public Access.** Federal agencies must understand that any movement toward public access policies is essentially an experiment. Imposing new burdens and costs on stakeholders will be difficult to avoid, as the scholarly publishing community comprises a range of business models. It is important that the federal government continue to engage stakeholders with a range of perspectives (e.g., for-profit, non-profit) and to create avenues for stakeholders to work in tandem with relevant agencies as public access policies are considered. Efforts such as the Roundtable on Scholarly Publishing project launched by the House Science and Technology Committee in 2010 are good examples.

We thank OSTP for the opportunity to express our views. If you have any questions regarding these comments, please do not hesitate to contact me at 202/326-6639 or [aleshner@aaas.org](mailto:aleshner@aaas.org).

Sincerely,



Alan I. Leshner



**BEFORE THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY**

**REQUEST FOR INFORMATION CONCERNING PUBLIC ACCESS TO PEER-REVIEWED SCHOLARLY PUBLICATIONS THAT RESULT FROM FEDERAL FUNDED SCIENTIFIC RESEARCH**

**COMMENTS OF NETCOALITION AND THE COMPUTER & COMMUNICATIONS INDUSTRY ASSOCIATION**

NetCoalition serves as the public policy voice of some of the world's most innovative Internet companies, including Amazon.com, Ask.com, Bloomberg, eBay, Google, Wikipedia, and Yahoo. The Computer & Communications Industry Association (CCIA) represents large, medium and small companies in the high technology products and services sectors, including computer hardware and software, electronic commerce, telecommunications and Internet products and services – companies with more than \$200 billion in annual revenues. Our associations welcome the opportunity to respond to the Office of Science and Technology Policy's November 4, 2011 request for comment on public access policies for science and technology funding agencies. We strongly support the Administration's objective, articulated in the OSTP's December 9, 2009 request for comments on this topic, of enhancing the public's access to scholarly publications resulting from research funded by federal agencies. We appreciate the Administration's dedication to maximizing the return on federal investments in research and development.

We agree that increasing access to the results of government-funded research will stimulate scientific and technological innovation and competitiveness.

Our members have long supported public access to the results of federally funded research. They urged Congressional adoption of the public access policy of the National Institutes of Health (NIH), and opposed legislative efforts to undermine that policy.

Similarly, our members endorsed enactment of S. 1373, the Federal Research Public Access Act of 2009 (FRPAA). In an August 12, 2009 letter to Senators Lieberman and Cornyn, NetCoalition stated:

It is the mission of NetCoalition companies to help their users locate and access the information they need. FRPAA furthers this mission by placing valuable publicly funded research in an online location where search engines operated by NetCoalition members can index and link to it. FRPAA thus simultaneously assists the broad dissemination of important scientific information and promotes the growth of the Internet.

Below, we respond to some of the questions contained in the November 3, 2011 request for information.

**1. What type of access to peer-reviewed publications that result from federally funded scientific research is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

The more access the public has to peer-reviewed publications that result from the \$60 billion of scientific research funded each year by the federal government, the more rapidly the U.S. economy will grow. Government funded research is the foundation for most of the technological innovation of the past century. Virtually all the innovations that define the world we live in -- nuclear and solar energy, the digital technology and the Internet, aviation, effective medical treatment -- are the direct result of enormous

government investment in basic and applied research.<sup>1</sup> The more quickly the results of that research can be disseminated to the public, the more quickly new products and services can be developed, which in turn will lead to economic expansion and job growth.

This certainly is the case in the information technology sector. While large technology companies often subscribe to peer-reviewed journals directly relevant to their research and development, because of budget constraints, they usually do not subscribe to all journals of potential interest in related fields. Engineers and scientists in these companies are forced to conduct research with partial blinders on, seeing only what is directly before them and missing the potential interdisciplinary connections and the broader context that full access can provide. Access to papers resulting from federally-funded research would give these engineers and scientists a wider, more interdisciplinary perspective, thereby accelerating innovation in unexpected directions.

Additionally, the Information Revolution has democratized research to an unprecedented degree. An individual with a laptop and a broadband connection has the capability of developing software solutions to extremely complex problems, provided that he has access to data and know-how developed by others. These software solutions can lead to the birth of new companies, or can hasten the rate of product-development by existing companies. Public access to the results of government-funded research would dramatically increase the set of building blocks for these independent developers.

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<sup>1</sup> According to a 2008 National Science Foundation report, 57% of the funding for basic research comes from the federal government. National Science Foundation, *National Patterns of R&D Resources: 2008 Data Update*, Figure 4-2. Fifteen percent of basic research funding came from universities and colleges (including public institutions); 11% from nonprofit sources (such as foundations); and only 18% from businesses. *Id.*

Furthermore, there is significant evidence that open access to scholarly communications encourages a more efficient and collaborative research environment, which increases the rate of discovery and advancement of knowledge.<sup>2</sup> A robust public access policy thus would provide more “raw material” for large and small technology companies to refine into products and services that would expand the U.S. economy.<sup>3</sup>

Greater public access to peer-reviewed publications resulting from federally-funded research will also help the U.S. technology sector address one of the greatest obstacles to its growth: the shortage of well-trained engineers. Reducing the cost of access to cutting edge publications will lower the cost of educating engineering students and providing more advanced training to working engineers. Increasing the quantity and quality of engineers will allow technology companies to provide new products and services at an accelerated rate.

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<sup>2</sup> See, e.g., *The effect of open access and downloads ('hits') on citation impact: a bibliography of studies*, [ocit.eprints.org/oacitation-biblio.html](http://ocit.eprints.org/oacitation-biblio.html). An analysis of the 300 most influential innovations in science, commerce, and technology revealed that collaborative academic environments generated more world-changing ideas than the competitive sphere of the marketplace. Steven Johnson, *Where Good Ideas Come From: The Natural History of Innovation* (2010).

<sup>3</sup> Professor Mark Lemley explains that “surveys of hundreds of significant new technologies show that almost all of them are invented simultaneously or nearly simultaneously by two or more teams working independently of each other. Invention appears in significant part to be a social, not an individual, phenomenon. Inventors build on the work of those who came before, and new ideas are often ‘in the air,’ or result from changes in market demand or the availability of new or cheaper starting materials.” Mark Lemley, *The Myth of the Sole Inventor*, 110 MICHIGAN LAW REVIEW \_\_\_\_ (2011), available at <http://ssrn.com/abstract=1856610>, July 21, 2011, p. 4. The “air” Professor Lemley references includes journal literature. For example, when discussing the Wright Brothers’ reliance on the work of others, Professor Lemley describes how the Wright Brothers “wrote to the Smithsonian in 1899 asking for all available information on the development of flight....” *Id.* at 34. The Smithsonian provided them with publications reporting on research concerning fixed wing, fuselage, and tail-fin design, which they incorporated into their aircraft. *Id.*

In short, adopting a public access policy across all federal agencies with a twelve-month embargo period (as in the NIH policy) would stimulate economic growth. Adopting a public access policy with a shorter embargo period – or no embargo period at all – would stimulate even more economic growth. A public access policy represents an economic stimulus plan that has already been paid for.

**2. What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property right of publishers, scientists, Federal agencies, and other stakeholders?**

There is no evidence that the NIH public access policy has actually harmed publishers. But even if the expansion of that policy to other agencies would reduce publishers' profitability, the Administration should not be deterred from proceeding. The public interest in access to these publications vastly outweighs the intellectual property interests of publishers and other stakeholders. The taxpayers have paid for the research reflected in the articles at issue; the drafting of the articles themselves; and the salaries of the experts performing the peer-review. While publishers do add some value, that value is dwarfed by the investment made by the public via the federal government. Given the low cost distribution afforded by the Internet and open access publishers and repositories, there is no reason for the federal government to continue to allow publishers to employ business models that enable them to appropriate the value the public has invested in the creation of the articles.

The scientific, technical, and medical (STM) journal market has been lucrative for commercial publishers, with generous profit margins, in large measure because the

creation of the content they sold was so heavily subsidized by the public.<sup>4</sup> If a broad public access policy cuts into publishers' profit margins and results in them exiting the market, so be it. Open access publishers already exist that are more than capable of performing the peer-review and long-term stewardship functions.<sup>5</sup>

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The Administration has been considering this issue for more than two years. This delay has denied American technology firms and individual innovators access to the results of hundreds of billions of dollars of research underwritten by U.S. taxpayers. This has impeded the development of new products and services that would grow the economy and create jobs.

The public benefits of increased access to peer-reviewed publications dwarf the possible adverse consequences publishers may suffer by virtue of losing exclusive control over information they did not create. Our economy cannot afford further delay to the adoption of a broad public access policy. The Administration should implement a broad public access policy as soon as possible.

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<sup>4</sup> It should be noted that the four largest STM publishers are foreign-owned: Reed Elsevier –U.K./Netherlands; Thomson – Canada; Wolters Kluwer – Netherlands; and Springer – Germany.

<sup>5</sup> Indeed, many commercial STM publishers themselves now publish open access journals.

Respectfully submitted,



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January 12, 2012

Mendeley is pleased to have this opportunity to respond to the Office of Science and Technology Policy Request for Information on the topic of public access to peer-reviewed scholarly publications resulting from federally-funded research ( <http://federalregister.gov/a/2011-28623>). Mendeley is a 4 year old company that provides services and software to researchers to enable them to organize research, collaborate with colleagues around the world, and discover new research[1]. We have 40 employees in the US and the UK and serve over a million scientists worldwide, with the majority of our users located in the US. We are seeing strong growth, currently adding about 100,000 scientists per month and hiring for several positions in the US and the UK. Our research catalog consists of 150 million research documents, growing by 10 million monthly. Our core business is end-user subscription services provided to scientists, librarians, research and grant administrators, and publishers. Our main objective is to connect researchers with the colleagues and the research that they need to move their research program forward faster and towards this end we are developing innovative approaches to research assessment, expertise discovery, organization and re-use of research data.

## Summary

We recognize that publishing incurs certain costs and publishers should be allowed to recover them. However, it's hard to believe that an industry whose revenues have grown four times faster than inflation over the past 25 years will be at any significant risk from Open Access mandates, particularly given the success of the Open Access journals PLoS ONE and BioMed Central and the rush by others in the industry to copy their model. We regret that so little of the efficiencies of the modern Internet era have been realized in scholarly publishing to date, yet we feel this leaves tremendous opportunities ahead for innovation and job creation for the future. We recommend extending a uniform Public Access policy to the other grant-funding federal institutions, including as components of the policy:

- Explicit protection for re-use with license such as the Creative Commons Attribution License (CC-BY)
- No embargo period
- Mandated deposit of the final, peer-reviewed version in either an institutional or centralized repository
- Inclusion of data required for reproducibility
- Incentives for interoperability of repositories via shared metadata schemas

## Comment 1

**1.a - Are there steps that agencies could take to grow existing and new markets**

***related to the access and analysis of peer-reviewed publications that result from federally funded scientific research enterprise?***

**Mendeley creates jobs**

Mendeley provides an example of how to create a market around federally funded scientific research. The more open data & documents that are available, the more easily we can connect researchers and the better collaboration tools we can build. This makes our product more valuable and helps us grow. Unfortunately, much of the taxpayer-funded research is currently locked away by commercial publishers, but academic publishing companies such as the Public Library of Science have shown that this isn't necessary for commercial publishing success[2]. Open Access publishing, where the costs of publishing are borne by the author or the funding body, provides a very successful alternative to traditional publishing, where the costs are borne by the subscribers, while at the same time allowing the result of taxpayer funded research to be available as a public good. In addition to the job creation enabled by open access to taxpayer funded research, our economic impact extends more broadly to adding value to other industries and to the creation of new markets. We provide an open API that third-party developers can use to make their own products more valuable. We have API clients in biotech, high tech, green tech, aerospace, earth science, law, and many other industries. This year as part of an innovation challenge judged by technology industry experts Tim O'Reilly, founder of O'Reilly Media, Juan Enriquez, Managing Director of Excel Venture Management, John Wilbanks, former VP for Science at Creative Commons, James Powell, CTO of Thompson Reuters, and Werner Vogels, CTO of Amazon.com, we issued 1000 individual API keys to developers and these third-parties used our API and that of the Public Library of Science (PLoS) to add value to their own products[3]. These developers can build the most useful and feature-rich applications with open data such as that provided by Pubmed Central. The OSTP can best facilitate this creation of value by adopting an Open Access mandate which requires taxpayer-funded research be placed immediately in a public repository, either Pubmed Central or their institutional repository, along with the data necessary for replication of the results. Importantly, Open Access doesn't simply mean free access, but includes full re-use rights, including commercial re-use. All members of the public should be able to benefit from this taxpayer-funded resource. Unfortunately, only about 8% of the scientific literature is currently available under an Open Access license[4]. This suggests that an Open Access mandate requiring immediate public taxpayer access to taxpayer-funded research would result in at least a 12-fold increase in the productivity of scientists, the return on investment of federal grant monies, and job creation opportunities.

One example of development made possible by open data is OpenSNP.org which is a service that provides customers of genetic screening services with information about their screening results. These customers typically aren't researchers themselves so open access is absolutely necessary for them to make use of the information uncovered by OpenSNP. There are also professional associations building knowledge bases for their membership, engineering firms using open access to stay on the cutting edge of technology, and biotech companies that need access to research to design the next generation of drugs and therapies[3].

## **1.b - Growth of new tools to analyse peer-reviewed publications - ‘article-level metrics’ and innovation**

Full Open Access to taxpayer-funded scholarly literature and the data accompanying such publications can help promote the development of tools which enable scientists, research administration offices, grant review boards, and faculty tenure review committees find and measure the impact of work they’ve published or funded. These tools could allow grant funds to be spent more effectively, technologies brought to market faster, and cures discovered faster. However, these metrics must look across the breadth of scholarly output to be successful, yet only 8% of scholarly publications are available as open access[4], so Open Access mandates are critically important to support the development of these tools.

For historical reasons, only one metric, the Journal Impact Factor, is currently in common use. However, this metric only reports the average number of citations a journal gets in a year divided by the number of articles published - it doesn’t show the impact of individual articles. This metric has been found to be less predictive of research program success than some alternative metrics[6], such as the Hirsch index, due to the wide variation in citations accruing to individual articles within a journal.

Some examples of nascent research metrics services enabled by Open Access mandates:

[readermeter.org](http://readermeter.org)

[total-impact.org](http://total-impact.org)

[alm.plos.org](http://alm.plos.org)

Reader Meter determines a reader’s impact by looking to see how many papers they have in Mendeley’s literature database and how many people are reading those documents. Analogous to the Hirsch index, a popular citation metric, Reader Meter gives you a score of 5 if you have 5 documents with 5 or more readers.

Total Impact looks at the broader picture of a researcher’s output, incorporating article-level metrics from a variety of sources such as Mendeley and PLoS. It can also be extended to cover datasets and published bibliographies and other types of researcher output beyond published papers.

The Public Library of Science’s Article Level Metrics shows the broader impacts of work, allowing more sophisticated analysis of research impact than previously possible.

## **1.c Growing the economy and improving the productivity of the scientific enterprise.**

Open Access promotes scientific productivity because it allows researchers, whether commercial or academic, to access the latest scientific findings without restriction and to begin to immediately build upon those. Such aggregative building is necessary because a new drug or new technology is developed not on the basis of one publication, but by accumulating knowledge over time from many researchers studying a given topic. There is increasing evidence for one obvious-in-hindsight effect of Open Access - Open Access works are read more and cited more by subsequent papers[7]. Open Access also promotes the use of research

materials in classes, helping to keep American students at the top academically and promoting better patient education.

Open Access also serves Mendeley in its mission to make scientists more productive. There are two main scenarios where Mendeley enhances the productivity of those who use open data and documents:

### **Has access, needs discovery tools**

A researcher's productivity can be enhanced in a number of ways, but given that most of a researcher's work goes into finding all the ways that *don't* work, a really effective way to improve productivity would be to get the right documents into the right hands at the right time. Mendeley and the ecosystem of third-parties we enable, do that by two fundamental mechanisms, search and recommendation, both of which work best with Open Access content.

### **Search**

It has traditionally been a time-consuming and laborious process for a researcher to find and organize all the research related to their project. However, there are some job creation opportunities provided by Open Access mandates to make this process much faster and easier and to connect previously unconnected disciplines. Even in the relatively rare case where a researcher has subscription access to everything they need, they must spend less time trying things people have already figured out don't work and less time in manual organization of research collections, if they want to work efficiently and make best use of their grant money. Modern researchers depend in practice on search of databases for related keywords both to track current research and to survey the state of knowledge about an idea or technique they wish to employ. However, many common words have discipline specific meanings, such as replication (cellular or of digital storage volumes) or transformation (spiritual, mental, or in the cellular meaning, the process of becoming cancerous). No one central authority can provide all the facets that different research groups would want, but by enabling open access to the aggregated set of literature, we can empower groups to make their own facets, which is exactly what many of the applications built using our Open API are doing. Additionally, no one publisher can provide an index across all publications across an entire discipline. This requires a "neutral" repository that can return all the relevant results for a given query. Mendeley provides such a repository. Getting the right information to the right researcher when he needs it also requires ranking of documents so that not only all matching documents are found, but the best ones are returned first. This means discoveries are made faster, communicated faster, and allows science to be more efficient. Open Access mandates therefore present the publishing industry and the technology industry with an exciting opportunity for growth that promotes efficient science, cross-discipline collaboration, and creates jobs.

### **Recommendation**

One way to think about recommendation as a class of discovery mechanism is to think of it as "searches you haven't run - yet". By looking at the reading and sharing history of a researcher and comparing that history to the sharing history of other researchers, we can determine what a researcher may want to read but hasn't even searched for yet. A similar sort of recommendation helped Amazon.com grow into an \$11M company. However, this type of service requires a vast amount of data to be really useful. No one publisher can get this scale of data about all publications, including those from other publishers. Only by looking over the aggregated reading activities of a large number of researchers reading diverse literature is this truly useful, and only with open licenses such as CC-BY and Open Access mandates will it be

possibly to realize this enormous opportunity for revenue generation and job creation.

### **Doesn't have access, needs it, also needs discovery tools**

In the more common case, where a researcher doesn't have all the access he needs, he will necessarily spend more time trying things that don't work or re-optimizing a method that someone else has already optimized.

### **Diversion of research funding**

Another issue is the amount of resources that are taken out of university and grant budgets and diverted into subsidizing the existing publishing infrastructure. Little of the cost savings of the digital age have been realized in scholarly communication, despite the Internet having been created exactly for this purpose!<sup>[9]</sup> Services such as Arxiv.org and Pubmed Central provide an example of an efficient publication distribution system, which maximizes the amount of federal grant money that goes to actual research and minimizes the funds necessary for just for curating, archiving and communicating those results. This allows science to progress faster and new industries to be created to give provide American workers the jobs of the future.

### **1.d The costs and benefits of Open Access policies**

According to the Houghton Reports<sup>[10]</sup>, Open Access will increase the value of investment by a factor of five. Their analysis shows that, while subscription revenue to publishing companies may decline, that decline is more than offset by the growth of new technologies and by job creation stimulated by improved scientific productivity. Expanding the NIH-style policy to all other federal agencies, without embargo, is projected to create \$1.5 Billion in new revenues, 60% of which will directly benefit the U.S. economy.

In addition to job creation through innovation, the creation of new markets, and improved scientific productivity, it will promote badly needed competition among publishers to realize some of the cost savings possible with the Internet and modern technology. Subscription costs have increased four times faster than inflation over the past 25 years, resulting in severe problems for libraries in providing access to research for their institutions. Open Access repositories such as Pubmed Central don't come without a cost, of course. The NIH reports that it costs about \$4M annually to provide access to 2.2M articles for 500,000 users per day, the majority of which are not accessing the site from an academic institution<sup>[11]</sup>. This is less than 0.01% of the NIH annual budget, which stands in sharp contrast to the approximately \$2B that it costs traditional publishers to provide subscription-only access. By keeping extending the NIH policy, without embargo, to all federal research funding agencies, greater access can be provided while minimizing infrastructure costs.

### **1.e What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

**A full Open Access license is the only one which will allow the above benefits to be realized.**

The difference between free access and Open Access is important to understand. A license that only permits end-user to read a published work for free but excludes derivative reuse will not unlock the potential of this taxpayer-funded resource. The license applied to the published work must not limit the rights of third parties to make derivative copies or any other kind of re-use

although attribution requirements are acceptable, in keeping with the long-standing scholarly tradition of crediting others for their work. The reason the license needs to be permissive of reuse is that third parties are expected to include computers, and tracking myriad licenses across the thousands of works that may comprise a single derivative work presents such a barrier as to make creation of such works technically infeasible. Examples of such derivative works include automatic translation of published works or services which recommend related works. The preferred license to enable the benefits of increased scientific productivity, greater return on federal grant monies, and job creation is the Creative Commons Attribution license, CC-BY[12], which is used by the Public Library of Science and BioMed Central, the leading Open Access publishers.

Professor Michael Carroll, Professor of Law, Washington College, Director, Program on Information Justice and Intellectual Property and Member of the Board of Creative Commons explains[13]:

*“Granting readers full reuse rights unleashes the full range of human creativity to translate, combine, analyze, adapt, and preserve the scientific record, whereas traditional copyright arrangements in scientific publishing increasingly are inhibiting scholarly communication. Traditional copyright law was designed with the subscription-based publishing model in mind. Authors receive copyright when they write their first draft of an article. Authors then transfer this copyright, or grant an exclusive license, to a publisher in exchange for publication. The publisher relies on copyright to police the behavior of readers and competitors who may seek to obtain or redistribute the content without a subscription.*

*By shifting the financing away from subscriptions, the open-access model realigns copyright to enable broad reuse while assuring authors and publishers that they receive credit for the work they have done. This is done through open licensing by the copyright owner. Initially, the authors of an article automatically own a copyright in the article as soon as it has been drafted. If the authors sign an agreement that transfers the exclusive rights to the publisher, the publisher becomes the copyright owner. The standard means for achieving open access with respect to copyright is for the copyright owner (author or publisher) to use the Creative Commons Attribution license, which gives readers and republishers broad reuse rights on the condition that credit for the article is given as directed by whoever is granting the permission. (Disclosure: I sit on the Board of Creative Commons.)*

*Recently, however, some commercial publishers have waded into the open access waters by charging authors a publication fee to substitute for subscription revenue while limiting reuse. Having been paid for coordinating peer review, editing and laying out the text, and the like, these publishers nonetheless limit readers to making only non-commercial reuses, or even also requiring reusers to use the same license for any adaptations, while reserving to the publisher the rights to make any commercial reuse. (This is done through use of the Creative Commons Attribution Non-Commercial license or the Creative Commons Attribution Non-Commercial Share-Alike license.) This is pseudo open access. Authors who pay for publication in these pseudo open access publications are not getting their money's worth. For example, text or figures subject to these more restrictive licenses cannot be uploaded to Wikipedia, which uses the Creative Commons Attribution Share-Alike license.*

*Presumably, these publishers retain commercial reuse rights either to derive additional revenues from certain potential reusers or to block competitors, who may exercise these reuse rights to earn revenue through some kind of value-added service or publication. This latter option is possible only if the competitor discovers a market that the original publisher*

*overlooked. Such entrepreneurs should be rewarded rather than controlled.”*

Federal funding agencies must require an Open Access license such as CC-BY that explicitly allows commercial re-use to allow the economic benefits and enhanced job creation to be realized.

## **Comment 2**

**What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research?**

Publishers provide a valuable service by overseeing the production, typesetting, and coordination of pre-publication peer review. They should be allowed to recover their costs and compete based on quality of service and price. However, once the service has been provided, they should not be allowed to restrict future use of articles containing research funded by the American taxpayer and peer-reviewed not by the publisher, but by researchers. It is the researchers who are the producers and consumers of these articles and so they have an interest in safeguarding the intellectual rigor of the body of work. Because this review work is done by researcher without compensation by publishers, they have intellectual property interests in the works as well, and those interests should not be overridden by publishers.

Legal protection for the rights of a researcher in their work, such as that provided by a CC-BY license, is the best way to balance the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders.

## **Comment 3**

**What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

Centralized repositories provide the advantage of simplicity and consolidation of resources, but the disadvantage of slowing innovation in public access repositories because decisions on new ways of adding value to the data and enhancing its reuse will necessarily require a larger number of stakeholders. Web-scale indexing and open APIs have reduced many of problems of federated or decentralized approaches and subject repositories such as Arxiv.org, ADS, and SSRN are examples of successful distributed repositories hosting work that has benefited to various degrees from federal funding. As long as all the repositories provide open APIs, there's no compelling need for the government to maintain custody of published content. Recognizing that a national archive is a valuable public good, the government can ensure long-term stewardship of distributed content by enforcing the use of a license that allows reuse, such

as CC-BY.

## **Comment 4**

**Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

With our position between private enterprise and public partnerships, Mendeley provides a great model for innovation which takes advantage of existing archives while promoting long-term stewardship. Mendeley has participated in a number of public-private partnership projects that set an example for how future innovation may take place. By partnering with Symplectic and individual academic institutions such as the University of Cambridge as part of the JISC-funded Direct User Repository Access project[14], Mendeley allows universities to increase utilization of local institutional repositories while promoting the visibility and discovery of content already found in these repositories. This promotes long-term stewardship by placing the content under the charge of the institutional repository which is tasked with preservation, but also enhances accessibility and interoperability by providing a common platform for discovery.

Additionally, through a partnership with SWETS and individual institutions[15], we can provide universities and research administration offices a common platform for assessing the research impact of faculty and assessing subscription usage and needs among faculty, saving universities thousands by enabling more intelligent budgeting of research and subscription funds.

Mendeley will continue to pursue new innovations in this area and also to partner with publishers such as PLoS to pursue new opportunities for market creation and job creation. Enabling reuse through CC-BY licensing will also promote long-term stewardship and promote innovation.

## **Comment 5**

**What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?**

To promote interoperability, it's important that the metadata (the data that describes the works) schema is broad enough that individual repositories can integrate their data but specific enough that individual versions of works can be distinguished. Scholarly publishers and repositories should support the National Library of Medicine XML Document Type Definition and the Dublin Core metadata schema[16]. Deposit of works should come with a Digital Object Identifier (DOI)

and should maintain compatibility with requirements of the Open Researcher and Contributor ID, an emerging standard for identifying researchers[17].

To promote innovation such as development of the semantic web, publishers and repositories should provide an Application Programming Interface (API) which enables inter-repository and third-party applications to exchange data. The works should be classified according to public domain taxonomies and these classifications should likewise be made available via API or other machine readable format. Where possible, scholarly societies, publishers, and repository maintainers should work together on shared taxonomies to facilitate interoperability.

## **Comment 6**

**How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

Federal agencies can maximize the benefit of public access policies and get the best return on investment by developing a public access policy that is consistent across all federal grant funding agencies. This is particularly the case for research fields, such as biotechnology, which is often funded by more than one different agency, for example, the NIH and the DOE. A consistent federal policy will also reduce duplication of effort and minimize costs while promoting interoperability.

To achieve maximum benefits in cost-saving, research productivity enhancement, and job creation, these policies should:

- include a uniform licensing requirement using a license which protects reuse, such as CC-BY.
- mandate immediate deposit of the final, peer-reviewed version of the publication in a public access repository
- mandate deposit of the metadata and any associated data or code along with the publication
- enable the development of research evaluation tools such as Mendeley's readership index and PLoS's article-level metrics
- facilitate the development of data sharing and data management plans

## **Comment 7**

**Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

The entire output of all federally-funded research should be covered by these public access policies. This includes book chapters and conference proceedings, as well as data and code developed under federal grant. This does not preclude book authors and publishers from compiling textbooks or print copies of conference proceedings and offering those for sale under a more restrictive license, provided the license chosen for the public access policy is a non-restrictive license such as CC-BY which permits commercial reuse.

## **Comment 8**

**What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research?**

The best policy for scientists, for encouraging innovation, and for getting the best economic impact of federal grant monies is no embargo period. PLoS provides an example of a publisher which needs no embargo period and which continues to enjoy significant commercial success. Because commercialization and job creation don't arise from one single publication, but from the aggregate of multiple publications over time, any embargo period applied at the article level would slow down scientific progress and inhibit commercialization. Because many commercialization and market creation opportunities lie at the intersection of different fields, the policy should be uniform across all subject areas.

**Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

The effect of embargoes has been studied by the Research Information Network, the Joint Information Systems Committee, the Publishing Research Consortium, Research Libraries UK, and the Wellcome Trust[18]. They concluded that embargoes would deny many of the immediate benefits of Open Access while not providing incentives for publishers to transition to Open Access over time. They also found significant sustainability risks due to the greater reliance on the subscription model and recommended the Gold OA model, where publication fees are paid to the publisher in exchange for immediate Open Access of the work, as the approach which will achieve the best benefit/cost ratio.

*"In our view, therefore, while there is no harm in policy-makers encouraging it as a low-cost and arguably lower-risk way of expanding access, it is unlikely in practice to provide significant changes in access."*[19]

While it may be argued that the citation advantage of Open Access article proves that embargoes do not do harm to scientific productivity, we don't have evidence to show how large the citation advantage might be if there were no embargoes and all works were Open Access. Open Access without embargo is particularly important for public understanding of scientific results. Often, research is reported in the lay media before the public can access the original research and this leads to public misunderstanding of science and presents a public health risk in conjunction with media reports about the health risks of treatments, for example. In the UK, a recent editorial by George Monbiot called embargoes a "tax on education, a stifling of the human mind"[20]:

*"I refer readers to peer-reviewed papers, on the principle that claims should be followed to their sources. The readers tell me that they can't afford to judge for themselves whether or not I have represented the research fairly. Independent researchers who try to inform themselves about*

*important scientific issues have to fork out thousands. This is a tax on education, a stifling of the public mind. It appears to contravene the universal declaration of human rights, which says that "everyone has the right freely to ... share in scientific advancement and its benefits"*

If embargoes are causing people who want to understand the research being paid for with their taxes to have to pay thousands for access to the research, then embargoes are clearly not a risk-free option. On the other hand, the commercial success of publishers such as PLoS and BioMed Central, and Hindawi shows that embargoes do not necessarily help, either. The growth of new journals that copy the success of the journal PLoS ONE, which imposes no embargo and uses a CC-BY license, shows that there is broad understanding in the industry that this model is a proven and successful one. A few examples of new journals using this model are BMJ Open, from the British Medical Journals group; G3, from the Genetics Society of America; Scientific Reports, from Nature Publishing Group; and AIP Advances, from the American Institute of Physics.[21]

**Please identify any other items the Task Force might consider for Federal policies related to public access to peer-reviewed scholarly publications resulting from federally supported research.**

As discussed above in comment 7, federal agencies should also adopt uniform policies regarding the data associated with publications they fund. Sharing of raw data is as important as the publications, because when data are published, they are often turned into tables and images, which aren't as useful to researchers looking to replicate or extend the work. The UK House of Commons Select Committee on Science and Technology said, *"Access to data is fundamental if researchers are to reproduce, verify and build on results that are reported in the literature ... The presumption must be that, unless there is a strong reason otherwise, data should be fully disclosed and made publicly available. In line with this principle, where possible, data associated with all publicly funded research should be made widely and freely available...The work of researchers who expend time and effort adding value to their data, to make it usable by others, should be acknowledged as a valuable part of their role."* [22]

Data repositories such as Genbank provide a model for how this sharing can work and new initiatives, such the Open Knowledge Foundation's Working Group on Open Data in Science, are trying to build the infrastructure and culture to facilitate data sharing to this end [23]. We recommend the following:

- require that the data needed to replicate a research finding be made available at the same time as the article is published
- require that use of data is given proper citation credit
- incentives for providing data and citing data are developed.

We appreciate the opportunity to respond to this RFI and hope this comment usefully guides policy decisions.

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Dr Cameron Neylon – U.K. based research scientist writing in a personal capacity

## Introduction

Thank you for the opportunity to respond to this request for information. As a researcher based in the United Kingdom and Europe, it might be argued that I have a conflict of interest. In some ways it is in my interest for U.S. federally funded research to be uncompetitive. There are many opportunities that have been brought through evolving technology that have the potential to increase the efficiency of research itself, as well as its exploitation, and conversion into improved health outcomes, economic activity, a highly trained workforce, and technical innovation. Globally this potential has not been fully realised. In arguing for steps that work towards realising that potential in the U.S. it might be expected that I am risking aiding a competitor and perhaps in the longer term reducing the opportunity for Europe to overtake the U.S. as a global research contributor.

However I do not believe this to be the case. The potential efficiency gains and the extent to which they would increase the rate of innovation and economic development are so great, that their adoption in any part of the world will increase the effectiveness and capacity of research globally. Secondly the competition provided by a resurgent U.S. research base will galvanise action in Europe and more widely, leading to a “race to the top” in which, while those at the lead will benefit the most, there will be significant opportunities for the entire research base. My contribution is made in that light.

## Preamble

The RFI and the America Competes Act are welcome developments in the area of public information, as they take forward the discussion about how best to improve the effectiveness of publicly funded research. Nonetheless I must respectfully state that I believe the framing of the RFI is flawed. The concentration on the disposition of intellectual property risks obscuring the real issues and preventing the resolution of current tensions between researchers, the public that funds research, federal agencies, and service providers, including scholarly publishers.

The intellectual property that is generated through publicly funded research takes many forms. It includes patents, the scholarly communications of researchers (including peer reviewed papers), as well as trade secrets, and expertise. The funder of this IP is the taxpayer, through the action of government. Federal funders pay for the direct costs of research, as well as the indirect costs including, but not limited to, investigator salaries, subscription to scholarly journals, and the provision of infrastructure. That the original ownership of this IP is vested in the government is recognised in the Bayh-Doyle act which explicitly transfers those rights to the research institutions and in response places an obligation on the institutions to maximise the benefits arising from that research.

The government chooses to invest in the generation of this intellectual property for a variety of reasons, including wealth generation, the support of innovation, the creation of a skilled workforce, evidence to support policy making, and improved health outcomes. That is, the government invests in research to support *outcomes*, not to generate IP *per se*. Thus the *appropriate* debate is not to argue about the final disposition of the IP itself, but how best support the *services* that take that IP and generate the outcomes desired by government and the wider community.

A focus on services greatly clarifies the debate and offers a promise of resolution that can support the interests of all stakeholders. It will allow us to identify what the required services are, as well as how they differ across different disciplines and for different forms of IP. It will provide a framework in which we can discuss how to provide a sustainable market in which service providers are paid a fair price for their contribution.

If we focus on the final disposition of IP it will be easy to create a situation in which we argue about who made what contribution and the IP is either divided to the point where it is useless, or concentrated in places where it never actually gets exploited. If instead we focus on the deliver of *services* that support the generation of *outcomes* we will have a framework that recognises the full range of contributions to the scholarly communications process, allows us to optimise that process on a case by case basis, and ultimately forces us to focus on ensuring that the public investment in research is optimally directed to what is intended to achieve: making the U.S. more economically successful and a better place to live.

## Response

*(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

### 1 a) New markets for traditional peer reviewed publications

There are two broad forms of new market that can be identified for peer reviewed publications resulting from federally funded scientific research. The first of these is “new” markets for the traditionally published paper. There is massive and demonstrated demand from the general public for access to peer reviewed papers, particularly for access to medical research. A second crucial market for traditional papers is small and medium enterprise. The U.S. has a grand tradition of the small scale technical entrepreneur. In the modern world these entrepreneurs require up to date information on the latest research to be competitive. Estimates of the loss to the U.S. economy from the current lack of comprehensive access to peer reviewed papers by SMEs are around US\$16 B (<http://osc.hul.harvard.edu/stp-rfi-response-january-2012>).

Education at levels from primary through the postgraduate can also benefit from access to current research, and effective training of a modern skilled workforce is dependent on training being up to date. I am not aware of any estimates of the potential national costs due to deficiencies in education that result from a lack of access to current research but an investigation of these costs would be worthwhile.

The incremental cost of providing immediate access upon publication to peer reviewed research communications is *at worst zero*. The incremental cost of making a publication more widely available once the sunk costs involved in its preparation and peer review have been covered is zero. The infrastructure exists, both in the form of journal websites, and other repositories to serve this content. The question is how to create a sustainable market in which the services required to produce peer reviewed papers can be supported.

Open Access publishers, such as the Public Library of Science and BioMedCentral have demonstrated that it is financially viable to make peer reviewed research freely available via charging for the *service* of publication up front. The charges levied by PLoS and BMC are in fact less than those charged by subscription based publishers for vastly inferior “public access” services. For instance, the American Chemical Society charges up to \$3500 for authors to obtain the right to place a copy of the paper in an institutional or disciplinary repository but limits the rights to commercial use (including for instance use in research by a biotechnology startup or for teaching in an institution which charges fees). By contrast the charge made by PLoS for publication in PLoS ONE is \$1350. This provides the service of peer review, publication, archival, and places the final, peer reviewed and typeset, version of the paper on the web for the use of any person or organisation for any purposes, thus maximising the potential for that research to reach the people who can use it to generate specific outcomes.

Again, the debate over where the IP is finally located, in which a publicly funded author has to purchase a limited right to use their own work, having donated their copyright to the publisher, is ultimately sterile. The debate should be focussed on the provision of publication services, the best mechanisms for paying for those services and ensuring a competitive market, and the value for money that is provided for the public investment. It is noteworthy in this context that a number of new entrants to this market, who have essentially copied the PLoS ONE model, are charging *exactly the same fee*, suggesting that there is still not a fully functional market and that there is a significant margin for costs to be reduced further.

#### 1b) New service based markets for the generation of new forms of research outputs

A second set of markets are opened up when the focus is shifted from IP to services. The current debate has been largely limited to discussion of a single form of output the peer reviewed paper. However when we consider the problem from the angle of what services are required to ensure that the public investment in research generates the maximum possible outcomes, we can see that there will be new forms of services required. This include, but are not limited to, data publication and archival, summarization and current awareness services, integration and aggregation services, translation and secondary publication services.

The current focus on the ownership of IP for a narrow subset of possible forms of research communication is actively preventing experimentation and development of entirely new services and markets. Given the technical expertise contained within the U.S. these are markets where U.S. companies could be expected to take a lead. However the cost of entry to these markets, and the cost of development and experimentation, are made artificially high by uncertainty around the rights to re-use scholarly material. It is instructive that almost all innovation in this space is based on publicly accessible and re-usable resources such as PubMed, articles from Open Access journals, and freely available research data archives online. The federal government could support a flowering of commercial innovation in this space by signalling that it was concerned with creating markets for services that would support the *effective, appropriate, and cost effective* dissemination and accessibility of the full range of research outputs.

*(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

Again, I wish to emphasise that the focus on intellectual property is not helpful here. It is crucial that all service providers, including publishers, research institutions, and researchers themselves receive appropriate recompense for their contributions, intellectual and otherwise, and that we create markets that support sustainable business models for the provision of these services as well as providing competition that ensures a fair price is being paid by the taxpayer for these services and encourages innovation. This is actually entirely separate to the issue of intellectual property as many of the critical contributions to the process *do not generate any intellectual property in the legal sense*. Let me illustrate this with an example.

I have gone through the final submitted version, after peer review, of the ten most recent peer reviewed papers on which I was an author. I have examined the text and diagrams of these, which were subsequently accepted for publication in this form, for any intellectual property that was contributed by the publishers during the peer review process. *I have found none*.

I am not a lawyer, so this does not constitute a legal opinion but in my view the only relevant intellectual property here is copyright. No single word of text, or any element of a diagram was contributed to these documents by the publishers. In some cases small amounts of text were suggested by external peer reviewers and incorporated. However in the fifteen years I have been carrying out peer review I have never signed over the copyright in my comments to a publisher, nor have I been paid for the review of papers, so there is no sense in which the publisher has any rights to text or comments provided by external peer reviewers. The final published versions of these papers do have a small contribution of intellectual property from the publishers, the typesetting and layout in some cases, but these are not relevant to the substance of the research itself.

But my main point is that this argument is ultimately not helpful. The publishers for each of these papers *have* provided a range of *critical* services, without which the paper would not have been published, including the infrastructure, management of the peer review process, archival, and deposition with appropriate indexing services. These important services are clearly ones for which a fair price should be paid to the service provider. It is therefore the services that we require to purchase and the most effective and appropriate mechanism by which to purchase them, that should be the point of discussion, not the disposition of intellectual property.

Our focus should therefore be on identifying for the full range of research outputs:

- i) How to ensure that they are accessible to the widest possible range of potential users. This might include maximising rights of re-use, ensuring that the outputs are discoverable by appropriate means, translation, interpretation, and publication in alternative media.
- ii) Identify the services available, or if not available the services required, to achieve the maximum level of accessibility
- iii) Work with service providers to identify appropriate business models that will support the provision of the required services and the development of markets that will ensure a fair price is received for those services.
- iv) Tension the desired accessibility against the resources available to purchase services to provide that access. With limited resources it may be necessary and appropriate to choose, for

instance, between paying for peer reviewed publication and generating material targeted at a specific audience most likely to be benefit from the research output.

The optimal solution for most of these issues is currently unclear. There is one exception to this rule. Once the costs of preparing and reviewing a research output and making that output available online have been met there is no economic benefit or reduced cost achieved by reducing access to that output. There is no gain in paying the full costs for a service that places an output online but then limits access to that output.

*(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

Again, I feel this frames the question the wrong way, focusing on control and ownership of resources rather than the provision of services that enable discovery and use of research outputs. The question is not one of whether a distributed or a centralized approach is globally the best. This is likely to differ between disciplines, types of research output, and indeed across national borders. The question is how best to ensure that the outputs of federally funded research outputs are accessible and re-usable for those who could effectively exploit them. This will require a wide range of services focusing on different disciplines, different forms of research, but also crucially on different *user groups*.

The question for government and federal agencies is how best to provide the infrastructure that can support the fullest range of publication, discovery, archival, and integration services. This will inevitably be mix of services, and technical and human infrastructure, provided by government, commercial entities, and not-for-profits, some of which are centralised, some of which are distributed. Economies of scale mean that it will be more cost effective for some elements of this to be centralised and done up-front by federal agencies (e.g. long term preservation and archival as undertaken by the Library of Congress), whereas in other cases a patchwork of private service providers will be appropriate (specialist discovery services for specific communities or interest groups).

Once again, if a service based model is adopted in which a fair price for the costs of providing review and publication services is paid up front, guaranteeing that any interested party can access and re-use the published research output, then government will be free to archive and manage such outputs where appropriate while not interfering with the freedom to act of any other interested public or private stakeholder. This model can provide the greatest flexibility for all stakeholders in the system.

*(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

There are a range of such models ranging from ArXiv through relatively traditional publishers like PLoS and BMC to new and emerging forms of low cost publication that disaggregate the traditional role of the scholarly publisher into a menu of services which can be selected from as desired. It is not the place of government, federal agencies, or even scholarly communities to

attempt to pick winners at this very early stage of development. Rather the role of government and federal funding agencies is to make a clear statement of expectations as to the service level expected of the researcher and their institution as a condition of funding and an appropriate level of resourcing the support the purchase of such services as required for effective communication of research outputs.

The role of the researcher is to select, on a best efforts basis, the appropriate services required for the effective communication of their research, consistent with the resources available. The role of the funder is to help provide a stable and viable market in the provision of such services that encourages competition, innovation, and the development of new services in response to the needs of an evolving research agenda.

*(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

Standardisation and interoperability remain challenging problems both technically and politically. Federal agencies should take advice on the adoption of standards when and where they have widespread adoption and traction. However it is in general unwise for government to select or impose standards where there is not already widespread adoption. Federal agencies are well placed to provide an overview and where appropriate help to create “mid-course corrections” that will help to align the development of otherwise disconnected communities. The funding of specific targeted developments to support standards and interoperability development is appropriate. Consideration should be given at all times to aligning research standards with standards of wider relevance (e.g. consumer web standards) where appropriate and possible as these are likely to be better funded. There are however risks that the development of such standards can take directions not well suited to the research community.

Standards adopted by federal agencies should be open in the sense of having:

- a) Clear documentation that enables third parties to adhere to and interoperate with the standard.
- b) Working implementations of the standard that can be examined and reverse engineered by interested parties.
- c) Defined and accessible processes for the development and ongoing support of the standard.

*(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

Federal agencies, consistent with the Paperwork Reduction Act and guidance from the Office of Management and Budgets should adopt a “write once - use many” approach. That is that where possible the reporting burden for federally funded research should be discharged once by researchers for the communication of each research output. This means in turn that services

purchased in the communication of that research should be sufficient to provide for any downstream use of that communication that does not involve a marginal cost.

Thus, for instance, researchers should not be expected to write two independent documents, the peer reviewed paper, and a further public report, to support public access policies. Reporting on the outcomes of federally funded research should depend, as far as possible, on existing previous communications. The providers of publication services should be encouraged to remove or modify existing restrictions that limit the accessibility of published research outputs including for instance, length limitations, limitations on the use of links to background information and unnecessary use of highly technical language. Service providers should be explicitly judged on the accessibility of the products generated through their services to a wide range of potential audiences and users.

*(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

Yes. All research outputs should be covered by coherent federal policies that focus on ensuring that global outcomes of the public investment in research are maximised. The focus purely on research articles is damaging and limiting to the development of effective communication and thus exploitation.

*(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?*

Once the misleading focus on intellectual property is discarded in favour of a service based analysis it is clear that there is no justification for any length of embargo. Embargoes seek to ensure a private gain through creating an artificial scarcity by reducing access for a limited period of time. If a fair price is paid for the service of publication then the publisher has received full recompense in advance of publication and no further artificial monopoly rights are required. As noted above the costs of providing such services are at most no higher than is currently paid through subscription costs. With appropriate competition the costs might indeed become lower.

From the perspective of exploiting the public investment in research embargoes are also not justifiable. Technical exploitation, commercial development, and the saving of lives all depend on having the best and most up to date information to hand. Once a decision has been taken to publish a specific research result it is crucial that all of those who could benefit have access, whether they are private citizens with sick family members, small business owners and entrepreneurs, not-for-profit community support organisations, or major businesses.

Given the current environment of intellectual property law it *may* be appropriate under some circumstances for *the researcher or their institution* to delay publication to ensure that the research will be fully exploited. However there is no benefit to either the researcher, their institution, or the federal funding agency in reducing access once the research is published. Further it is clear that reducing access, whether to specific domains, communities, or for specific times, *cannot* improve the opportunities for exploitation of the research. It can only reduce them.

## Conclusion

To conclude, to focus on the final disposition of intellectual property arising from the authoring of research outputs relating to federally funded research is to continue a sterile and non-productive discussion. Given that the federal government funds research, and provides its agencies with a mandate to support research through direct funding to research institutions, it is incumbent upon government, federal agencies, and the recipients of that funding to ensure that research communication is carried out in such a way that it optimally supports the exploitation and the generation of outcomes from that research.

To achieve this it is necessary to purchase services that support effective communication. These services have traditionally been provided by scholarly publishers and it is right and proper that they continue to receive a fair price for those services. The productive discussion is therefore how to develop the markets in these services that means service providers are viable and sustainable, and that there is sufficient competition to prevent price inflation and encourage innovation. That such services can be economically provided through a direct publication service model where the full costs of review and publication are charged at the point of publication has been demonstrated by the success of PLoS and BioMedCentral.

However this is just a starting point. A fully functional market will encourage the development of a wide range of competitive services that will enable researchers to select the most cost effective way of communicating and disseminating *their* research and ensuring that it reaches the widest possible audience and in turn is exploited fully. This in turn will enable federal agencies to support research, and its communication, in a way that ensures that the public investment is exploited fully for the benefit of the U.S., its citizens, and its economy.

**TO:** Office of Science and Technology Policy

**FROM:** Anna Gold, University Librarian, California Polytechnic State University Library Services, San Luis Obispo, California

**DATE:** January 12, 2012

**SUBJECT:** Response to RFI: Public access to **peer-reviewed scholarly publications** resulting from federally funded research

### **About this response**

The following information was prepared by the Kennedy Library at California Polytechnic State University in San Luis Obispo, California, in response to the request for information issued November 3, 2011, by the Office of Science and Technology Policy.

Information was primarily provided by David Beales, Associate Librarian for Engineering at Kennedy Library, in consultation with Timothy Strawn, Director of Information Resources and Archives, and University Librarian Anna Gold, with additional input provided by Marisa Ramirez, Digital Repository Librarian at Kennedy Library.

The Robert E. Kennedy Library and Cal Poly Library Services at California Polytechnic State University (San Luis Obispo) provide a comprehensive program of library services within a teaching-led comprehensive public polytechnic university, including access to scholarly and professional information, data services, and a digital institutional repository that recently passed the 1.3 million download mark.

The mission of Cal Poly Library Services is to promote open and informed inquiry, foster collaboration and innovation, support the unique needs of every student and scholar at Cal Poly, and contribute to the cultural life of our community. In common with other libraries in higher education, the Library is in a unique position in our organization to do this through access to technologies that support the creation, reuse, sharing and preservation of new knowledge.

### **Background**

The current academic publishing model has evolved to digitally replicate the inherent protections to publishers of an increasingly obsolete print model although this model and the current infrastructure of the publishing industry are no longer the most suitable for optimizing the distribution of academics' work to their colleagues in other institutions. Libraries have participated in the process both as subscribers on behalf of their institutions, and by acting as a second tier document delivery service, making academic material available to the wider community. The limitations of the print medium meant that in the past there was little need to invest in controlling access to material, compared to the investment in making material as widely accessible as possible. This is no longer the case.

The competing arguments of publishers and the Open Access movement are well established. At Cal Poly's Kennedy Library, more widespread open access would deliver efficiencies, financial transparency and opportunity for community outreach. These would aid us in our mission through:

- The widespread adoption and implementation of interoperable data storage and retrieval systems.
- A more direct link between the cost of publication and the value of the publication product.
- A reallocation of staff and budget from compliance with protection of the publishers' products to maximizing access through compliance with open access standards.
- A more direct link between our information literacy training and the real-world information needs of small and medium-sized enterprises (SME's).

**Cal Poly's Library Services offer the following further comments on the specific questions posed in the RFI:**

1. *Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*
  - Through their existing information literacy programs, university libraries are well placed to support the aim of "educating the next generation with 21st century skills" as set out in President Obama's "Strategy for American Innovation"<sup>1</sup>. However, information literacy skills are only nominally valued by SME's with limited access to peer-reviewed information; open access to peer-reviewed information would increase the value to SME's of information retrieval and evaluation skills, resulting in a direct link between students with information literacy training and university measures of student success.
  - Funded programs to provide information literacy training to SME's in local communities would benefit SME's in making best use of open access material and would provide opportunities for universities to build closer links with businesses and public libraries in their communities.
  - One step that US agencies could take to grow existing and new markets would be to provide seed funding for "Easy Access IP"<sup>2</sup>. In the UK, The Lambert Review recognized that public funding for university research was "intended to benefit the economy as a whole rather than to create significant new sources of revenue for the universities."<sup>3</sup> An outcome of the review, the "Easy Access IP" initiative is a model in which universities license a selection of their intellectual property for free to organizations that want to explore the use of the intellectual property, but for whom the risks of investing in IP would be too high. The aim of the founding partners of "Easy Access IP" (University of Glasgow, King's College London and the University of Bristol) is to "increase the engagement between universities and industry, and accelerate the transfer of university knowledge and expertise into the hands of the best commercial partner who can develop it to benefit the economy and society."
  - The required type of access to these publications should be based upon Cornell University's arXiv digital repository model of barrier-free submission and use, with standards maintained through the use of moderators and community feedback. As Cornell University recognizes, one institution cannot be relied upon to guarantee the long-term sustainability of this model.
2. *What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

- Government support for a Digital Copyright Exchange is a recommended step. One model for this is in the UK<sup>4</sup>, where the government is bringing together interested parties to create a centralized database of intellectual property rights that can be easily bought and sold. Potential users of intellectual property (IP) would be able to exercise the required due diligence in locating the IP owner simply by searching this one central database. The listed benefits of such a database refer mainly to simplifying the use of IP in the creative industries; and this is a promising way of dealing with the issue of orphan scholarly works. It also has the potential to simplify the licensing and re-use of research-developed software, which is currently highly problematic, with multiple copyright claims frequently arise from one piece of software.
  - A centralized source of information on publisher copyright policies would simplify the process of self-archiving. The SHERPA RoMEO website<sup>5</sup> is useful but incomplete.
  - Publishers' intellectual input into the publication process is the management of the peer review process, content preparation, branding of the journal portfolio, and provision of access. The funding for this input is currently provided through control of access to articles. In the open access model, the funding for this activity is provided through the publication fee. This funding is protected by the effectiveness of the journal/publisher brand and through the efficient provision of access to the articles within the publishers' journal portfolios to the maximum number of relevant users. During the transition phase from hybrid open access publications to full open access, scientists would continue to be required by publishers to sign over copyright of their work, but as publishers become evaluated and valued based on the effectiveness with which they enable the dissemination of information, market forces would encourage them to sign back more of the authors' rights to redistribute and re-use their own work. There are no specific steps required to protect the intellectual property interests of publishers or scientists.
  - During the transition from the current publishing model to an open access model, there is a lack of transparency from publishers – particularly of hybrid open access journals - as to the impact on subscription fees of the receipt of publication fees. Research funding agencies such as the Wellcome Trust are currently paying for the publication of open access material while the authors' institutions are paying for subscriptions to the same material. While this is acceptable in the short term as publishers transition to open access, it is recommended that funding bodies require that funded research only be published in journals with a clearly scheduled roadmap of how they will progress to pure open access funding.
3. *What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*
- Research communities should continue to provide the infrastructure for deposit of material in digital repositories in order to best serve the varied needs of their communities and institutions. Universities and publishers are also in the best position to provide the infrastructure for public access to scholarly publications. Competition will ensure that access services evolve to take advantage of emerging technologies. However, as publishers and universities evolve, particularly in their strategic priorities and the subject areas that they support, long-term stewardship of collections may provide little immediate competitive advantage to the host institution. It is recommended that digital and print stewardship be formalized and centrally incentivized.

- Examples of current digital preservation models include LOCKSS (Lots Of Copies Keep Stuff Safe)<sup>6</sup> and Portico<sup>7</sup>.
  - LOCKSS is software that allows libraries to preserve their own copies of electronic content in an OAIS-compliant infrastructure. The content is continually updated to the most current format and the networked nature of the international LOCKSS community allows for balancing the load of providing wider access to material. The cost associated with providing access to material could be federally subsidized.
  - Portico is a centralized archive of the information content of peer-reviewed journals, stored in a standardized format. This ensures ongoing usability of content, establishes the content's authenticity, and ensures discoverability through metadata. Portico is intended to be a fail-safe for libraries in the event of catastrophic loss of access.

The relative insecurity of Portico's centralized repository model compared with LOCKSS may be ameliorated by use of cloud storage; but it is difficult to see how the cost of providing open access to articles through this method could be proportionately shared. A centralized system of storage would also tend towards minimum common standards of storage for all users. The distributed LOCKSS model, in contrast, allows individual institutions to provide tailored storage and retrieval to their communities while providing agreed minimum levels of access to the wider community.

- Examples of print preservation models include the Western Regional Storage Trust (WEST)<sup>8</sup> and UK Research Reserve (UKRR)<sup>9</sup>.
  - WEST is a distributed retrospective print journal repository program serving academic libraries in the Western Region of the US. Participating libraries consolidate and validate print journal backfiles at major library storage facilities and at selected campus locations. The resulting shared print archives ensure access to the scholarly print record and allow member institutions to optimize campus library space. The first phase of the project is due for completion in 2013. It is funded by a grant from the Mellon Foundation and by annual membership fees.
  - UKRR is a United Kingdom initiative designed to ensure completeness of the principal print research collection in the British Library, with two further copies retained within UKRR member libraries. Access to material held in the Research Reserve is provided via the British Library within 24 hours through electronic document delivery. In 2009, an initial government seed fund of £10 million (\$16 million) covered the cost to individual institutions of deduplicating their print collections, allowing them to free up space in their libraries. The success of UKRR for journals has led UK Higher Education Institutions to consider taking the same approach for books.

The model for efficient long-term preservation of print collections through cooperation is established. We recommend that the national adoption of this model be promoted through a federally funded program.

4. *Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

- We are not able to strongly recommend existing models for public-private partnerships at this time.
5. *What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*
- While metadata standards to encourage interoperable search are a worthwhile goal, they are vulnerable to being left behind by evolving technologies. OAI-PMH has been widely adopted by repositories but has been abandoned by the major search engines, as it is less useful for retrieving results than their own algorithms. It is suggested that metadata standards are most usefully considered within the limits of their user communities' standard business (for example, Categories for the Description of Works of Arts – CDWA)<sup>10</sup>. So long as they are XML-based, there is a useful degree of interoperability; the trend towards interoperable schema will continue while it is still useful. However, librarians are aware that any effort to maintain quality metadata standards is difficult. Metadata schema that are not directly related to the needs of the host institution/author are unlikely to be embraced wholeheartedly. Consequently, we cannot recommend particular core metadata standards.
  - Google, Yahoo and Microsoft's evolving microdata schema<sup>11</sup> should be investigated for its applicability to open access publishing through use of the Challenge.gov platform's prize offers for initiatives which improve public access to federally funded research. Two parallel areas to consider for prize funds are recommended; one for the most effective semantic search algorithm within the academic publishing sphere and another for effective search of universal metadata standards. The current US Patent & Trademark Office challenge<sup>12</sup>, in which participants compete to deliver an algorithm which will identify and locate elements within a patent document is an example of a way forward for using algorithms to work with more loosely controlled, interoperable metadata standards. NLMplus<sup>13</sup> is a semantic search and discovery application which improves access to the National Library of Medicine's (NLM) collection of biomedical data. It was developed in response to a challenge contest by the NLM.
6. *How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*
- Our chief recommendation is to minimize the cost to academic institutions of applying open access policies. To help achieve this goal, it is recommended that all federal funding agencies adopt a uniform open access policy, including an open access mandate and standardized application of copyright or creative commons protections of the authors work. The PubMed open access policy is well regarded within the library community and would be a useful initial benchmark. This will also simplify the shared services approach to backroom library operations that is of increasing importance in rationalizing shrinking budgets.
7. *Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*
- Ideally, all academic publication would be open access. However, peer-reviewed publications other than scholarly journal articles would be better addressed separately. For example:

- Book publication introduces issues of intellectual property protection related to author payment that are not present in journal publication. Additionally, the transition from print to electronic access is not as advanced for books as for journal articles, although this is rapidly changing. Models such as that for the National Academies Press<sup>14</sup> whereby free electronic access to new publications is subsidized by sales of the print version are interesting, but are not sustainable in the medium or long term as ebook readers overtake print.
  - Conference proceedings are a more natural fit for open access. However, many scholarly societies are currently resistant to open access publication when it reduces the benefits of society membership by making previously exclusive journals publicly available. Conference attendance and associated proceedings are an alternative source of revenue that scholarly societies will rely on during the transition. Ideally, we would recommend that conference proceedings be included in an open access policy; but recognizing the challenges presented by scholarly society publishing, we recommend that making journal articles open access be a first priority; and that other publication types, with their associated issues, be brought into open access as a secondary undertaking.
8. *What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?*
- A mature open access publishing environment would not require embargo periods. A timetable for movement from an initially agreed embargo period, to no embargo, should be a requirement of the publishers' roadmaps toward open access (discussed in response to question 2).
  - Because the interdisciplinary nature of academic publishing makes it difficult to establish embargo periods for different subject areas; and because of the transitional nature of the adjustment to open access, a standard six-month initial embargo period would protect publishers as they move towards open access.

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# AMERICAN UNIVERSITY

W A S H I N G T O N , D C

Jorge L. Contreras  
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January 12, 2012

National Science and Technology Council (NSTC)  
Office of Science and Technology Policy (OSTP)  
Attention: Ted Wackler, Deputy Chief of Staff  
Via email: [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov)

Re: OSTP Request for Information: Public Access to Peer-Reviewed Scholarly Publications  
Resulting from Federally Funded Research (76 Fed. Reg. No. 214 at 68,518 (Nov. 4, 2011))

Dear Mr. Wackler:

I appreciate the opportunity to share comments with OSTP regarding public access to digital data resulting from federally-funded scientific research. I am a professor of law at American University, prior to which I spent seventeen years as a practicing attorney representing major research institutions, R&D consortia and private enterprises engaged in technical and scientific work. I have recently served as a member of the National Advisory Council on Human Genome Research and currently serve as Co-Chair of the National Conference of Lawyers and Scientists and Co-Chair of the American Bar Association Section of Science & Technology Law's Committee on Technical Standardization. My current research focuses on the production and dissemination of scientific and technical information.

Responses to specific items of the OSTP RFI are set forth below and represent my own views, and not those of American University, Washington College of Law, or any of the other organizations mentioned above.

**(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research?**

Public access to scholarly publications resulting from federally-funded research has several potential benefits. These include enabling scientists to reproduce and validate the results of their peers, improving scientific education, and accelerating the overall progress of scientific discovery. Peer review, editing and publication, however, are not without cost, and much has been written regarding the financial needs of value-added intermediaries such as scientific publishers and database managers. Approaching the question of appropriate levels of intellectual

property protection for scholarly publication thus requires a balancing of interests of the relevant stakeholder groups: publishers, funders, libraries, universities, scientists and the public.

In previous work,<sup>1</sup> I have analyzed the interactions of these stakeholder groups in a number of settings and have observed the negotiations that have led to the establishment of embargo or “latency” periods governing the release of scholarly publications. During the latency period, a publisher retains the exclusive right to offer access to the published work, but thereafter the work becomes available for free and open access. Interestingly, latency periods are quite similar across multiple negotiation settings that have been observed. Thus, (i) universities and publishers have negotiated limited exclusivity periods of *six to twelve months*, after which university researchers may release their work to the public, (ii) membership organizations that publish scientific journals such as the *New England Journal of Medicine*, in response to member pressures, voluntarily permit open access release of articles following an exclusivity period of up to *six months*, (iii) NIH has mandated that all publications arising from NIH-funded research be released to the PubMed Central database *one year* after publication, and (iv) legislation that was previously introduced in Congress would have extended the NIH mandate to all federal agencies and reduce the holding period to *six months*.

In each of these scenarios, scientific publishing is conducted in its traditional form and the publisher enjoys a limited-duration period of exclusivity. Following this period of exclusivity, release of the published work via open access channels is authorized. It is significant that the policies illustrated above were developed through a wide range of processes, from unilateral adoption (in the case of membership organizations), to bilateral negotiation (in the case of publisher-university embargos) to executive agency action (in the case of the NIH policy) to legislative action (in the case of proposed legislation). It is also significant that the imposition of a latency period has seemingly been accepted by publishers, scientists, government and research institutions as a suitable vehicle for addressing the differing concerns and objectives of these diverse stakeholder groups. Though positions regarding the desired length of holding or embargo periods still differ, it appears that the scientific publishing community is converging on a latency period in the range of six to twelve months as an appropriate compromise, or a position of equilibrium. That is, at the latency equilibrium point, the various stakeholder groups negotiating such policies (i.e., publishers, libraries, scientists, government and research institutions) are each willing, albeit reluctantly at times, to allow the public release of published literature. A shorter period would not be acceptable to publishers as it would not adequately allow them to recoup their costs of review, editing, publication and marketing, and a longer period would not be acceptable to funders, libraries, scientists and public advocates, who have an interest in making such data freely available at the earliest possible time. Thus, as a result of multilateral compromise, an equilibrium latency period acceptable to all stakeholder groups may emerge.<sup>2</sup>

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<sup>1</sup> See Jorge L. Contreras, *Prepublication Data Release, Latency, and Genome Commons*, 329 *SCIENCE* 393 (2010), and *Data Sharing, Latency Variables and Science Commons*, 25 *BERKELEY TECH. L.J.* 1601 (2010).

<sup>2</sup> We have seen the development of similar latency periods and equilibria in the area of genomic data release. See Jorge L. Contreras, *Response to OSTP Request for Information: Public Access to Digital Data Resulting from Federally Funded Scientific Research*, Jan. 12, 2012.

In my view, these data suggest that “market” forces (i.e., the negotiation and interplay of interested stakeholder groups) can arrive at protective periods that are substantially shorter than default intellectual property rules (nearly 100 years in the case of copyright).<sup>3</sup> Accordingly, I believe that the negotiated latency equilibrium that has emerged in the field of scientific publishing provides strong evidence that allocating exclusive publication rights to publishers for such a period adequately compensates them for the value that they provide, and that protection in excess of such levels gives undue weight to their intellectual property interest. I would encourage OSTP to consider this analysis in its future policy development activity.

**(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

One of the seldom-discussed puzzles of the “open access” debate relates to the national character of research funding. Proponents of open access to federally-funded scholarly literature generally advocate for *global* open access. That is, literature that is considered “open access” should be available to any reader throughout the world without charge. This model reflects the global, open nature of the Internet (national censorship notwithstanding), and has generally been adopted by open access publications and resources across the board, including NIH’s PubMed Central. There are many valid arguments, both ideological and instrumentalist, for adopting such a global approach. But the argument that U.S. taxpayer-funded research should be accessible to the taxpayers does *not* support a global open access approach. Rather, this argument, which has been made consistently over the past decade in the debate over the NIH open access policy and other pending open access legislation, would tend to favor a system whereby such research publications were made accessible only to *U.S.* taxpayers (institutional or individual), but not to foreign ones. Such a nationally-based open access system (which I term “National OA”) would, in economic terms, better allocate the benefit of U.S. tax dollars to U.S. taxpayers, and would eliminate economic free riding by non-U.S. data consumers.

At first blush, such a proposal might seem to fly in the face of the spirit of the open access movement and be viewed as impractical to implement, given the borderless nature of the Internet. The second objection is more easily dealt with than the first. To the extent that scholarly publications are deposited into a federally-managed database such as PubMed Central, the ability to grant access to such a database would reside entirely with the database manager. It would not be technically difficult to require institutions to register for access to the National OA database, to establish a set of differentiated rates for access, and to set the rate for verified U.S.-based persons and institutions at zero. This system would enable the negotiation of bilateral national

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<sup>3</sup> The fact that these observed latency equilibrium periods are so much shorter than default intellectual property periods also suggests that the default periods may, in some cases, be unnecessarily lengthy (a point that has been made by many others).

agreements whereby, for example, other nations producing meaningful scientific output could obtain reduced or waived access fees for their institutions and researchers in exchange for access to their own nationally-funded research publications.<sup>4</sup> Similarly, access rates for institutions and researchers from developing countries could be waived or substantially reduced as a form of humanitarian aid.

Nevertheless, the imposition of national barriers to open access publications may be viewed as contradictory, if not inimical, to the public spirit of the open access movement, which seeks to make scientific knowledge as broadly available as possible for the greatest advancement of human knowledge, learning and progress. However, the National OA system described above would not prevent private-sector open access initiatives from continuing to offer global access to the literature. Thus, the broad range of so-called “green” open access self-archiving initiatives and the burgeoning number of “gold” open access publications<sup>5</sup> could continue to make their content available to readers without charge on a global basis.

Most importantly, the proceeds from a National OA system could be used to support other important open access needs. One of these might be the establishment of a fund to support publication by U.S. researchers in gold OA journals (i.e., those utilizing an “author pays” model). If author fees were significantly mitigated through such a fund, it is possible that more authors would be attracted to gold OA journals, thus expanding the dissemination of knowledge globally. Another potential use of such fund could be to support publication in gold OA journals by authors from developing countries.<sup>6</sup> Finally, such funds could be used to support the database infrastructure and curation requirements that are necessary to maintain a vast collection of resources such as PubMed Central.

**(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research?**

Please refer to discussion of Question (2) above.

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<sup>4</sup> In any case, one would hope that the fees established even for non-U.S. access to these resources would be far lower than the commercial subscription rates that occasioned the so-called “serials crisis” in the 1990s and which continue to shut-out poorly-funded institutions from important scientific literature both in the developing and industrialized world.

<sup>5</sup> There were approximately 4800 such journals according to one 2009 study. Mikael Laaski, et al., “The Development of Open Access Journal Publishing from 1993 to 2009”, *PLoS ONE* 6(6) (June 2011). Significantly higher figures for OA journals are reflected in the online Directory of Open Access Journals ([www.doaj.org](http://www.doaj.org)), which, as of this writing, lists more than 7,300 OA journals in 117 countries.

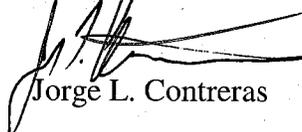
<sup>6</sup> For a discussion of the economic challenges faced by researchers in the developing world, even with respect to OA journal publication, see Jorge L. Contreras, *Open Access Scientific Publishing and the Developing World* (forthcoming, ST ANTONY'S REVIEW OF INTERNATIONAL AFFAIRS (2012)).

January 12, 2012

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Thank you again for the opportunity to offer these comments in response to your inquiries. Please do not hesitate to let me know if there is any additional information that I can provide in support of these matters.

Respectfully yours,

A handwritten signature in black ink, appearing to read 'J. Contreras', is written over the typed name.

Jorge L. Contreras

## **THE ASSOCIATION OF AMERICAN UNIVERSITY PRESS'S RESPONSE TO THE NOVEMBER 4, 2011 REQUEST FOR PUBLIC COMMENT BY THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY**

### **I. Background to the AAUP Comments**

The Association of American University Presses (AAUP) has 134 largely U.S.-based members, with representation in 42 states, the District of Columbia, and Puerto Rico. All are nonprofit scholarly publishers who collectively publish more than 10,000 scholarly books and 800 journals each year. Most member presses are affiliated with research universities, but some are entities of scholarly societies and research institutes.

AAUP members publish both books and journals on subjects and in fields covering the entire spectrum of scholarly research, not just science and technology; some of those journals contain articles based upon federally funded research. These publishers utilize a variety of business models including subscription sales and subsidized open access. The AAUP supports the Administration's goal of increasing public access to the results of research funded by federal science and technology agencies, and we appreciate having been given this opportunity to comment. We would like to make three general comments before responding to the specific questions posed in the Federal Register Notice.

First, we wish to point out that, contrary to popular belief, the majority of university presses in the U.S. receive on average only 10% of their funding in the form of institutional operating subsidies. An additional 10% comes from a mix of outside gifts and grants and from non-publishing operations; the great majority of their funding, 80%, comes from sales in the commercial marketplace. As is well-understood by now, open access eliminates costs for the consumer, but not for the publisher of government-funded research, whose investment in publishing such work remains substantial. The ability to recover that investment is essential to the ability of the nonprofit members of AAUP to continue to fulfill their social mission in support of a vital public good: disseminating the fruits of scholarly research to spur the growth of new knowledge.

Second, as noted in our comments to the OSTP RFI of January 21, 2010, we endorse the shared principles and many of the recommendations in the January 2010 report of the Scholarly Publishing Roundtable appointed by the House Committee on Science and Technology. That report's principal recommendation,

Each federal research funding agency should expeditiously but carefully develop and implement an explicit public access policy that brings about free public access to the results of the research that it funds as soon as possible after those results have been published in a peer-reviewed journal,

is followed by eight further recommendations and five principles to be observed. These further recommendations are designed to ensure that the goal of free public access is met in a way that respects the interests of all stakeholders in the system of scholarly communication, and that maximizes the public good to be derived from meeting that goal.

The Roundtable report does an admirable job of explaining the importance of each of the further recommendations and so we list them here.

1. Agencies should work in full and open cooperation with all stakeholders, as well as with OSTP, to develop their public access policies.
2. Agencies should establish specific embargo periods between publication and public access.
3. Policies should be guided by the need to foster interoperability.
4. Every effort should be made to have the version of record (VoR) as the version to which free access is provided.
5. Government agencies should extend the reach of their public access policies through voluntary collaborations with nongovernmental stakeholders.
6. Policies should foster innovation in the research and educational use of scholarly publications.
7. Government public access policies should address the need to resolve the challenges of long-term digital preservation.
8. OSTP should establish a public access advisory committee.

We believe these further recommendations are part and parcel of the principal recommendation and must be considered along with it.

Second, we note that the Roundtable's principal recommendation is broader than the one posted in the OSTP Federal Register Notice. The Roundtable's recommendation applies to all federal funding agencies; the Federal Register Notice speaks only of research funded by federal science and technology agencies. As a practical matter, however, some science and technology agencies, like the Department of Agriculture, the Department of Energy, and the Department of Health and Human Services, also fund research in the social sciences and humanities that would be covered by either an all-agency or a STM-specific public access policy. We are also aware that other federal agencies of the Executive Branch have started to discuss public access policies of their own, often with no stakeholder consultation or involvement.

Given these circumstances, it would seem prudent and wise for all federal funding agencies to develop policies in accordance with a coherent set of guidelines. We believe the principles and recommendations of the Roundtable report provide such guidelines. The Roundtable report notes the variations in both funding patterns and scholarly practice within different fields in the sciences. Those variations are even more extreme in the social sciences and humanities, which tend in general to be much more poorly funded than the sciences, may require substantially greater non-federal investment to publish, and may require much longer embargo periods, or alternative routes to free public access, if they are to recover their publishing costs from sales and subscriptions.<sup>1</sup>

Therefore we think it vital that the Roundtable's further recommendations, with their emphasis on consultation, cooperation, interoperability, authority, preservation, and long-term sustainability be followed. AAUP members—university presses, scholarly associations, and research institutes—publish a significant number of the scholarly journals in the humanities and social sciences. Because of their stewardship responsibilities these publishers

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<sup>1</sup> Mary Waltham, an independent researcher, has done two careful and thoughtful analyses of journal publishing costs and cost-recovery models. The first was done in 2005 for the Joint Information Systems Committee (JISC) in the U.K.: [www.marywaltham.com/JISCReport.pdf](http://www.marywaltham.com/JISCReport.pdf). The second was done in 2009 for the National Humanities Alliance (NHA) in the U.S.: [http://www.nhalliance.org/research/scholarly\\_communication/index.shtml](http://www.nhalliance.org/research/scholarly_communication/index.shtml).

are particularly attuned to the costs to be managed in the exploration of options for expanding free public access. We believe that the AAUP community, many of whom have been experimenting with open access models, can be a valuable resource in future discussions of public access to journal articles based upon federally funded scholarly research.

## II. Responses to RFI questions.

We are taking the liberty of responding to questions 6-8, which are most germane to the publishing interests of the members of AAUP.

### **(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

As stipulated above in AAUP's endorsement of the House Roundtable report, we believe the government should maximize access to the results of all federally funded research, not just scientific research. However, while U.S. taxpayers invest in federally funded research, they do not currently invest in the peer-reviewed literature that grows out of that research. That investment--in managing peer review, in editing, design, production and the other values added in the course of publication--is made by publishers. Perhaps those costs should be borne by the federal government as well, but that is a significant policy issue beyond the scope of the questions posed here. As long as publishers invest in publishing peer-reviewed literature that grows out of federally funded research, federal funding agencies should neither appropriate nor require publishers to provide their finished products for public access until their investment has been recovered.

However, every federally-funded research project is required by law to provide a detailed final report to the funding agency. Some agencies make these reports openly accessible, but some do not. Such reports are not the version of record, but requiring all agencies to make these reports freely available would have several important public benefits. First, they are submitted at the conclusion of research and so could be made publicly accessible well before the publication of any published article based on the research. Second, they would make publicly accessible the reports on all federally funded research, not just the results of research selected for publication. And third, they often include more information than appears in the published article, if there is one, and so provide a more complete picture of the true scope of government-funded research.

### **(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

Only if those public access policies permit recovery of the publisher's investment.

### **(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library**

**budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

As stated above, such publications are not directly funded by taxpayers but are the result of private investment by publishers. The ability to recoup that investment is an absolute requirement for publishers to be able to continue to publish new work, to fund the development of required new infrastructures, including archiving and metadata, and to experiment with new business models--including open access.

If the purpose of an embargo period is to allow publishers to recover their investment before the work becomes freely available at no cost, then by definition no single "appropriate" embargo period can exist. The embargo period depends not only on article half-life and usage patterns, which vary substantially from discipline to discipline, but also on individual publisher's business models and financial requirements. Publishers seeking to develop sustainable open access business models--and many are--must have the flexibility to determine the embargo period that best fits their needs. Embargoes should not be set by federal regulation.

Peter Givler, Executive Director  
Association of American University Presses

Submitted to [publicaccess@ostp.gov](mailto:publicaccess@ostp.gov) in response to Doc. No. 2011-28623 (76 FR 68518) by  
GSA Executive Director Adam P. Fagen, PhD, [afagen@genetics-gsa.org](mailto:afagen@genetics-gsa.org).

January 12, 2012

Office of Science and Technology Policy  
Task Force on Public Access to Scholarly Publications  
725 17th Street  
Washington, DC 20502

Dear OSTP Task Force on Public Access to Scholarly Publications:

The Genetics Society of America (GSA) welcomes the chance to offer its comments to the Office of Science and Technology Policy (OSTP), and is thankful for the opportunity to provide input on public access to scholarly publications.

Founded in 1931, GSA is the professional scientific society for genetics researchers and educators. Its nearly 5,000 members work to advance knowledge in the basic mechanisms of inheritance, from the molecular to the population level. GSA is dedicated to promoting research in genetics and to facilitating communication among geneticists worldwide through publishing two scholarly journals—*GENETICS* and *G3: Genes/Genomes/Genetics*—and sponsoring a number of professional conferences including the biennial conference on Model Organisms to Human Biology, an interdisciplinary meeting on current and cutting edge topics in genetics research, as well as annual and biennial meetings that focus on the genetics of particular model organisms. The GSA seeks to foster a unified science of genetics and to maximize its intellectual and practical impact.

Since 1916, the journal *GENETICS* (<http://www.genetics.org/>) has published high-quality, original research on a range of topics bearing on inheritance, including population and evolutionary genetics, complex traits, developmental and behavioral genetics, cellular genetics, gene expression, genome integrity and transmission, and genome and systems biology. *GENETICS* is one of the world's most cited journals in its field, ranking fourth in total citations in Thomson ISI's Genetics & Heredity Category. For almost 100 years, *GENETICS* has published seminal articles in genetics and genomic science; for example, a paper in *GENETICS*<sup>1</sup> established the use of *Caenorhabditis elegans* as a model genetic organism, which subsequently led its author, Sydney Brenner, to receive the 2002 Nobel Prize in Physiology or Medicine. *GENETICS* has operated on a subscription-based business model with the primary consumers of the journal—individuals and institutions—paying

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<sup>1</sup> S. Brenner. 1974. The genetics of *Caenorhabditis elegans*. *Genetics* 77(1): 71-94.

for immediate access to its full contents. The journal moved to an online-only publishing model beginning in January 2010.

In 2011, GSA launched *G3: Genes/Genomes/Genetics* (<http://www.g3journal.org/>), a fully open-access journal that is available only online. *G3*'s mission includes providing a forum for the publication of high-quality, foundational research, with a particular focus on research that generates useful genetic and genomic information including novel datasets of broad interest to the research community. *G3* subsidizes its publication with an author-pays business model.

Given our longstanding experience as a publisher, GSA has been able to develop and hone policies that balance access to our publications, service to our members and the public, and the economic viability of our business models. The Society and its journals have continued to innovate, taking a number of steps over the years to best serve our authors and readers. We do so in the following ways:

- Free access to *GENETICS* is provided as a benefit to all GSA members;
- All *GENETICS* content is made freely available to all 12 months after publication; the journal half-life<sup>2</sup> is greater than ten years, illustrating that the journal use extends well beyond the short-term;
- *GENETICS*' complete archive dating to 1916 is online at Stanford University's HighWire Press, and all content is free 12-months after publication;
- *GENETICS* advance online publication allows research articles to be published online (ahead of final electronic publication) within two weeks of acceptance, and all articles are free-to-read; these advance online articles are also deposited into PubMed Central;
- *G3* is fully open-access and allows authors to retain copyright via Creative Commons licensing agreement;
- *GENETICS* provides authors with an option of paying a small fee to make their article immediately available free of charge;
- *GENETICS* and *G3* participate in secure archiving programs through LOCKSS (Lots of Copies Keep Stuff Safe);
- *GENETICS* and *G3* have developed a unique feature in publishing that links content in individual articles to the relevant model organism databases (which are generally federally funded), thereby enriching the article content and allowing for direct access to the originally deposited data;
- *GENETICS* and *G3* require all data associated with an article to be available in public databases or published in that article or available as supplemental information hosted on the journal websites;
- *GENETICS* content is currently available in the National Library of Medicine's PubMed/Medline database; all *GENETICS* content is deposited by the GSA into

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<sup>2</sup> Half-life is the median age of articles cited in Thomson Reuters' *Journal Citation Reports*. This means that half of all citations to articles in *GENETICS* are to articles published at least ten years earlier, suggesting that *GENETICS* articles remain useful and highly relevant over time.

PubMed Central within 12 months of article publication, in compliance with the access policy for NIH-supported research;

- *G3* has just received approval for inclusion in PubMed Central and is in the process of its application review with PubMed;
- *GENETICS* and *G3* use Digital Object Identifiers (DOIs) and participate in CrossRef, allowing for article and metadata cross-linking among publishers;
- *GENETICS* and *G3* are COUNTER-compliant, providing librarians with usage statistics and information that allows institutions to understand how their users are accessing *GENETICS* and *G3* content;

GSA has significant concerns about any policy requiring private-sector publishers to allow free access to their journal content with embargo periods determined by the government or hosted on websites other than their own. These requirements are likely to erode peer review and peer editing and negatively affect existing business models (and therefore the viability) of publishers in all sectors of scholarly publishing.

The careful development of these policies requires determining the true extent of the problem: what is the level of public demand for access to the scientific literature, and in what ways is that demand not currently being met? If the problem is such that a broad-based federal policy is needed to address it, care must be taken to craft a procedure that will meet public demand while ensuring that scientific publishing will not only survive, but thrive in a way that allows continued innovation in publishing and continued dissemination and promotion of scientific research.

Perhaps even more important than providing a mechanism for reviewing and disseminating research articles, scholarly journals provide an essential service for the discipline: setting the standards of the field. This is done through peer review where the synthesis of the opinions of reviewers provides a consensus view on whether the research is sound and meets the standards for evidence and objectivity. Many journals also ask the question of whether the research advances the field enough to justify readers' limited attention. For journals like *GENETICS* and *G3* sponsored by scientific societies, these decisions are made by practicing scientists, the authors' peers, because they are uniquely qualified to set the standards of the field. Although peer reviewers and peer editors generally offer their service without compensation, they rely upon editorial support provided by professional societies and their staff. That support, which has real and legitimate costs, enables for what is perhaps the most important value that scholarly journals provide: **expert and judicious setting of the standards of the field.**

GSA's responses to the questions posed by OSTP relate primarily to the needs of the GSA membership and communities we serve and are not meant to be comprehensive of all aspects of scholarly publishing nor to represent the viewpoints of other organizations or publishers.

(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?

Our journals—and many others—include articles based on results from federally funded scientific research and those funded from other sources. *GENETICS* and *G3* provide GSA with a source of revenue to provide service to our members and the entire genetics community in facilitating communication about genetics research and education. **If this revenue source is upset by government mandates on publishers, it will severely alter the services GSA can provide to enrich the genetics community and will jeopardize the future of scholarly publishing in our discipline.**

Since the GSA membership includes the genetics research and education community in all 50 states and around the world, the Society's policies and priorities represent the needs of the professional community of geneticists. As such, our subscriptions, fees, and policies—including those with regard to access to journal content—have been developed to best serve the needs of the genetics community, those scientists who publish in our journals and rely upon the work published by others.

While federal funding for research is critical to the production and analysis of research data, final publication of these results in scholarly journals such as *GENETICS* and *G3* incorporates a significant amount of additional time, work, technology, and community engagement that defines today's state-of-the-art publishing environment. Any claim that federal funding "pays for" the content of *GENETICS* ignores the cost and added value of the robust peer reviewing, editing, and publishing processes and other added-value services that publishers like GSA provide.

Moreover, **revenue recovered from journal subscriptions enables GSA to drive further innovation in the field of scholarly publishing.** For this reason, the development and implementation of any new requirements imposed on publishers (including embargo or access policies) must be done with care, based on sound empirical evidence that such a policy is truly needed or desired by taxpayers—and not already available in other venues.

*GENETICS'* readership and usage data indicate that the journal is well-read and well-accessed by our core audience, which includes genetics and genomics scientists and researchers, the vast majority of whom have access either through an institutional subscription or through their own GSA membership.

Because of *GENETICS'* excellent reputation and penetration within the U.S. scientific community, increased readership for *GENETICS* and *G3* will likely occur primarily in international markets. We are currently working to promote the journals in those markets and to increase *GENETICS'* institutional subscriber base around the world, maximizing the contributions of the global community to the work of GSA. Together, this suggests that

**expanded public access to *GENETICS* content is not needed for the U.S. research community**—as most already have access—but would be providing free access to scientists outside of the United States who would otherwise be willing to pay.

GSA believes that **economic growth and scientific productivity are best served through the federal government's investing in scientific research** through grants and funding, enabling the scientific community to answer questions and enhance understanding that is worthy of publication in scholarly journals. We believe that the publication and dissemination of research articles is best left to a free market and to the publishers who invest a considerable amount of time and resources in their operations, meeting the needs of scientists within the discipline.

(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?

**GSA believes that intellectual property interests are best left to individual publishers, authors, and their institutions, similar to patent rights.** The federal government's role is best left to enforcing existing copyright laws. The GSA journals support two forms of copyright, leaving it up to authors to determine which best meets the need for a particular article. With *G3*, authors retain copyright through the use of a Creative Commons License. With *GENETICS*, GSA has a generous policy that allows authors the reuse of all or part of their research in other forms, and permits other publishers to use or reuse all or part of the articles in re-published form for books, journal articles, educational materials, and other publications.

(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

GSA supports a decentralized approach for managing public access to peer-reviewed scholarly publications that result from federally funded research. It is critical that there be a **single host for the final version of record for journal articles**, and we believe that the repository should most naturally be the copyright holder and publisher, i.e., the journal. This canonical version of the article should be the final published version, and only the publisher is in a position to provide access to that article. The final published version has had value added by the publisher, including editing, copy-editing, layout, table and figure work, the addition of technological features such as links to gene databases (see below), and other resources. Moreover, only the publisher is in a position to ensure that any errata or corrigenda are appropriately housed with the originally published article. Duplicating the record in a centralized database runs the risk of having the so-called “public” and

“official” versions differing, causing confusion within the community as to which article is the “correct” version.

As described in response to question 5 below, PubMed and Pub Med Central already provides access to scholarly articles, enabling researchers to find desired publications regardless of where the articles themselves are housed. In addition, a growing collection of private and public-private resources (including Google, Google Scholar, Scopus, Web of Science, HighWire Press, and other databases—as well as CLOCKSS, LOCKSS, and Portico for archiving purposes) has proven effective for the GSA journals.

GSA opposes the government’s gaining custody of our journal content and sees no reason why this would be necessary. To promote economic efficiency and avoid duplication of efforts by the government, readers should be directed to the version of record on the publisher’s website. The GSA encourages the government to work with scholarly publishers to provide links to the articles on the publisher’s website, as well as to provide usage statistics on article usage in PubMed Central. Similarly, we hope that the government would not expend the considerable costs and resources to duplicate existing archives held by individual journals and publishers.

(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?

GSA and many other publishers have been strong supporters of resources that make scholarly publications more easily accessible and have relationships with many content aggregators to promote access to our journal contents. In general, all **publishers value both access to and a secure archive of their journals and are committed to those efforts.**

Successful publishing industry-led initiatives such as CrossRef, Portico, LOCKSS, and CLOCKSS are examples of effective collaborations that foster innovative advances in archiving and retrieval. Similar efforts continue to improve discoverability and the ability of researchers to “mine” published data, as illustrated by Google and Google Scholar, and the GSA’s own partnerships with model organism databases like WormBase, FlyBase, and the *Saccharomyces* Genome Database (see below). Data formats and metadata specifications for interoperability and preservation change rapidly, as illustrated by the changes over the past ten years, and a high-degree of publisher agility is required.

(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?

Scholarly publishers have invested considerable resources to encourage search and discovery of their journal articles, with support from existing federal investment in products such as PubMed and PubMed Central. GSA believes that the private sector is best equipped to develop additional search, discovery, and analysis tools as such needs will undoubtedly need to be tailored to the needs of specific communities or areas of research—and will continue to evolve rapidly. Moreover, innovations such as Google Scholar demonstrate the value of private investment in these areas, and Google and Google Scholar provide the majority of access events to GSA journals.

GSA believes that **scholarly publishers drive the development of new technologies for delivering content and reaching readers**. These technological developments have transformed the traditional research “paper” into a multi-media product that may include significant supplemental material such as extensive information on methods, additional data, video clips, figures that can be downloaded as PowerPoint slides for teaching, and links to external sources.

With GSA’s close connection to the consumers of our journal content, the Society is in a good position to understand the metadata needs of those who are browsing and reading journal articles, noting that such metadata is likely discipline-specific. Therefore, it is beyond the scope of this report or of the GSA’s knowledge base to reveal or recommend metadata that would ensure effective search across all disciplines. Within our community, however, researchers value seamless links between scholarly publications and the annotated and curated genetic research data on which those articles are based. That is why GSA developed the capacity for readers to click on a gene name in a *GENETICS* article and land on the corresponding gene map in a database.

The development of this technological innovation involved hundreds of hours of work on the part of *GENETICS* staff and editors, the staff at the model organism databases, and HighWire Press, the online host for *GENETICS*. This kind of investment of time and financial support is illustrative of the value of scholarly publishers to the research enterprise and the commitment of scholarly publishers to serving the needs of our readership. **GSA would be unable to innovate and provide such value-added services without the revenue from the journal’s consumers**, who are willing to pay for such resources without the need for government support.

|                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries? |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The primary scientific literature is often highly technical and specific and generally not understandable to a general audience. **Enabling public access will, thus, generally not advance public knowledge or understanding of the findings published in scholarly publications**. Federal agencies would be more effective at providing public access to scientific results by seeding the efforts of both the public and private sectors to maximize the benefit of public access to federally funded research, undertaking public awareness

campaigns that explain the results of research in ways that lay people can access, understand, and benefit.

The GSA journals, for example, are taking steps to ensure that findings published in *GENETICS* and *G3* are written in language accessible to a broad community. We also seek to reach those beyond the immediate research community through the monthly publication and distribution of highlights, which are available without subscription, for articles in *GENETICS*. GSA also features articles of particular interest and relevance to public concerns with press releases and notifications on the Society website and social networking platforms, among other mechanisms, to reach as broad an audience as possible. In fact, we are especially interested in and committed to explaining the relevance of articles published in *GENETICS* and *G3* to as wide an audience as possible.

The federal government's investment, again, lies in the research itself, and not in the publications process. **Scholarly publishers—in particular, nonprofit society publishers such as GSA—add value by adding quality.**<sup>3</sup> Publishers provide the infrastructure, staff, and financial support for peer review and peer editing of manuscripts; professional editing of the final version; and the distribution, archiving and promotion of published research findings. Publishers appoint editors and select reviewers who have the appropriate expertise for evaluating submitted manuscripts. Final presentation, including graphic design and content presentation that maximizes search, retrieval, and usability, is handled by the publisher. Publishers such as GSA also seek to enhance dissemination of articles published in our journals, helping the public to access and understand the value of the research without requiring them to read the highly technical original literature.

(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?

While GSA publishes neither books nor conference proceedings, we see little difference in any vehicle for the publishing of original research results. Nonetheless, our comments in this response are focused on peer-reviewed scholarly journals such as *GENETICS* and *G3*.

(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?

GSA believes that the appropriate embargo period varies by discipline and publication, as evidenced by variable half-lives and immediacy indexes across and within disciplines, as

<sup>3</sup> Sally Morris. 2008. What is quality in journals publishing? *Learned Publishing*, 21, 4–6 doi: 10.1087/095315108X248383

noted in the *Journal Citation Reports* published by Thomson Reuters. Therefore, GSA cannot speak in detail to evidenced-based arguments that can be made for delay periods in other disciplines, but rather, only to the embargo period(s) the GSA has determined are best for our own publications and field.

**GSA is committed to providing complete and fast access to its publications, and we have every incentive to move information to publication as quickly as practical—while maintaining rigorous peer review and peer editing and the high standards that define our journals.** The sooner information is made available, the sooner others can evaluate and build upon the work described in the publication. Each GSA journal has a business model based upon careful consideration by our scientist Board of Directors and Publications Committee, in accordance with the GSA's mission and vision in service to its members and the genetics community.

Manuscripts accepted for publication in *GENETICS* are published online early and are free to read within two weeks of acceptance. After final online publication, each issue is embargoed for 12 months. This embargo period allows *GENETICS* to offer a fair price and to retain its subscription base, which is critical to its current and future success, while at the same time enabling the Society to recover some of the costs invested in the publication process. This model also enables the Society and the journals to remain agile as we explore continued ways to serve our authors, readers, and institutional subscribers.

*G3: Genes/Genomes/Genetics*, GSA's fully open-access journal first published in June 2011, provides free access to all its articles immediately upon publication each month.

GSA feels that the government's modification of its current public access policy or mandating a specific embargo period has the **potential to threaten the subscription base of many publishers** (including GSA), as institutional subscriptions may erode with mandatory embargo periods shorter than 12 months. The impact could be far-reaching and would likely have an especially catastrophic effect on small- and mid-sized scholarly publishers who do not have the profit margins to absorb such revenue decreases or to generate revenue from other sources. It also has the potential to **substantially increase page charges for authors, thereby reducing the funds available for conducting the research itself**. Potentially, the scholarly publishing industry (and, importantly, the peer-review and peer-editing system as it exists today) could suffer irreparable harm.

The GSA's own research (including interviews with librarians within the past several years) and experience supports the existing 12-month embargo period for *GENETICS*. Anecdotally, a pilot test of a shorter embargo period for the journal (3 months) resulted in a high rate of subscription cancellations, threatening the economic viability of *GENETICS*.

Thank you very much for your consideration of our comments. Please do not hesitate to contact us if we can provide any additional information.

Sincerely,



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January 12, 2012

To: Task Force on Public Access to Scholarly Publications  
National Science and Technology Council (NSTC)  
Office of Science and Technology Policy (OSTP)

***Response to Request for Information:  
Public Access to Peer-Reviewed Scholarly Publications  
Resulting From Federally Funded Research***

Federal Register Volume 76, Number 214 (Friday, November 4, 2011). Notices. Pages 68518-68520. From the Federal Register Online via the Government Printing Office [www.gpo.gov] [FR Doc No: 2011-28623]

**INTRODUCTION**

The subject “Request for Information (RFI)” offered the opportunity for interested individuals and organizations to provide recommendations on approaches for ensuring long-term stewardship and broad public access to the peer-reviewed scholarly publications that result from federally funded scientific research. What follows are the recommendations of the Editor-in-Chief of the Acoustical Society of America (ASA). These resulted from extended discussions with various members of the Society. However, because of the desire to meet the extended submission deadline of January 12, it was not possible to have a formal vote by the Society in regard to these recommendations, so these recommendations should be properly regarded as recommendations by an individual rather than for an organization. However, it is the sense of the present author, who has been a member of the Society for 50 years, that the opinions expressed here are shared by the majority of the Society’s members.

The Acoustical Society of America is a not-for-profit scholarly organization (a professional organization) of individuals interested in acoustics, and its stated mission is “to increase and diffuse the knowledge of acoustics and to promote its practical applications.” The Society was founded in 1929 and it presently has about 7000 members. Its premier journal, *The Journal of the Acoustical Society of America* was started the same year. The *Journal* presently publishes about 900 peer-reviewed research articles per year. The number of pages published per year is of the order of 9000.

The entire journal dating back to the first volume is now available online. A substantial portion of its articles, especially the section *JASA Express Letters*, can be downloaded at no cost by anyone in the world. Accessibility to the rest of the articles is not regarded by the Society as a substantial problem because the bulk of the potential readers are either members or the Society or else affiliated with an institution that subscribes to the *Journal*. The membership dues are modest and all members have online access to the entire journal, going back to 1929. The dues for students and persons living in developing countries are only \$45. For other individuals, dues are set at \$95 per year for the first five years, and thereafter at \$115. The majority of the institutional subscribers receive the print edition as well as unlimited online access by all the persons affiliated with the institution. The cost of institutional subscription amounts to about 24 cents per printed (two-column) page, which is comparable to what is the cost per page of typical specialized monographs on comparable topics.

For further information about the Acoustical Society of America, one should visit the web site

<http://acousticalsociety.org/>

A substantial minority of the Society's members conduct research with some support from the United States government, and the Society depends critically on whether those members choose to publish papers reporting their research in the Society's publications. If a substantial minority of the members were forced to publish their papers elsewhere it would substantially reduce the journal's reputation for being the one place to go to read the current best work in acoustics and it would substantially reduce the value of membership in the Acoustical Society of America.

#### **RESPONSE TO QUESTION 1**

*Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

One suggestion is that various agencies should publish periodic documents that summarize the recent results of federally funded research and which cite primary sources where the readers can find more information. An example that comes to mind is *NASA Tech Briefs*. Subscriptions are free, but are apparently available only to persons in companies that are potential buyers of services and items advertised in the magazine. Consequently, there is some question as to whether it is truly publicly accessible. However, the present writer has a strong impression that *NASA Tech Briefs* has contributed to the growth of the economy. Many of the ideas and technologies developed during the U. S. space program, for example, have had sizable impact on other areas of our society.

The questions as posed do not make a distinction among the various possibilities that might be associated with the terms and phrases: "access," "analysis," and "peer-reviewed publications." There is a tremendous number of publications in the sciences, and most of the major libraries can only afford to subscribe to a fraction of them. Most of the published articles have only been cursorily analyzed by the scientific community and find few actual readers. While many journals claim that the articles within them have been peer-reviewed, there are real questions as to what this means for various journals. One suggestion is that the various agencies should support the submission of articles based on federally supported research to journals associated with major professional societies. Such journals are more likely to be found in libraries and they will also be available to the members of the societies, so their degree of access will be much higher. Also, the quality of peer-review will be much higher. If a scientist or researcher is asked to review a paper submitted to a for-profit journal of recent vintage, the person will be much more likely to decline doing the review, as distinct from a request from a leading professional society for which the scientist happens to be a member. There

are of course long-established reputable journals that are published by commercial publishers, and many scientists are willing to review (without compensation) for these journals because of their long-standing reputation for quality and because of the perception that they are providing a substantial service to the scientific community. The concern that many scientists have is that the newly created thrust by some individuals within the federal government toward some comprehensive concept of open access will encourage the proliferation of for-profit journals which are of a “vanity press” nature and that this will be of considerable detriment to the orderly archiving and evaluation of scientific research.

It is suspected that the federal government may not want to spend a disproportionate additional amount of money on making the results of federally sponsored research fully publicly accessible. For the most part, the present system, at least as far as publications under the purview of professional societies are concerned, is working fairly well. The professional societies collect dues from their members and these are used to support giving as much access to as many people as practicable for their publications. The dues cannot pay for everything, so some extra monies are collected from the authors and from the institutions which subscribe to their journals. The revenues are sufficient so that the journals can also publish articles written by authors who do not have available funds to help with publication costs. Such authors constitute the majority of the authors who submit papers to the *Journal of the Acoustical Society of America*. Also, the present writer believes that the subscriptions to professional society journals are only a small part of the expenditures made by most institutional libraries. The major portion of the money goes to subscriptions to journals published by commercial organizations not associated with any professional society. Most societies of which the present writer and his colleagues are aware are continually looking for innovative ideas to make their publications more accessible. For example, the American Physical Society has started a new journal *Physical Review X* (author publication fee is \$1500) which is totally open-access. This model, however, cannot work for all authors, only for the minority who have sufficient support to pay the required fees. The Acoustical Society has a journal, *Proceedings of Papers on Acoustics*, which also is totally open-access and which collects no fees from authors.

A major problem is the recent emergence of new open-access journals publications by (start-up?) commercial organizations. There are a very large number of such journals and they are not associated with professional societies. Typically, their editorial boards are either kept secret or composed of persons who have relatively low status within their respective research communities. Members of the Acoustical Society of America are regularly and frequently bombarded by e-mails asking them to apply to be an Editor-in-Chief of a newly started journal, or to serve on the Editorial Board, to submit a paper, or to submit a review paper. This emergence has undoubtedly been partly encouraged by persons in various federal agencies and by staff-members of some institutional libraries who have a high opinion of the sanctity of open-access publication. There is no guarantee that these journals will exist for a reasonable amount of time. What happens if the sponsoring commercial organization should throw in the towel and stop paying for the web-site on which the articles have been posted? What guarantee do the authors have, after paying such fees, that their articles will be noticed by the people they may want to read them? They may be open-access, but that does little good if no one notices them.

The questions in this category apparently ignored the fact that much research is not funded by the federal government. Many persons conduct research simply because it is their way of life (a “way to spend their days”), and they will continue to do it with or without any external support. In some cases, they are mildly encouraged by their employers to publish research articles, but support for such publication is not feasible within the employer’s budget. A cursory examination of recent issues of the *Journal of the Acoustical Society of America* indicates that only about 20% of the research articles acknowledge some support from the U. S. government. In many cases, the acknowledgements imply that the research was only supported in part, not in its entirety, by the federal government. There

are no discernible differences in quality in the articles where support is acknowledged with those where it is not acknowledged. Consequently, it would seem awkward that the Acoustical Society should make a distinction between supported and non-supported research, especially given its mission statement “to increase and diffuse the knowledge of acoustics and to promote its practical applications.” However, the present write has a good

Possibly, one of the questions in this category might be rephrased to one such as “Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications?” without regard to just what fraction of the material in the publications results from federal funding. Ideally, all research should be as publicly accessible as practicable, and available for growing the economy and maximizing U. S. economic growth.

One suggestion is that the government subsidize the publication of abstract journals which include abstracts written by scientists with high reputation who give frank assessments of recently published research.

To a certain extent, in the present system of publication of scientific work, the authors themselves control the availability of the publications. If one submits a paper to a journal with a wide circulation, one that is widely read and noticed, then accessibility is certainly guaranteed. If one submits a paper to a lesser known journal, one for which the bulk of the scientific community has little respect, the paper will be de facto inaccessible. It doesn't matter that a knowledgeable person can navigate to some website and download the paper at no cost. The effort involved in conjunction with the low expectation for getting something worth reading will deter most relevant people from doing this.

This leads to the suggestion that the responsible scientists who guide the funding of federally-supported research take tangible steps to encourage the publication of the resulting articles in venues where they are more likely to have the greater impact. It is of secondary importance whether the article can be obtained immediately for free or purchased for a very modest fee. Just what is a modest fee may be debatable, but one would certainly expect that a fee of, say, 20 cents per printed page would be reasonable. However, one major difficulty is that the reader may not know what he or she is getting for the investment. If one should do an internet search and come up with a list of, say, 100 potentially useful articles, each of, say, 10 pages, then the cost of downloading all of them would be prohibitive for most persons. Consequently, there might need to be some oversight, some preview options, some external review comments, so that the buyers would have a good idea of what they are paying for.

## **RESPONSE TO QUESTION 2**

*What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

If the research is genuinely and totally funded by the Federal government, then a reasonable view is that the ideas and results should be in the public domain. If a third party organization, such as a professional society, invests money and volunteer time on the part of its members in the assessment, rewriting, revising, editing, vetting, and publication of a scholarly work resulting from federal funding, then the value of its contribution should be recognized. It does not seem proper that any organization should make huge profits off of such activities, but the system should be organized so that the value of such efforts are recognized and are economically viable. If the government should

choose to encourage the researchers it funds to publish their work in a rough format with no added value from the scholarly publishing community, they would be doing a great disservice to the cause of the orderly dissemination of scientific work.

In regard to policies that should not be adopted, one is that of allowing third parties without permission to republish work that has been published with added value by publishers. This stipulation should be made providing the originally published work is truly accessible. If the work is inaccessible, then some allowances might be made. If a third party wants to publish the original work without any additional valued-added content and if the work was fully supported by the government, then this might be allowed, given the permission of the government.

### **RESPONSE TO QUESTION 3**

*What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

There are very good reasons for the government to have a strong management system to insure the public access to all research that has been published in U. S. government reports. (This is, of course, subject to the usual caveats about national security and other sensitive topics.) This is distinct from research carried out at non-governmental institutions and which has been published in peer-reviewed non-governmental publications. The perception on the part of many researchers outside the government is that the government has not done nearly as much as it should have in this respect. Discovering the existence of such governmental reports is typically not easy, the metadata is often not especially informative, and the prospective reader is asked to pay a relatively healthy fee to download a poor pdf copy of a scan of the original published report. This is possibly an area that should be given the highest priority.

A concern with the possibility of the government managing only publications that result from federally funded research is that it would discriminate against work that is not federally funded. Most of the latter is not proprietary and the authors want their work to be read and used. As mentioned above, much scientific work is not federally-funded, and the work that is federally-funded is not necessarily superior to that which is not. It would seem the height of arrogance for any federal agency to presume that the only research in its purview that is worth touting is that which it supports. If there are some areas of research (such as some which concern health and public policy) which the government deems meritorious of extraordinary accessibility to the general public, not just the research community, then the government should make efforts to see that all research articles exceeding some threshold of quality should be accessible, not just those resulting from Federal support.

A good model of what can and should be done is the arXiv.org website housed by the Cornell University Library and which is supported by a large number of institutions. It was certainly initially supported, at Los Alamos, by the federal government, but the current extent of its federal support is not known. As it presently is configured, it allows free uploading of preprint articles in the physical sciences, without regard to the sources of support of the research.

However, the recent proliferation of literature requires that some steps be made to organize the literature, also to assess its relative values, and to bring it to the attention of people who might make use of it. The government has done laudatory things in this respect in the past, and it may want to fund or partially support activities along these lines. These present commercial search engines, such

as Google Scholar, are inadequate for the task, so some publicly funded assistance or direct federal involvement could be very valuable.

Maintaining long-term stewardship can be very difficult if the the number of private sources is too high. One suggestion is that the government institute a certification program for such private sources. This would not mean that individuals should be forced to publish with sources that are certified, but some mild encouragement might be applied to persons who receive grants or contracts from federal agencies. This is something entirely different than the perceived thrust where agencies force people to publish only in totally open-access journals, such as the recently created vanity-press journals, at the detriment of traditional publishers which need to ask for subscription fees from institutions.

#### **RESPONSE TO QUESTION 4**

*Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

For answers to this question, one probably should look to other countries and to earlier times. The proper role models are the professional societies, which are the chief advocates and overseers of standards in the publication of research results. Typically, such societies strongly encourage innovation in accessibility and interoperability. In some countries, and especially so in former times, professional societies were largely supported by the governments of the countries in which the membership resided. This does not seem to be the case for professional societies in the United States in the present age. For example, the Acoustical Society of America has no tangible ties with the United States government, and it also has many members who live outside of the United States. There are a few instances where various government agencies, such as NASA, the Office of Naval Research, and the Department of Transportation, have partially supported specific tasks of the Society, but the occasions have been rare and the extent of support compared to the overall operational budget has been small, although nevertheless highly appreciated.

There is considerable concern as to the reliability of the government in regard to long-term stewardship. This is a key issue. Governmental priorities change frequently, and the only substantial commitment is that which is actually in the U. S. constitution. Long-established professional societies and long-established major research universities provide a better hope for long-term stewardship. If the government helps to support such, it would be greatly appreciated, but the stewardship will continue on in any event.

#### **RESPONSE TO QUESTION 5**

*What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

A major block to research across disciplines and archives is the use of jargon and acronyms, and also the lack of clear writing. The *Journal of the Acoustical Society of America* wages a constant battle with authors who insist on using acronyms which would be completely unfamiliar to persons outside a narrow subfield. Doing this apparently gives the authors a sense of superiority and also helps to keep outsiders from treading on their turf. So, a major step is for Federal agencies,

publishers, and professional societies is to encourage clear writing that is as widely readable as practicable. This means, in particular, that the peer-review process should be broadened to insure this.

The idea of a centralized system of metadata may be inoperable, given the great diversity among the various scientific disciplines. There are differences in the citation formats and metadata from the existing archival publishers. In many cases, the formats are driven by the demands of the subject matter and it would be a mistake to impose a common format on all publishers.

While some might argue that core metadata consists solely of distinct experimental results, it also consists of techniques, procedures, mathematical relations, and, most importantly, ideas. It may be necessary to have third parties actually read each paper and then rewrite them so as to succinctly bring out the core metadata in a form that would be more readily palatable to a wider readership. This would be more than just copying the author prepared abstract, and the synopses could be much longer. One of the frustrations that are encountered by journal editors is that few people are willing to step forward and comment on previous published work. Many journals, especially those not associated with professional societies, do not even allow for this possibility. The *Journal of the Acoustical Society of America* allows for submission of “comments papers,” but there are very few submissions in this category. Perhaps one reason is that such authors get neither funding support or recognition. If various interested parties did something proactive, then something positive might come about.

From one aspect, the *NASA Tech Briefs* might be a good role model for how federal agencies might approach this problem. Another role model might be *Mathematical Reviews*, which is published by the American Mathematical Society.

## **RESPONSE TO QUESTION 6**

*How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

One solution is to initiate steps so that those U. S. taxpayers who do not have any direct involvement with major institutions can nevertheless have access to their library resources. Most institutions extend this privilege, possibly for a fee, to their alumni. But, nevertheless, almost all such institutions are major beneficiaries of federal funding. So leverage and possible financial encouragement should be given to them so that they will allow library access, possibly with some constraints against abuse and for a modest fee (to discourage frivolous use of services), to any person who desires it. For the most part, this would mean only online access to the journals to which the institution subscribes.

While timely access to the latest research and to all previous research is essential to the health of the scientific community, it is not at all clear that free and open access to all is uniformly beneficial to the U.S. taxpayers. The cost to the federal government can be contained if it exercises some judgement as to just what should be freely and fully available to the general public. Awardee institutions, scientists, publishers, federal agencies, and libraries operate under very different incentives, and care should be taken that federal policies do not destroy the incentives for any of the essential links that comprise the publication chain.

## RESPONSE TO QUESTION 7

*Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

If the publication is genuinely a book, then it will be primarily of a review and tutorial nature, not the sort of a publication the ordinary results from federal funding. These are typically funded by commercial publishers (such as McGraw-Hill, Wiley, Springer, Elsevier, and many others), and they have to take risks to stay in business. The profits are not enormous, and there seems to be no reasonable way to guarantee the public open access to books. The present system, which seems to work all right, is the interlibrary loan system, whereby every book is in at least one major library, and patrons at other libraries can obtain the book via interlibrary loan.

Conference proceedings are usually not peer-reviewed, at least not in a rigorous sense, and they are viewed by most scientists as being of temporary value. Recently, they seem to all be published as CD-ROMS and their distribution is very small. Most libraries refuse to shelve CD-ROMS, so they are de facto not archival. Perhaps, there could be some system, analogous to arXiv.com mentioned above, whereby authors could post their presentation slides (in ppt or pdf format) on some centralized site. This could prove to be rather expensive, however. The Acoustical Society of America has a reasonable system in its online journal, *Proceedings of Meetings on Acoustics*, where conference proceedings are posted online, fully accessible, at no cost to the authors.

## RESPONSE TO QUESTION 8

*What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?*

The Acoustical Society of America has no objections if pdf's of the articles in its journal are posted on governmental web sites (such as PubMed) or on institutional web sites. There is no specified embargo period, although the official release is usually after six months. All of its articles are copyrighted, and the concern is that third parties may want to collect such articles, republish them, and attempt to sell them for a profit. For various reasons, it is expected that persons will choose to search on the *Journal* first to find them, as the scope of articles on sites such as those mentioned is too broad for a reasonably organized search. There is no indication that this policy has adversely affected the institutional subscriptions to the *Journal of the Acoustical Society of America* or the number of persons who choose to be members of the Society.

## OTHER ITEMS

*Please identify any other items the Task Force might consider for Federal policies related to public access to peer-reviewed scholarly publications resulting from federally supported research.*

The government should be aware that the present system of peer-review, at least for the journals associated with professional societies, derives a considerable benefit from voluntary efforts. It is not clear how the government could insure comparable quality and degree of intelligently-directed access if it did not have the results of such voluntary efforts. The role of the government in funding research is important, but it is far from being the overwhelmingly most important contributor to insuring the actual use of the research. What are perceived as possible governmental actions may run large

risks of cutting off such voluntary efforts. There is of course the valid concern that the public should have access to results of federal-funded research, but the existing enterprise is in effect a partnership in which the end-products, the published peer-reviewed article and its distribution, are contributed to by organizations and persons who are not directly compensated by the government.

The respondent sees no evidence in the various questions that are being asked that the government has any understanding of the threat that is being made to the scientific enterprise by the rise of a vanity press that offers open access publication. The peer review by journals of this sort will probably be meaningless, and there are various accounts (not reproduced here) of instances where authors, to test the system, have submitted purely nonsense papers which have been accepted, providing the authors pay the requisite fees.

The government should also be aware that not everything published in some peer-reviewed journals is in the nature of original research, but is material that nevertheless can benefit the economy. For example, the *Journal of the Acoustical Society of America* continues to publish voluntarily-written reviews of every patent that pertains to acoustics. It also publishes tutorial papers that help the readers to become more fully cognizant with the research results and with the fundamentals of the subject. Then, there are many articles that are intended to improve the teaching of the subject. There are articles which describe the progress in achieving standards for many types of activities which involve acoustics. These do not seem to be things which federal agencies would customarily fund. The present writer thinks that it is important that the primary venue for the publication of scientific work should also contain articles that are intended to help professionals in their work.

One concern mentioned by a reviewer of a draft of this letter is that the thrust towards open access seems to ignore the fact that much federally-funded research is kept from public access because of overly cautious fears that it might benefit potential enemies of the country. Singled out as an example were the overzealous interpretation of the ITAR (International Traffic in Arms Regulations). There are worries that authors receiving federal funding may be choosing not to disseminate information that should be in the public domain due to fear of remote possibilities of the applicability of ITAR and export control regulations. Perhaps a better effort by the government to distinguish among research as to whether it deserves being in the public domain is worth pursuing.

A concern mentioned by another reviewer is that the government does not provide open access to unclassified final reports resulting from sponsored research by some federal agencies. The existence of these reports can be found with some effort, but the obtaining of them usually requires a relatively high fee. One wonders, if the research was supported by the U. S. Taxpayers and if it might have some potential benefits to growing the economy, why it isn't available at substantially lower cost.

Sincerely yours,



Allan D. Pierce  
Editor-in-Chief, ASA



National Center for Atmospheric Research  
NCAR Library  
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Web: <http://www.ucar.edu/library/>

Response to  
Request for Information: Public Access to Peer-Reviewed Scholarly Publications  
Resulting From Federally Funded Research  
Submitted by the University Corporation for Atmospheric Research  
January 2012

**Background:**

The ideal that scientific information should be widely available for free within a reasonable time after its creation has always been the norm in the atmospheric sciences, where progress would be halted without global data. Although the scientific community has always embraced this ideal, changes in the larger landscape of scholarly publishing have made the issues much more complex. Over the past decade, the publishing industry has undergone a significant transformation. The birth of new scientific sub disciplines, growth of interdisciplinary research, and increase in the volume of data being produced have led to a skyrocketing number of scientific journals. Subscription prices are escalating at a rate well beyond the Consumer Price Index. With more journals costing more money, even the best-funded research libraries can no longer count on being able to maintain a complete collection, and smaller libraries have to weigh each acquisition.

In September, 2009, the University Corporation for Atmospheric Research (UCAR) became the first management entity of a Federally Funded Research and Development Center (FFRDC), the National Center for Atmospheric Research (NCAR), to pass an open access mandate, which states that:

“...each employee will provide an electronic copy of the final version of his/her Scholarly Work in an appropriate format at no charge to the NCAR Library.”

It further states:

“The NCAR Library will take reasonable measures to make the Scholarly Works available to the public, including through an open-access repository.”

OpenSky, the new institutional repository serving UCAR and NCAR was launched in September 2010. It was developed in support of the organization’s newly passed open access policy. OpenSky allows people both inside and outside the institution to freely access peer-reviewed publications and other works by

NCAR and UCAR authors. Although not even 2 years old, the impact on the atmospheric science research and education community has been significant. For example, students from our affiliate universities are using OpenSky to access journal articles for a class on the History of Atmospheric Instrumentation. Many of our university members have expressed their appreciation for our policy, as their university libraries cannot afford the journal subscriptions for all of the sub-disciplinary areas of atmospheric science. It is not difficult to conclude that open access has had a positive impact on both education and scholarship in the atmospheric sciences. We therefore are delighted to be able to respond to this Request for Information.

#### Comments:

*(1) Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?*

- NSF and other Federal agencies should follow the policies of the NIH in requiring free and immediate access, with minimal restrictions for reuse, upon publication of federally funded peer-reviewed scholarly articles.
- Federal agencies should support through their grant funds, as a matter of course, publisher fees associated with Open Access.
- Data-mining and text-mining are two potential avenues for economic growth resulting from greater access to scientific results.
  - A specific example of this is to be found in the medical community: as a result of data mining, medical scientists were able to complete the sequencing of the Alzheimer's gene. This finding is leading to increased economic and research activity in the medical and pharmaceutical communities to support both early intervention and a potential cure.
  - Having a corpus of scientific literature available to be mined will spur activity and innovation in computer science, natural language processing, text-mining, software systems for repository development, and new digital preservation services. An example of economic growth in this sector can be found in DuraSpace, which now offers both repository and preservation services.

*(2) What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?*

- The Community should adopt Creative Commons licensing which is flexible and comprehensive enough to offer benefits to scholars, publishers, and the grant funding organizations.
- We understand, as does most of the community, that Open Access is not free. Hence, it would be not desirable for Open Access to be mandated without some consideration of publishing and archiving costs.

*(3) What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?*

- We advocate a decentralized approach to managing public access to federally funded peer-reviewed scholarly publications through the creation of disciplinary repositories. We believe that disciplinary communities are best suited to manage their scholarship, given support for these repositories, and the preservation of their collections.
- These disciplinary repositories should be required to ensure interoperability with allied disciplinary repositories, and to take appropriate measures to ensure long-term preservation.

*(4) Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?*

- Although we support the idea of Public-Private partnerships, we believe additional institutional and disciplinary repositories could better guarantee long term preservation and access to federally funded peer-reviewed scholarship. UCAR/NCAR's OpenSky repository is an example of a successful partnership with professional societies and commercial publishers, providing additional discovery and preservation services to published scholarship.

*(5) What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?*

- Minimal metadata standards and interoperability protocols must be established by the community, and federal agencies can ensure compliance by insisting that adherence to these protocols is a condition of funding to repository developers, either public or private.

*(6) How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?*

- Federal agencies should support legitimate costs for all the stakeholders involved in the creation of peer-reviewed publications that result from federally funded scientific research.
- Federal agencies should also support efforts that generate new and expanded models of publication and their long term preservation, including the economics and scholarly prestige associated with these new models.

*(7) Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?*

- Given the variability between disciplines in terms of scholarly publishing norms, we believe that the individual disciplines are best suited to make determinations regarding the types of additional material that should be included under these recommendations.

*(8) What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?*

- It is our position that there should be no embargo period after publication when Open Access fees have been paid to the publishing agency.

**Summary:**

In conclusion, we urge the development of an equitable and uniform public access policy approach for all major federal research granting agencies. The scientific challenges that we face in the 21<sup>st</sup> century are too great and too urgent for the dominant paradigm in scholarly publishing to continue to be either relevant or realistic.

**For information or questions regarding this submission, contact:**

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January 12, 2012

The American Society for Cell Biology (ASCB) would like to thank the Office of Science and Technology Policy (OSTP) for bringing attention to the important issue of public access to the results of federally funded research. The ASCB is a nonprofit, international scientific society of approximately 9,000 members at leading research institutions, state colleges, undergraduate teaching institutions, and biotechnology companies. The Society's publications include the high-impact monthly research journal *Molecular Biology of the Cell (MBoC)*.

We will comment specifically on questions 3, 6, and 8 of the RFI, based on our experience as a nonprofit scientific publisher.

**(Q3)** A comprehensive and searchable manuscript database will profoundly enhance scientists' research productivity. We believe that the public will be best served if research results are deposited within central interoperable repositories that share common formats and standards, as this will make the data more accessible and more readily integrated with related databases. It will also increase the efficiency and sophistication with which the stored articles can be searched for relevant information. These advantages will significantly increase the value of the information to the scientific community.

PubMed Central provides an efficient and cost-effective model for how such a repository might be structured and managed. The ASCB was one of the first publishers to participate in PubMed Central and we remain a Full Participant. We provide PubMed Central with full text articles from *MBoC* in XML and PDF formats, together with image files. The vendor that hosts *MBoC* online uses files in the same formats, so the files can simply be forwarded to PubMed Central after an issue is published. No additional effort is required on the part of authors or ASCB staff, and there is no additional expense apart from the small fee that the online host charges us to forward the files.

Over 500,000 unique users access the PubMed Central website every day, retrieving approximately one million articles; PubMed Central is clearly increasing public access to the biomedical literature and we are proud to be a partner in this effort.

**(Q6)** The ASCB believes strongly that barriers to scientific communication slow scientific progress. The more widely scientific results are disseminated, the more readily they can be understood, applied, and built upon. The sooner findings are shared, the faster they will lead to new scientific insights and breakthroughs. This conviction has motivated the ASCB, since 2001, to provide free access to all manuscripts submitted to *MBoC* within one week of acceptance and to all copy-edited and finalized research articles two months after their publication. The articles are available both on the journal's website and in the National Library of Medicine's online archive, PubMed Central.

The vast majority of the biomedical research conducted at American universities and colleges is funded by taxpayers. The ASCB believes that taxpayers are best served when all scientists, educators, physicians, and members of the public – including patients and their families – have access to publicly funded research results. So long as significant access barriers remain, taxpayers are not fully benefiting from the work that they fund. With the proliferation of networked technology, we have an unprecedented and cost-effective means to overcome such barriers. It is now possible and practical to offer free access to every potential user. It is incumbent upon us, as scientists and citizens, to take full advantage of this opportunity.

**(Q8)** Some publishers argue that providing free access to their journal's content will catastrophically erode their subscription revenue base. The experience of many successful research journals demonstrates otherwise; these journals make their online content freely available after a short embargo period that protects subscription revenue. For example, as noted above, the content of *MBoC* is free to all after only two months, yet the journal remains not only financially sound, but profitable. This is because libraries represent research scientists, who have a specific need to access research articles promptly after their publication; these researchers cannot wait months for free access. The first few months after an *MBoC* article is published show the greatest activity in terms of online views and downloads of these articles, directly demonstrating the time sensitivity of this information to readers.

Many scientific journals also offer "front matter," such as news features, announcements, and reviews in the same publication as research papers. Since this value-added content is typically not paid for by federal research dollars, publishers would not be required to deposit it for public access. This material is valuable to the reader, adding further to the incentive for institutions and individuals to maintain their subscriptions to scientific journals.

Federally funded research articles should be made freely available as soon as possible so that science and the public benefit from their expanded use and application. At the same time, it is important that nonprofit societies and other publishers generate sufficient revenues to sustain the costs of reviewing and publishing articles. We believe that a six-month embargo period represents a compromise between the financial

requirements of supporting a journal and the need for access to current research.

For the reasons outlined above, the ASCB supports efforts to require that the results of federally funded research be made freely available to the public, in one or more centralized government repositories, no more than six months after they are published.

Sincerely,

A handwritten signature in black ink that reads "Ron Vale". The letters are cursive and fluid.

Ron Vale  
President  
The American Society for Cell Biology

A handwritten signature in black ink that reads "Douglas E. Koshland". The signature is cursive and includes a long, sweeping flourish at the end.

Douglas Koshland  
Chair, Public Policy Committee  
The American Society for Cell Biology



## **Public access to federally funded scholarly publications**

SUBMITTED TO THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY, JANUARY 12, 2012

FOR MORE INFORMATION, CONTACT [HEATHER@ARL.ORG](mailto:HEATHER@ARL.ORG)

### **Introduction**

I'm writing today on behalf of the Scholarly Publishing and Academic Resources Coalition (SPARC) in response to the Office of Science and Technology Policy's Request for Information (RFI) dated November 3, 2011, seeking input on the issue of Public Access to Scholarly Publications resulting from federally funded Research.

SPARC is an international alliance of more than 800 academic and research libraries that promotes expanded sharing of scholarship in the networked digital environment. SPARC believes that wider and faster outputs of the research process increases the impact of research, accelerates the pace of scientific discovery and promotes innovation and increased return on our collective investment in research.

SPARC was formed to act on the library community's desire to ensure that the promise of the Internet to dramatically improve scholarly communication, particularly in the journals marketplace, was realized. It has been an innovative leader in the rapidly expanding international movement to make scholarly communication more responsive to the needs of researchers, students, the academic enterprise, funders, and the public. Its pragmatic agenda focuses on collaborating with other stakeholders to stimulate the emergence of new scholarly communication norms, practices and policies that leverage the networked digital environment to support research and expand the dissemination of research findings.

We appreciate the leadership the Administration has shown in promoting openness in the federal government, and share the belief that policies are needed to implement the principles of transparency, participation, and collaboration, as set forth in the Open Government Directive of 2009. We thank the Office of Science and Technology Policy for convening this substantive discussion on the importance of ensuring broad public access to the results of federally funded research. SPARC shares the Administration's view that enhancing access to this information will promote advances in science and technology, encourage innovative use and application of government-supported research, and fuel commercial development and economic growth.

This RFI was issued in accordance with the America COMPETES Reauthorization Act of 2010, legislation that is aimed at improving the competitiveness of the United States through investment and innovation in research and development. We firmly agree that

an effective government-wide policy to ensure public access to the results of the ~\$60 billion<sup>1</sup> in scientific research conducted annually using public funds is an essential component of achieving the goals of the America COMPETES Act.

We support the establishment of a public-access policy covering all federal agencies that conduct scientific research. To maximize the returns on our nation's investment, such a policy should ensure that all members of the public are able to immediately access and fully reuse digital articles reporting on the results.

SPARC views the successful National Institutes of Health (NIH) Public Access Policy<sup>2</sup> – which requires NIH-funded researchers to make the final authors manuscript freely accessible to the public through the agency's permanent, digital archive (PubMed Central) no later than one year after publication in a peer reviewed journal – as an appropriate baseline policy, with one important modification. To maximize the impact of federally funded research, any government-wide public-access policy must ensure that digital articles reporting on the results can be fully used by all downstream users (scientists, teachers, entrepreneurs, etc.). We support ensuring this through the use of a license that works within the current copyright system that at most requires attribution to the author, such as the Creative Commons Attribution (CC BY) license.

Our responses to the specific questions in the RFI follow below.

**1. Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publicly accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

#### *Encouraging Commercialization*

As noted earlier, this RFI was issued in accordance with the America COMPETES Reauthorization Act of 2010, legislation designed to improve the competitiveness of the United States through investment and innovation in research and development. To compete effectively in a global economy, the U.S. must ensure that it is positioned to translate ideas generated from publicly funded scientific research into new services and products as rapidly as possible.

Articles reporting on the results of publicly funded research are a critical component of our nation's research output. To create the optimal environment to encourage such commercialization, the complete collection of full-text<sup>3</sup> articles reporting on federally funded research should be made immediately, freely available to the public. Members of

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1 <http://scienceprogress.org/2011/07/u-s-scientific-research-and-development-202/>

2 The NIH reports that more than 500,000 unique individual users access the PubMed Central Database daily to view the more than 2 million full text articles it contains.

3 It is important to note that the full text of peer-reviewed articles must be made accessible – not merely abstracts, summaries, or un-peer reviewed grant reports – for the full value of these articles to be leveraged by the public.

the public must also be ensured the rights to fully use these articles (i.e., to text and data mine, compute on, etc.) without commercial restriction. Enabling immediate access and full reuse – a concept known as Open Access<sup>4</sup> – to these articles will accelerate the ability of individuals and companies to construct new services and products, and ensure that the value of the public's investment in this research is fully realized. It will create a business climate where all stakeholders – in both the public and private sector – can incorporate ideas generated from this research into their business development cycles more quickly, speeding the launch of new products, and accelerating the creation of new markets.

There is a substantial body of research that provides evidence of the tangible economic benefits of increased access to this information, specifically in terms of product innovation and increased revenues through sales.<sup>5</sup> It is important to note that the full text of peer-reviewed articles must be made accessible – not merely abstracts, summaries, or un-peer-reviewed grant reports – for the full value of these articles to be leveraged by the public.

Providing fast, barrier-free access to articles allows more users to stay abreast of cutting-edge ideas, and generate new uses and applications for research. This is particularly crucial for startups, and small- and medium-sized businesses which frequently find the cost of accessing these articles (whether through subscriptions or pay-per-view models) prohibitively expensive. In one study examining the ability of such businesses to access scientific articles, over a third of the companies reported they frequently had trouble accessing articles, while an additional 41% reported that they sometimes experienced difficulty.<sup>6</sup>

This lack of access directly impacts these companies' ability to be competitive. One study estimated that, without a mechanism to ensure open access to articles reporting on the results of research, it can take a small business approximately two years longer to be able to incorporate ideas generated from it into their work streams<sup>7</sup> – an unacceptable lag time if the goal is to speed our nations' ability to compete effectively in a global economy.

This research also highlights a key advantage to making articles resulting from federally funded scientific research openly accessible to businesses for commercial use. While academic users of research articles often take a discipline-specific approach, businesses rarely do. Rather, business use of research is often characterized by cross-disciplinary and multidisciplinary work. Subscription costs often present insurmountable barriers for businesses – particularly startups and small businesses – to effectively exploit this research.

The experience of funding agencies (such as the National Institutes of Health) that have implemented a mandatory public-access policy has demonstrated that the public has a deep and abiding interest in articles resulting from publicly funded research, and in the

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4 <http://www.soros.org/openaccess/read>

5 See, for example, Narin et al (1997), Mansfield (1995), Toole (1999), Tijssen (2002), McMillian and Hamilton (2002).

6 Houghton, Swan and Brown (2011)

7 Houghton, Swan and Brown (2011)

creation of tools and analytics that can provide new insights into this research.<sup>8</sup> Their experience has also demonstrated that such policies create opportunities that are complementary to, rather than competitive with, the current journal publishing marketplace. During the nearly four years that the NIH Public Access policy has been in place, the Science, Technology and Medical (STM) journal industry has reported increases in growth and revenues for its subscription access journals.<sup>9</sup> We know of no data that has been reported by any publisher indicating that they have been negatively financially impacted by the policy.

Over the same time period, a robust new market of open-access journals – journals that make their content freely available to all users, with no restrictions for reuse other than appropriate attribution to the author – has also flourished. More than 7,300 open-access journals are currently being published in a broad spectrum of disciplines.<sup>10</sup> Innovative companies, such as the U.S.-based Public Library of Science (PLOS), have lead the way in demonstrating the financial viability – and desirability – of this new publishing model. The successful establishment of the innovative and profitable PLOS One journal, now the single largest scientific journal published in the world,<sup>11</sup> quickly spurred the introduction of similar products by both for profit and non-profit publishers.

In fact, the majority of large commercial publishing companies have moved rapidly to invest in the development of their own open-access journal publishing programs, with major players such as Springer, Wiley, Sage, Nature, and Taylor and Francis all rolling out new open-access options over the past several years. The growth of this new market segment has been so dramatic that a new trade association, the Open Access Scholarly Publishers Association (OASPA) has now been established to help promote its further development.

The emergence of this growing collection of openly accessible publications has already begun to spur development of new tools and services. Opportunities abound for innovation in search, data and text mining, current awareness, integration of data, impact measurement, translations, indexing, recommendations and summarizing. Mendeley, a company launched in 2009, offers integrated academic search and peer recommendations entirely built on a collection of open-access papers. This rapidly growing company already boasts a user base number over one million individuals. Companies that build applications that mine publication databases and produce meta-analyses and visualization of the pattern of scientific results from multiple studies (such as Pub Gene and BioCreative) are also benefiting from availability of more open publications.

Similarly, companies such as iParadigm, which builds tools used to detect plagiarism, routinely mine open-access databases – including PubMed Central – as one of their primary resources to power their iThenticate tool.

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8 <http://olpa.od.nih.gov/hearings/111/session2/Testimonies/PublicAccess.pdf>

9 [http://www.stm-assoc.org/wp-content/uploads/outsell\\_december\\_2011\\_large.jpg](http://www.stm-assoc.org/wp-content/uploads/outsell_december_2011_large.jpg), STM Publishing News, <http://www.stm-publishing.com/?p=722>

10 <http://www.doaj.org>

11 [http://en.wikipedia.org/wiki/PLOS\\_ONE](http://en.wikipedia.org/wiki/PLOS_ONE)

The establishment of a government-wide public-access policy for articles generated by federal science agencies other than the NIH will help further fuel development of this burgeoning new market area. Far from threatening the publishing industry, publishers are well positioned to lead the development of many of these new services.

While creating new markets and business models in the publishing industry is one important outcome of a public-access policy, it is important to remember that it is part of a larger goal: to encourage the use of publicly funded research to spur increased commercialization in other business sectors. Creating a government-wide policy that results in an openly accessible database (or set of databases) of publicly funded articles will provide opportunities for companies of all kinds to build on this information, in a manner similar to services that have been built on other public data, like that generated by the National Weather Service. An effective policy will encourage additional private investment in IT to capitalize on a government resource, a proven strong point in the U.S. economy.

For many industries (such as the biotechnology and pharmaceutical industries) the ability to interact with leading-edge research results is part of the lifeblood of the company. They (and their investors) count on these resources to be able to deploy a research and development strategy that keeps them on the cutting edge of new ideas and knowledge, so that they can translate these ideas quickly into marketable products and services. A growing body of evidence demonstrates that the pace and volume of commercialization is markedly increased with access to a database of openly accessible – and fully reusable – content, than with access to one that applies access or use restrictions.

For example, a recent study compared the commercial outputs deriving from the openly accessible Human Genome Project database versus the restricted access Celera genome database. The study showed that the number of products (specifically, gene-based diagnostic tests) developed from the open Human Genome database was approximately 30% higher than from the restricted access Celera database. Perhaps most notably, the study also found that this commercial advantage persisted over time, even after access and usage restrictions were lifted from the Celera database.<sup>12</sup>

This finding is supported in the 2011 report "Benefits to the Private Sector of Open Access to Higher Education and Scholarly research," an extensive examination of the potential impact of open access on businesses by the Joint Information Systems Committee (JISC) in the U.K.<sup>13</sup> The authors examined how a government policy supporting open access to research articles reporting on publicly funded science might affect companies of various sizes in a wide range of disciplines – from the pharmaceutical powerhouse GlaxoSmithKline to Rolls Royce, to smaller microelectronic companies and architecture firms. Positive impacts reported centered first and foremost on the (not insignificant) time and cost savings to the companies in time spent searching for relevant articles, and constructing workarounds to pay walls or copyright restrictions. However, many of the business also reported specific examples that illustrate potential wider benefits of open access. These included:

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12 Intellectual Property Rights and Innovation: Evidence from the Human Genome Project, Heidi Williams  
13 [http://open-access.org.uk/wp-content/uploads/2011/10/OAIG\\_Benefits\\_OA\\_PrivateSector.pdf](http://open-access.org.uk/wp-content/uploads/2011/10/OAIG_Benefits_OA_PrivateSector.pdf)

- the location of previously unknown experts or information in unrelated disciplines which lead to breakthroughs in new product or service developments,
- the development of new research and business areas previously not considered viable, and
- the establishment of new partnerships with universities housing open-access repositories, among others.

#### *Improving Scientific Productivity*

Besides providing an environment in which commercialization can be optimized, ensuring full open access to articles reporting on the results of publicly funded research can also play an important role in improving scientific productivity. To do this, we have to move away from thinking about access to articles as simply something considered at the end of the research process. Rather, ensuring the ultimate accessibility and utility of articles is a critical part of the design of the research process, and should be taken into account at the start. This reflects an important reality in scholarly research: that the work is not complete until the results have been fully communicated and are openly available for others to build upon. Public-access policies can play a crucial role in ensuring that our nation's scientific research infrastructure is designed to optimize the accessibility and utility of these articles from outset, amplifying all of the desired outcomes from publicly funded research.

The research community has long recognized the opportunity that providing immediate, barrier-free, online access presents to researchers to work faster, by enabling them to get to research articles and incorporate new findings into their research more rapidly. In biomedical disciplines, for example, the need to rapidly collect, evaluate and understand the work of colleagues is readily apparent. In 2009, the very immediate public health threat presented by the influenza virus (H1N1) highlighted the need for the rapid exchange of scientific results and ideas in this arena. Finding traditional journal channels inadequate to the task, the community of expert influenza researchers self-organized, and created a new, open-access online resource for the immediate, open communication and discussion of data and ideas in the field, PLoS Currents: Influenza.<sup>14</sup> This new open-access resource quickly gained the support of the community, and rapidly evolved into a crucial piece of the influenza research landscape.

Ensuring open access to scientific articles can also help scientists to incorporate more information into their work more efficiently. As the amount of digital information continues to expand at a breakneck speed, it is crucial for researchers to be able use new tools to access, read, and understand a larger amount of information in a shorter amount of time. One of the most exciting aspects of enabling an open-access environment is that it provides a research infrastructure in which computers are fully enabled as new category of reader. Machines can help researchers work much more efficiently, powering through huge numbers of digital articles that a human reader alone has no possibility of digesting.

With the continued increase in papers generated from scientific research, enabling computers in this way is an essential element in improving scientific productivity.

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<sup>14</sup> <http://knol.google.com/k/plos-currents-influenza>

Consider the case of biomedicine – there are currently more than 19 million citations and abstracts covered by the National Library of Medicine's search engine, PubMed. These include ~830,000 articles published in 2009, up from 814,000 in 2008 and 772,000 in 2007.<sup>15</sup> The growth rate gives no indications of slowing, particularly as emerging economies like India, China and Brazil continue to accelerate their research outputs.

An open-access environment also allows researchers to employ new semantic and computational tools that can help scientists to contextualize ideas contained in papers, identifying new relationships and significantly expanding the breadth of research threads. Studies have demonstrated that open access to research may contribute to the exploration and creation of novel research lines, increasing the diversity of experimentation that follows from a single idea.<sup>16</sup> This is key in accelerating discovery, as progress in science is not a linear function.

In Alzheimer's research, for instance, scientists can be overwhelmed by the sheer volume of papers on the disease. It is difficult to keep up with the volume, and to accurately assess whether a new hypothesis is consistent with the existing literature. This led to the creation of tools such as the Semantic Web Applications in Neuromedicine (SWAN), a new tool designed to help researchers locate the papers most relevant to their interests, and uncover connections that might not otherwise be obvious – as well as to test and generate new hypotheses.

SWAN is a curated, online repository of hypotheses on Alzheimer's research derived from published articles, and provides a visual, color-coded display of the relationships between the hypotheses, highlighting overlaps, agreements, and conflict. Researchers have noted that it helps them to advanced their research – not only helping to focus it in a certain direction, but also to broaden it to include others.<sup>17</sup> Ensuring that these tools can fully function, using the full text of papers reporting on the results of publicly funded research, would greatly enhance the value of the research to the public, and significantly enhance the productivity of the research community.

A government-wide policy that facilitates the creation of an open-access environment will also allow – and encourage – more people to participate in the scientific research process at many levels. Researchers in a variety of disciplines are already using open-access environments (for both data and publications) to help them expand their pool of collaborators in specific research areas, as well as to help create new pathways to solutions.

In another example from the field of Alzheimer's research, experts (led by Neil Buckholtz, chief of the Dementias of Aging Branch of the Division of Neuroscience at the U.S. National Institute on Aging, and Dr. William Potter, a neuroscientist at Eli Lilly) established the Alzheimer's Disease Neuroimaging Initiative (ADNI), a novel, public-private collaboration that posts all of its data on Alzheimer's on an open public Web site. ADNI has made thousands of brain scan images and clinical and neuropsychological data

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15 <http://www.nature.com/news/2010/100127/full/463416a.html>

16 Murray et al, "Of Mice and Academics" <http://www.nber.org/papers/w14819>

17 Mureson, <http://www.nature.com/news/2010/100127/full/463416a.html>

available to researchers around the world, and has generated a wealth of new research papers, as well as more than 100 new studies testing drugs that may slow or stop the disease.<sup>18</sup> The ADNI model is already being replicated other areas, most notably in Parkinson's disease research.<sup>19</sup>

Along with increasing the sheer number of participants, an open-access research environment also increases the diversity of participants in the research process. It helps to promote access and reuse of information by researchers in loosely related (or even unrelated) fields that might not otherwise have access to the full corpus of research articles. This increases the value of our scientific research investment, by increasing the efficacy of scientific discovery.

For example, one study by Lakhani et al. measured the impact that reaching out to communities of researchers beyond a primary research domain had on research problem-solving. They found that the inclusion of researchers from outside fields resulted in their ability solve one third more problems than experienced R&D firms were able to solve on their own.<sup>20</sup>

This diversity of participants also translates into increased opportunities for collaboration with entire communities who have a stake in the outcome of research – such as the patient's advocacy community. Providing immediate, free access to articles that report on the latest results of publicly funded research can facilitate a fundamental change in the way stakeholders – parents, providers, and advocates – are included in the discovery process.

In the Autism community, Sophia Colamarino (Stanford University Medical School, and former Vice President for Research at Autism Speaks) has spoken eloquently on the patient advocacy and researcher funding perspectives, pointing out why public access is specifically important for patient groups. She notes that, because there is no routine treatment for Autism, families are routinely responsible for learning about therapies and treatments that may be appropriate for them. She points out that these families consistently seek reliable information, and that they are sophisticated in their ability to read and interpret scientific literature.

She further notes that her experience has shown that while families are inundated with information from a variety of sources, what is most easily available may not always be credible. Because of the barriers that subscription and pay-per-view pay walls present, families have easy access to all BUT the most scientifically valid information.<sup>21</sup>

Providing immediate, barrier-free access to articles that report on the results of publicly funded research access empowers family members and caregivers to be better, more informed advocates, and gives them a positive outlet by allowing them to participate in

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18 <http://www.nytimes.com/2010/08/13/health/research/13alzheimer.html>

19 [http://www.michaeljfox.org/living\\_PPMI.cfm](http://www.michaeljfox.org/living_PPMI.cfm)

20 Lakhani, "Marginality and Scientific Problem Solving Effectiveness through Broadcast Search," *Organization Science* 21 (September - October 2010): 1016-1033.

21 <http://www.berlin9.org/bm~doc/berlin9-colamarino.pdf>

progress first hand. Barriers to accessing published research literature cause families to struggle to find the most rigorous data necessary to make informed decisions.

### *Costs and Benefits*

#### Costs

Understanding the potential costs and benefits of ensuring that articles reporting on publicly funded research are made accessible is of critical importance, and is an area where many helpful sources of data are available to draw on. To explore the potential costs, it is useful to examine the data provided by the National Institutes of Health (NIH), whose successful public-access policy already ensures full accessibility to articles reporting on the results of the ~\$30 billion of basic and applied research that it funds annually.

This policy, which covers approximately one half of the total U.S. annual investment in scientific research, has proven to be extremely cost-effective. NIH reports that it costs \$3.5- \$4.6 million annually (on a total \$30-billion budget) to administer its public-access policy. This represents an investment of only about 1/100th of one percent of the NIH's overall \$30 billion operating budget to ensure that the 90,000-95,000 articles generated annually to report on NIH-funded research are readily accessible to all potential users.<sup>22</sup>

The NIH also reports a deep demand for these articles, with more than 500,000 unique users from all sectors of the public accessing the PubMed Central database each day to view and retrieve articles.<sup>23</sup> An effective, government-wide public-access policy can likewise be implemented in a cost-effective manner, by leveraging this existing infrastructure to minimize unneeded duplication of efforts, and utilizing the investments already made by the NIH.

#### Benefits

In 2005, the Organization for Economic Development explicitly noted that “Governments would boost innovation and get a better return on their investment in publicly funded research by making research findings more widely available... and by doing so, they would maximize the social returns on public investments.”<sup>24</sup>

It is no surprise that the concept of ensuring open access to the results of publicly funded research is now a cornerstone of innovation and competitiveness policies around the world.<sup>25</sup> As Neelie Kroes, Commissioner for the Digital Agenda of the European Commission recently noted, “Open access to scientific information is not a luxury; it is a must if we want to compete globally.”<sup>26</sup>

Significant economic research has been done, in the U.S. as well as internationally, on cost-benefit analyses of various policy approaches to ensuring greater access to articles

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22 <http://www.hhs.gov/asl/testify/2010/07/t20100729c.html>

23 <http://olpa.od.nih.gov/hearings/111/session2/Testimonies/PublicAccess.pdf>

24 <http://www.oecd.org/dataoecd/42/12/35393145.pdf>

25 <http://www.roarmap.eprints.org>

26 Neelie Kroes video <http://www.youtube.com/watch?v=taux110Vgek>

reporting on the results of publicly funded research. Detailed economic analyses have been conducted on proposed national policies in Australia, the U.K., the Netherlands and elsewhere, providing sound methodologies for policy makers to use in considering the potential impact of such policies. These studies have consistently demonstrated that the adoption of policies to encourage the open sharing of research results – including scientific articles – has a significant economic upside for national economies.<sup>27</sup>

Perhaps most germane for the purposes of this RFI is the 2010 study conducted by Houghton et al., examining the potential impacts of opening up access to articles reporting on the results of all U.S. federally funded scientific research, under a policy similar to that of the current NIH Public Access Policy. Houghton and his colleagues examined both the costs and potential returns to the public investment in R&D, and provide a working model to be used for further testing and refining estimates as additional data becomes available.<sup>28</sup>

The initial Houghton et al. modeling suggests that providing open access to all articles reporting on U.S. scientific research under a model similar to the current NIH policy would (very conservatively) result in at least a five-fold increase in ROI, with the benefits of the policy estimated to be approximately 8 times larger than the costs. They further estimate that the net present value gains of expanding an NIH-style policy to all other U.S. science agencies over time would be on the order of \$1.5 billion (net the costs of running the archive). Of that number, approximately 60% is estimated to accrue directly to the U.S. economy.<sup>29</sup>

#### *Accountability and Efficiency*

A government-wide public-access policy will have the added benefit of supporting informed, transparent, science-based federal budget and policy decision making by increasing federal agency accountability and providing agencies with an improved accounting on the outcomes of their funded research. It will also give Congressional budget drafters, appropriators, and authorizers better information to accurately assess the value of existing expenditures, and to target funding on the most promising research areas.

#### *What Type of Access is Needed?*

To maximize U.S. economic growth and improve the productivity of the American scientific enterprise, the complete collection of full-text articles reporting on federally funded scientific research should be made immediately, freely accessible to the public. The public must also be ensured the rights to fully use these articles (i.e., text and data mine, compute on, etc.) without commercial restriction.

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27 <http://www.cfses.com/projects/Easi-OA.htm>

28 Economic and Social Returns on Investment in Open Archiving Publicly Funded Research Outputs, Houghton et al. (2010)

29 Op. cit.

**2. What specific steps can be taken to protect the intellectual property interests of publishers, scientists, federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research?**

To best support the goals of accelerating scientific discovery, innovation and the creation of new markets, any public-access policy should ensure not only full accessibility of scientific articles, but also full utility of the articles in the digital environment. Mechanisms to enable full use (i.e. distribution, reuse, text mining, data mining, computation, etc.) should be part of any government-wide public-access policy. Digital articles reporting on publicly funded research should contain a clear description of the rights and permissions granted to users – both human and machine readers. A policy that results in a "read-only" database severely limits the utility – and the value – of the information contained in these articles.

Public-access policies can be successfully implemented while respecting and working within the current copyright framework. A policy requiring full open access to articles reporting on the results of federally funded research under a mechanism such as the Creative Commons Attribution (CC BY)<sup>30</sup> license is consistent with protecting the copyrights of both authors and publishers. Such a license does not replace copyright protection, but rather works within the copyright system, giving authors and publishers the ability to mark their content with the rights available, while ensuring that the rights holder receives credit in whatever manner they prefer. This type of license also serves the needs of the author by enhancing their ability to share their work more widely, increasing the opportunities for their work to be used and cited.

While the NIH Public Access Policy provides an excellent benchmark for most aspects of government-wide policy, one where it can be substantially improved upon is in the area of clarifying rights retention. The Department of Labor's Trade Adjustment Assistance Community College and Career Training (TAACCCT)<sup>31</sup> grant program provides a more appropriate exemplar. The TAACCCT program requires that grant recipients license content created from grant funds under a Creative Commons Attribution (CC-BY) license. This framework ensures broad access and reuse for anyone wishing to utilize this federally funded research output, while also ensuring that proper credit is given to the author.<sup>32</sup>

The public also needs full use of these articles sooner than the current term of copyright allows. Ideally, articles reporting on the results of publicly funded research should be made accessible to the public immediately upon appearance in a journal. However, an initial interim, phased approach might prove a practical way forward. This type of approach might be constructed to include:

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30 <http://creativecommons.org/licenses/by/3.0/>

31 <http://www.doleta.gov/grants/pdf/SGA-DFA-PY-10-03.pdf>

32 <http://epsiplatform.eu/content/topic-report-no-23-creative-commons-and-public-sector-information-flexible-tools-support-psi>

- First, providing an appropriate period of embargoed access (no longer than 12 months) where current rights appropriate under copyright apply;
- Second, after the expiration of the embargo period, full reuse [consistency] rights under an appropriate license such as CC-BY apply.

It should be the explicit goal of any government-wide public-access policy to make the results of federally funded research as useful as possible. Broad reuse allows both researchers and businesses to unlock additional value from our public research investment – now, and for decades to come. Restrictions that limit how users can work with these digital articles will result in only a fraction of their value being delivered, and unnecessarily reduce the subsequent return to the taxpayer.

### **3. What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities?**

The federal government is the appropriate entity to provide permanent stewardship of these articles, and is in a unique position to ensure that publicly funded articles are made permanently accessible, and useable. To ensure this, any public-access policy that is developed must give the federal government adequate rights to archive and distribute articles reporting on publicly funded research.

There are many compelling reasons for the federal government to maintain custody of articles arising from federal research. The library community fully understands that while multiple copies are necessary to support archiving and preservation, there also should be one master copy that is maintained by a recognized leadership organization. Currently, the National Library of Medicine (NLM) appropriately fulfills that crucial role for articles generated by NIH-funded research by housing articles in their PubMed Central (PMC) digital repository.

NLM has indicated<sup>33</sup> that they are willing to expand their role and accept articles from any other federal science agency, providing an immediate, cost-effective potential solution. Alternatively, NLM has also indicated that the software supporting PubMed Central is freely available in the public domain, and was explicitly designed in a modular form to be easily shared with other entities that might wish to use it. This option provides another cost-effective mechanism that ensures the interoperability of multiple federal agency archives. This solution has also been demonstrated to be effective, and is currently in use by the Canadian Institutes of Health Research<sup>34</sup> as well as the Wellcome Trust<sup>35</sup> in the U.K.

Having the federal government retain custody of a master copy of these articles also minimizes the possibility that any entity can create an exclusive arrangement that would inhibit – if not eliminate – the ability for a wide variety of stakeholders and businesses to

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33 <http://olpa.od.nih.gov/hearings/111/session2/Testimonies/PublicAccess.pdf>

34 <http://www.cihir-irsc.gc.ca/e/34846.html>

35 <http://www.wellcome.ac.uk/About-us/Policy/Spotlight-issues/Open-access/UKPMC-Project/index.htm>

maximize the utility of these articles, and ensure that new services and products can be readily built from them. It also ensures that overall policies and practices, including access conditions another standards, can be identified and applied effectively across multiple archives if needed. It is crucial that any federal archive be an access point for the public, and not simply serve as a "dark" archive. The library community's long experience with archiving publications has clearly shown that regular access and use of digital materials is a crucial element in effective long-term preservation.

This type of approach does not preclude other, non-governmental entities from also participating as partners in a decentralized approach. An effective federal public-access policy could also involve multiple repositories maintained by third parties, as long as those repositories support access and use conditions that allow all interested parties to build on the content contained in them. Repositories that meet conditions for public accessibility, unrestricted use rights, interoperability and long-term preservation of articles can play an important role, encouraging innovative public-private partnerships.

Some have posited that it is a duplicative cost and effort for the federal government to maintain an accessible archive of these articles, citing efforts by publishers in the private sector, such as CLOCKSS, Portico and others. While we support the important efforts of these organizations and projects, they do not provide sufficient coverage to ensure that the entire corpus of articles generated through public funds are made available. For example, a recent examination of archival coverage of journal articles by two major research university libraries – Cornell University and Columbia University – indicated that, after years of active participation in such projects, only about 15% of their journal holdings are currently archived by LOCKSS and Portico combined.<sup>36</sup>

Federal government stewardship is a necessity to ensure that our investment in scientific research is protected and leveraged now and into the future. As discussed in detail in Comment 1, federal stewardship is also cost-effective. With over a decade of experience in running the PubMed Central archive at the National Library of Medicine, the NIH has demonstrated that a small investment can ensure that the public has full access to the results of the scientific research that it collectively funds.<sup>37</sup>

#### **4. Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

Public-private partnerships can play an important role in leveraging the unique capabilities of a broad range of potential service providers, and create opportunities for the development of new products and services to built on publicly funded information. A key aim of the America COMPETES Act (whose goals this RFI has been issued to facilitate achieving) is to improve the competitiveness of the United States through investment in research and development. As such, it is critical that any public-private

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36 <http://2cul.org/node/22>

37 <http://olpa.od.nih.gov/hearings/111/session2/Testimonies/PublicAccess.pdf>

partnerships be constructed to ensure that *all* potential service providers have an equal opportunity to participate. Under no condition should any one site, organization or company be the single point of access for publicly funded articles.

This is particularly important as it relates to small businesses that may experience difficulty with entering markets given access conditions or restrictive copyright/reuse provisions. Constructing a partnership that unfairly advantages a limited number of participants will result in a less competitive environment, rather than facilitating the kind of environment that encourages robust participation as envisioned in the COMPETES Act.

The publishing community should be encouraged to participate in such partnerships, but it is only one stakeholder group whose interests must be considered. The federal government should also carefully consider the synergies in mission that exist with other potential partners, particularly libraries, archives and museums. These entities have missions explicitly focused on long-term preservation and access to information, and also have a wealth of experience and existing infrastructure that can be leveraged. Developing a public-access policy that includes roles for these kinds of organizations would greatly increase prospects for the viability and long-term sustainability of such partnerships.

It is also notable that none of the 50+ research funders that currently have active public-access policies are using proprietary or publisher-based sites as their final archives.<sup>38</sup> However, there are good examples of funders partnering with academic and research institutions in this role. The Digital Repository Infrastructure Vision for European Research (DRIVER) project is one such example.<sup>39</sup> DRIVER has constructed a pan-European infrastructure for digital repositories, providing a linked network of accessible archives to house the results of publicly funded research (both digital data and articles) for use by researchers, administrators, and the general public.

Public-private partnerships should be encouraged, provided repositories meet conditions for public accessibility, use rights, interoperability and long-term preservation of publicly funded articles, ensuring that all stakeholders and businesses have opportunities to participate effectively.

**5. What steps can be taken by federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives? What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities? How should federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to federal science funding?**

Metadata plays a crucial role in enabling the interoperability, search, discovery and analysis of articles reporting on federally funded research. Rather than thinking about metadata as simply a description of items contained in repositories, the federal

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38 <http://roarmap.eprints.org>

39 <http://www.driver-repository.eu/>

government should view it as a means to enable specific actions that can be taken on digital articles, as well. To be as useful as possible, metadata associated with federally funded articles must be both machine-readable and machine-interoperable, and should facilitate the robust use, reuse and analysis of digital articles.

While it is possible to identify, as requested, a "minimum core" set of metadata (Dublin Core/OAI-PMH would be the current de facto standard, coupled with the use of the NLM DTD for article markup), this will only facilitate a minimum amount of discovery and download. Broader metadata specifications are needed to make full use of the information contained in federally funded articles and to active the aims of the federal government of improving scientific productivity and accelerating commercialization.

To maximize the value of this information, additional metadata is needed to also facilitate archiving and preservation, and to encourage the development of new services (such as text mining, visualizations, etc.). This metadata could include:

- Persistent identifiers for authors, publications and links to data
- Controlled identifiers, such as ORCID, 1/2
- Usage tracking/analytics, such as COUNTER, SUSHI
- Metadata supporting context for published resources (i.e., controlled vocabularies)
- Attribution for funding organizations
- Grant IDs
- Descriptions of relationships between entities (such as RDF and OWL enable)

It is important to ensure that any metadata standard or framework not only meet current needs, but also be flexible and extensible enough to support potential future uses. This is particularly critical to ensure that connections between articles and digital data can be supported.

Close consultation with established entities that are working on standards and best practices in this area, such as NISO and the Library of Congress, will also be helpful and should be actively pursued.

## **6. How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

Federal agencies that fund science can maximize the benefit of public-access policies to U.S. taxpayers by making the complete collection of full-text articles reporting on federally funded scientific research immediately, freely accessible to the public. Members of the public also must be guaranteed rights to fully use these articles without commercial restriction. The federal government should provide long-term stewardship over the repositories that house these articles, in partnership with organizations such as libraries and archives. Access conditions and reuse rights that at most require author attribution (Creative Commons Attribution CC-BY license or similar) must also be clearly articulated, to enhance scientific productivity and encourage the full range of potential

stakeholders to build secondary services and generate new products and markets from this content.

For any public-access policy to be successful, there must be consistency of requirements across all federal agencies. Most federal grants are managed on behalf of researchers by their home institutions, which, in turn, host researchers who hold grants from multiple funding agencies. Creating disparate access policies – or even compliance requirements – for different federal science agencies would introduce needless confusion and expense into the system, and greatly increase the compliance burden on the grantee and their home institution. Uniform requirements and procedures regarding deposit of peer-reviewed articles should be established across all federal agencies covered by a public-access policy to reduce the cost and complexity of compliance.

Effective implementation strategies that minimize the burden on the researcher can also play an important role in maximizing the returns to the taxpayer, by raising compliance rates and ensuring that the complete corpus of articles reporting on federally funded research is widely available in a timely manner. For example, any government-wide public-access policy should be constructed to take advantage of existing protocols to facilitate automatic deposit of articles to multiple repositories, such as the SWORD protocol.

To optimize the benefits to the taxpayer, any federal public-access policy should also be constructed in a way that encourages the development of additional tools and services to facilitate both the work of the researcher, and the federal agency. Encouraging the integration of articles with agency (and home institution) grant management systems is an important potential way to improve agency accountability, as well as to provide increased information to the public on the results of the research that their tax dollars support.

An effective public-access policy centered on creating accessible databases of research articles can also create opportunities to build productivity management tools - like enhanced bibliographies or Principle Investigator (PI) Profiles – that are of wide use to researchers, institutions, and federal agencies. Similarly, policies based on the creation of such an openly accessible database might provide new opportunities for higher education institutions to help raise the visibility of research arising from their campuses. They also might provide an opportunity for such a database to be used as a teaching tool – perhaps providing an environment to teach researchers and scholars new techniques for effective literature search and analysis.

**7. Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

The principle of the public's right to access to articles that report on the results of publicly funded research applies to all outputs of research. Data and educational materials (book chapters, texts, conference proceedings, etc.) that result from publicly funded research should also be made readily accessible to the public.

However, we recognize that different conditions and expectations apply to different types of outputs. For example, authors are not paid for journal articles, but may in fact be compensated for the creation of book chapters. Data sets may contain confidential or personal information that may not be appropriate for unrestricted access or reuse. Access policies that reflect these differences while holding true to the basic principle of public access may need to be constructed.

**8. What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

To optimize their scientific and commercial utility, articles reporting on the results of federally funded research should be made immediately available to the public in freely accessible digital repositories. The federal government should also consider providing support to cover reasonable publication fees for those authors who opt to publish their articles full open-access journals (those that are immediately freely accessible, and enable full reuse rights such as those supported by the Creative Commons Attribution (CC-BY) license). However, to accommodate those journal publishers that continue to rely on subscription income, an author-determined embargo period that is as short as possible – preferably 6 months, but certainly no longer than 12 months – could be considered.

Some publishers have argued that public-access policies – including the NIH Public Access Policy, which include a lengthy 12-month embargo period – will discourage their primary customers (academic libraries which also constitute SPARC's primary member base<sup>40</sup>) from continuing to subscribe to journals and cause them financial harm. Any data documenting such a negative impact should be carefully considered; however, we know of no studies that directly examine this hypothesis nor any documented examples of journals whose financial viability has been significantly damaged by public-access policies.

SPARC's academic and research library members affirm that, while significant journal cancellations are taking place, they are consistently driven by a combination of annual journal subscription price increases, coupled with library budget reductions. These data are well-documented, and published annually in multiple publicly available outlets.<sup>41</sup>

Given the rapid growth in the number of open-access journals, and the increasing adoption of the open-access model by publishers across the journal marketplace, we note that the use of embargoes only benefits one subset of publishers that use a very specific, subscription-dependent revenue model. Open-access publishers, whose business models replace subscription fees with article processing fees, institutional subsidies, advertising,

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40 <http://www.arl.org/sparc/member/>

41 <http://www.outsellinc.com/insights/11448>

and other revenue streams, have very different revenue models, and receive no clear benefit from embargoes of any length.

The discussion of the inclusion of embargoes in public-access policies often centers exclusively on their potential to protect publisher revenues. However, since one of the goals of an effective federal public-access policy is to balance the needs of all stakeholders, it is also important to consider the impact of embargoes on other stakeholders. Embargoes of any length come with a cost in terms of decreased public access and a negative impact on the degree to which an article's availability fosters further research and development.<sup>42</sup>

In examining the length of embargo periods currently in use, a maximum embargo period of six months has emerged as the norm among biomedical research funders, with the NIH an outlier allowing 12 months. In other disciplines, embargoes of maximum 12 months are most prevalent in research funder policies around the globe.<sup>43</sup> This is also consistent with the current voluntary practices of many publishers. Highwire Press, one of the premier online hosting services for scholarly journals, currently lists hundreds of journals in a variety of disciplines that make their articles freely accessible after a 12-month (or shorter) embargo period.<sup>44</sup>

If different embargos are to be considered for different disciplines, the full range of factors that affect each discipline must be taken into account. These factors include at minimum:

- Growth of journals and papers in discipline (competitive analysis)
- Price – and pricing history – of journal and competitive titles
- Impact of required bundles vs. single journals in discipline
- Library budget numbers/trends
- Real revenue resulting from “long-tail” citation articles
- Percentage of articles covered by federal funds

All of these market conditions regularly contribute to journal cancellations and must be accounted for so that the effect of the embargo period can be adequately isolated. Even if this were possible, it is not clear that different embargoes ought to be considered, even if they imply differential economic effects. For one thing, the effects on subscription-based publishers should be balanced by the economic benefits of widespread access to the economy as a whole. For another, there are substantial costs in increased administration complexity and user confusion as soon as one allows differential embargoes.

## Conclusion

Once again, SPARC deeply appreciates the time and effort that the Office of Science and Technology Policy (OSTP) has taken to lead this discussion on the important topic of ensuring public access to the results of federally funded research.

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42 Houghton, Rassmusen and Sheehan, page 8. 2010

43 <http://www.roarmap.org>

44 <http://highwire.stanford.edu/lists/freeart.dtl>

COMMENTS - Public Access to Federally Funded Scholarly Publications  
SPARC (the Scholarly Publishing and Academic Resources Coalition) [www.arl.org/sparc](http://www.arl.org/sparc)  
January 12, 2012

SPARC fully supports the expeditious expansion of the current NIH public access policy to all other federal agencies that conduct scientific research, in order to create a freely accessible, permanent digital archive of the results of our nation's investment in scientific research. Our members look forward to providing any additional information that might be useful to OSTP, and to participating constructively as this process moves forward.

To discuss in deeper detail, please feel free to contact Heather Joseph, Executive Director through [heather@arl.org](mailto:heather@arl.org) or (202) 296-2296.

Respectfully submitted,

Heather Joseph  
Executive Director, SPARC

David Carlson  
Dean of Library Affairs, Southern Illinois University at Carbondale  
Chair, SPARC Steering Committee

Dear Sir/Madam,

please find enclosed a response to the "Request for Information on Public Access to Digital Data and Scientific Publications", submitted by the Wikimedia Research Committee (RCOM) on behalf of the Wikimedia Foundation. The full text of this response is archived at: [http://bit.ly/RFI\\_WH](http://bit.ly/RFI_WH)

Sincerely,

Daniel Mietchen, PhD  
*Wikimedian in Residence on Open Science and RCOM member*

Dario Taraborelli, PhD  
*Senior Research Analyst, Strategy, Wikimedia Foundation and RCOM member*

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*This document contains a response to the "[Request for Information on Public Access to Digital Data and Scientific Publications](#)" by the Office of Science and Technology Policy of the White House, submitted on behalf of the [Wikimedia Research Committee](#) (RCOM) by Daniel Mietchen ([Wikimedian in Residence on Open Science](#) and RCOM member), with the endorsement from Dario Taraborelli (Wikimedia Foundation staff and RCOM member) on behalf of the Wikimedia Foundation.*

- Source of the RFI: <http://www.gpo.gov/fdsys/pkg/FR-2011-11-04/pdf/2011-28623.pdf> or <http://www.gpo.gov/fdsys/pkg/FR-2011-11-04/html/2011-28623.htm>
- Submission deadline: Jan 12, 2012 ([extended from Jan 2, 2012](#); [confirmation](#)).

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## [\[edit\]](#) Preface

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The [mission](#) of the Wikimedia Foundation is to empower and engage people around the world to collect and develop educational content under a free license or in the public domain, and to disseminate it effectively and globally. To this end, it operates a number of projects - most notably Wikipedia, Wikibooks, Wiktionary, Wikinews, Wikispecies, Wikiversity, Wikiquote, Wikisource and Wikimedia Commons - that provide reusable licensed free content in multiple languages.

Scholarly publications play multiple roles in these activities:

- They serve as references, providing support for a claim made in an article in one of our projects. Traditional subscription-based access modes to the scholarly literature impose barriers for such use of the literature, since most of the participants in our projects do not have subscriptions to scholarly sources, nor an affiliation with institutions that do.
- If suitably licensed, they can serve as scaffolds for or building blocks of articles in our projects. The projects run by the Wikimedia Foundation employ a [Creative Commons Attribution Share-Alike 3.0](#) license, which means that anyone can use the content for any purpose, as long as the source is acknowledged and derivative works are being made available under the same conditions. It also means that works licensed in the same way or more liberally (i.e. with a [Creative Commons Attribution](#) license, [Creative Commons Public Domain Dedication](#)) or already in the Public Domain can be incorporated into our projects, either directly or in translated form.
- Similarly, images and media originating from suitably licensed sources can be used to illustrate our educational content.

To highlight this aspect of reusing materials from Open-Access sources, our responses to the individual questions have been drafted in public and shall build and comment on publicly available responses submitted by others. A link to these responses will be provided the first time we quote them. An overview of all public responses that we consulted in drafting our own is given in the [Publicly available responses by third parties](#) section. In addition to commenting on the issues raised in the questions, we have added a [separate section](#) with examples and comments that highlight how Open Access materials can be reused on projects like those we operate.

## [\[edit\]](#) Questions

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***"Office of Science and Technology Policy seeks further public comment on the questions listed below, on behalf of the multi-agency Task Force on Public Access to Scholarly Publications."***

[\[edit\]](#) **Comment 1**

[\[edit\]](#) **Comment 1a**

- Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research?

[Harvard](#) gave a comprehensive response, of which we are quoting the essence:

Yes, there are steps to grow new and existing markets arising from access to cutting-edge research. The most important step is to require public access (also called open access and free online access) to the final versions of the authors' manuscripts of peer-reviewed articles arising from publicly funded research.

and

Public access not only facilitates innovation in research-driven industries such as medicine and manufacturing. It stimulates the growth of a new industry adding value to the newly accessible research itself.

This new industry includes search, current awareness, impact measurement, data integration, citation linking, text and data mining, translation, indexing, organizing, recommending, and summarizing. These new services not only create new jobs and pay taxes, but they make the underlying research itself more useful. Translation can include translating scholarly materials into works designed for the end user, for example taking medical research literature and using it to write journal or newspaper articles or books.

Research funding agencies needn't take on the job of provide all these services themselves. As long as they ensure that the funded research is digital, online, free of charge, and free for reuse, they can rely on an after-market of motivated developers and entrepreneurs to bring it to users in the forms in which it will be most useful. Indeed, scholarly publishers are themselves in a good position to provide many of these value-added services, which could provide an additional revenue source for the industry.

[\[edit\]](#) **Comment 1b**

- How can policies for archiving publications and making them publicly accessible be used to grow the economy and improve the productivity of the scientific enterprise?

Again, the Harvard response comprehensively addresses these points:

Public access improves researcher productivity in many ways. By making published literature more visible and discoverable, public access prevents unintended duplication of effort. It prevents delays while researchers try to gain access to relevant articles they have discovered but cannot retrieve. It makes literature available to our hardware and software, not just to ourselves, and supports a fast-growing ecology of computer tools for mining and analyzing data and literature. It makes literature available to researchers outside the academy, such as

those based at hospitals, museums, non-profits organizations, and for-profit manufacturing companies. By enlarging the audience for research, public access multiplies the chances that prepared users will be able to make use of the research and translate it into clinical treatments or marketable products and services.

Some of these productivity gains can be quantified. See for example Karim R. Lakhani et al., "The Value of Openness in Scientific Problem Solving," Harvard Business School Working Paper, October 2006.

Excerpt: <http://www.hbs.edu/research/pdf/07-050.pdf>

Lack of openness and transparency means that scientific problem solving is constrained to a few scientists who work in secret and who typically fail to leverage the entire accumulation of scientific knowledge available....Our study finds that the broadcast of problem information to outside scientists results in a 29.5% resolution rate for scientific problems that had previously remained unsolved inside the R & D laboratories of wellknown science-driven firms.

#### [\[edit\]](#) **Comment 1c**

- What are the relative costs and benefits of such policies?

A [back-of-the-envelope calculation](#) already provides a flavour of the relative costs and benefits: dividing the 2009 *profits* made by Elsevier alone (ca. \$1 billion) by the total number of peer-reviewed articles published that year (ca. 1.5 million) results in about \$700 per article. Article processing fees at BioMed Central, Hindawi, Copernicus, Pensoft and other Open-Access publishers are frequently in that range or below. Bringing the profits of other publishers into the equation, the per-article rate would reach well into the range of fees charged by PLoS journals. [In other words](#),

collectively the top two or maybe three publishers take out of the academic world enough profits to pay for every research article in every discipline to be made freely available online for everyone to access using PLoS's publishing fee approach.

The matter of costs and benefits is treated in much more detail in the Harvard response, which highlights a number of studies that have been performed on the subject. They can be summed up with the following [comment](#) by SPARC, quoted in the Harvard response:

Preliminary modeling suggests that over a transitional period of 30 years from implementation, the potential incremental benefits of the proposed [FRPAA](#) [Federal Research Public Access Act] archiving mandate might be worth around 8 times the costs. Perhaps two-thirds of these benefits would accrue within the US, with the remainder spilling over to other countries. Hence, the US national benefits arising from the proposed FRPAA archiving mandate might be of the order of 5 times the costs. It is important to note that this is just the monetary cost savings. In the next few years, research to discover cheap, clean energy resources is desperately needed not only as a basic building block for the economy, but also for quality of all life on the planet. Humanities and

social research offers the potential to resolve social problems, enhance the quality of life and increase security  
- because the path to peace is through hearts and minds, not tanks.

### [\[edit\]](#) **Comment 1d**

- What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?

Harvard:

In practice, the way to free an article for use and reuse is to include a license or permission statement from the copyright holder explaining what the user may and may not do with it. An "open license" allows uses that would otherwise require the delay and expense of hunting down the rights-holder in order to ask permission.

and

a report evaluating the copyright licensing policies used by certain public and private funding agencies [...] recommended that research funders require the use of open licenses for funded research.

and

There are many open licenses. We recommend the Creative Commons Attribution (CC-BY) license, which permits any use provided the user makes proper attribution to the author. We recommend against licenses that bar commercial use (such as CC-BY-NC), in part because they would limit the utility of publicly funded research for businesses and industry.

This type of public-access policy would not be unprecedented for the United States. In January 2011, the Departments of Labor and Education launched the Trade Adjustment Assistance Community College and Career Training (TAACCT) program, a four-year, \$2 billion funding program for open educational resources to be released under CC-BY licenses. <http://www.whitehouse.gov/blog/2011/01/20/new-job-training-and-educationgrants-program-launched>

We also recommend against licenses that bar derivations (such as CC-BY-ND), since adapting existing resources to new needs is an important part of providing free and open educational resources of the kind the Wikimedia Foundation supports.

### [\[edit\]](#) **Comment 2**

#### [\[edit\]](#) **Comment 2a**

- What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research?

First, the use of the term "intellectual property" in discussions on access to the scholarly literature is misleading, since it comprises a number of legal codes that bear quite differently on research contexts. This aspect is covered in detail in the [Appendix](#) of the [Kitware](#) response.

Second, as explained in the comments by [Brembs](#) and in a related [post](#) by Cameron Neylon, publishers contribute very little to the publication of research that would fall under copyright, except some layout. The copyrights are with the authors, and for historic reasons associated with the distribution of printed copies, they are normally asked to transfer the copyright to the publishers, who then built their business models around providing toll access to the research literature. This system takes a lot of money out of research-related funds that could be used for purposes other than sustaining the profit margins of commercial publishers, so there is no scientific reason to keep supporting it. Instead, the research landscape would benefit from moves "to enshrine a simple principle in United States law: if taxpayers paid for it, they own it."<sup>[1]</sup>

[Irving](#) (emphasis added):

The easiest way to safeguard the rights of scientists is to make open access an optional but guaranteed right, as mentioned above. In the long term, mandatory open access to federally funded research may be desirable, but I believe most of the benefits can be achieved with rights alone.

The intellectual property rights of publishers could be maintained for **past** work by enforcing the right to open distribution only for **future** research. Although open access to past work is also highly desirable, a retroactive forced change to publishing agreements would constitute far more interference with private contracts, and is therefore more questionable.

#### [\[edit\]](#) **Comment 2b**

- Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?

As discussed above, the term "intellectual property" is misleading here, and in terms of copyright, it should be avoided that authors have to transfer copyrights to publishers at all. Instead, authors should retain copyright and grant publishers a non-exclusive right to publish the research under a free license - Creative Commons Attribution License (CC BY) for text, figures and media, Creative Commons Public Domain Dedication License (CC 0) for data and a free software license for code.

Consequently, if federal agencies reimburse authors for costs incurred by Open Access publication, these reimbursements "[should be limited to publication fees for true OA journals, not hybrid fees for subscription journals](#)", and they should only be partial if the publishers require transfer of copyrights from the authors.

#### [\[edit\]](#) **Comment 3**

##### [\[edit\]](#) **Comment 3 a**

- What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities?

Here, we follow Irving:

The pros of a decentralized approach are flexibility and diversity in exploring new methods of distribution, peer review, and search. The pros of a centralized approach are uniformity and simplified access, and institutional levels of security and redundancy.

The optimum, to ensure ongoing access and preservation of works, is multiple copies, so both centralized and decentralized. For practical reasons, a simple policy leaving operational details to the implementers is best. For example, PubMedCentral is a strong and now internationalized central model which works very well. Other disciplinary areas may find that a different approach works best. For example, the Research Papers in Economics service is a distributed repository.

### [\[edit\]](#) **Comment 3 b**

- Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?

There are reasons why either a Federal agency or a local university partner should maintain custody of all published content. One is that without such custody, access to the published results of U.S.-funded research could be available exclusively outside the U.S., if the publisher is owned by a private entity outside the U.S. Another is preservation. The vast majority of scholarly publishers do not attend to preservation at all. Even if a publisher does look after preservation, there is no guarantee that a private entity that changes hands will continue to provide this service, nor is there any guarantee that a private entity will choose to remain in the scholarly publisher business in perpetuity.

Full open access facilitates distributed archiving across a range of independently held repositories. In addition to that, as Irving pointed out, "a government database of open work would constitute both an alternative access point and a long term backup of published work, without interfering with nongovernmental mechanisms and institutions."

### [\[edit\]](#) **Comment 4**

- Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?

#### [Cameron Neylon:](#)

There are a range of such models ranging from ArXiv through relatively traditional publishers like PLoS and BMC to new and emerging forms of low cost publication that disaggregate the traditional role of the scholarly publisher into a menu of services which can be selected from as desired. It is not the place of government, federal agencies, or even scholarly communities to attempt to pick winners at this very early stage of development. Rather the role of government and federal funding agencies is to make a clear statement of expectations as to the service level expected of the researcher and their institution as a condition of funding

and an appropriate level of resourcing the support the purchase of such services as required for effective communication of research outputs.

The role of the researcher is to select, on a best efforts basis, the appropriate services required for the effective communication of their research, consistent with the resources available. The role of the funder is to help provide a stable and viable market in the provision of such services that encourages competition, innovation, and the development of new services in response to the needs of an evolving research agenda.

The Wikimedia Foundation has also been building partnerships with academic institutions, organizations and publishers. For instance, several [scholarly societies](#) or [academic journals](#) are already partnering with Wikimedia projects or consider doing so.

### [\[edit\]](#) **Comment 5**

- What steps can be taken by Federal agencies, publishers, and/or scholarly and professional societies to encourage interoperable search, discovery, and analysis capacity across disciplines and archives?
- What are the minimum core metadata for scholarly publications that must be made available to the public to allow such capabilities?
- How should Federal agencies make certain that such minimum core metadata associated with peer-reviewed publications resulting from federally funded scientific research are publicly available to ensure that these publications can be easily found and linked to Federal science funding?

Enriching publications with metadata enables specific actions to be made to the content, rather than just labeling it. This facilitates the reuse of that content and the multiple components that it comprises (figures, tables, data, key words, semantic mark-up, etc.). It is important that the metadata model supports the appropriate context for the published works with a controlled vocabulary that permits reuse and interoperability between content platforms and databases. It is therefore also important to couple metadata with an API for standards-based data exchange.

Scholarly publishers should, at minimum therefore, support the National Library of Medicine's [Journal Article Tag Suite](#) XML standard for content and metadata as well as the [Dublin Core](#). Publishers should also deposit digital object identifiers (DOIs) into repositories such as [CrossRef](#) and, similarly, ensure they comply with requirements to allow unique author identification via platforms such as [ORCID](#), a central registry of unique identifiers for individual researchers, and an open and transparent linking mechanism between ORCID and other current author identification schemes).

To facilitate new initiatives in the semantic web, publishers should classify content with public domain taxonomies and thesauri and make these classifications available in machine-readable format in the source code. Standard taxonomies and thesauri that are created by, funded by, and recommended by scientific agencies and institutions should, whenever possible, be adopted and used by scholarly publishers to facilitate discovery across the platforms and silos that have been artificially created over the years. These efforts will also enable large-scale research projects across platforms, publishers, and resources.

Finally, there is a major need for standards to expose in a machine-readable format the provenance, attribution requirements, open access availability and reuse terms of research artifacts. The lack of a universally accepted solution allowing Web services and applications to discover and aggregate metadata about publications, datasets and other resources *based on their reusability* is hindering the innovation that the open access and linked open data initiatives represent for the scientific community. Federal agencies should invest resources to support and promote the discoverability and reuse of open licensed and openly accessible scientific contents.

#### [\[edit\]](#) **Comment 6**

- How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?

Irving:

"much of the benefit of complete open access can be achieved simply by guaranteeing the right to freely distribute federally funded work. The costs for such a step are minimal, especially since efficient distribution and search mechanisms already exist, and will likely proliferate further if a greater fraction of publications can legally take advantage of them."

Brembs:

"The benefit is maximized by minimizing the costs associated with access. The costs are minimized by preventing third parties from adding costs to the process. One way to establish a short and thus cheap supply line is to have scholars deposit their work directly at their libraries, avoiding the costs of intermediaries such as publishers. The process of this deposition would still be identical to the current process (i.e., peer-review), albeit without intervening entities which withdraw funds but add little to no value."

#### [\[edit\]](#) **Comment 7**

- Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?

The output of all federally funded research should always be made available for reuse under a full open-access license. Although print distribution or author- and reviewer-level payments may incur additional costs, a publication fee paid to the publisher should cover these and guarantee the legal right of free online access and reuse of that material. This should include at least primary research (e.g., original research articles) and secondary research (such as systematic reviews in the medical literature) as well as conference proceedings, book chapters, and scientific protocols that are facilitated by federal funding.

#### [\[edit\]](#) **Comment 8**

#### [\[edit\]](#) **Comment 8a**

- What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful.

Irving:

The embargo period should be negative: researchers should be allowed to freely distribute their work whenever they choose, including before publication or even before completion. This will minimize the delay between the completion of work and the time when other researchers can begin building on it. Producers of research that do not want their work to be immediately distributed can choose not to do so, and consumers of research that prefer to wait for the filtering and improvement effects of peer review are free to wait. Any other embargo period, even zero, would cause an unnecessary drag on the speed of dissemination and advancement of scientific knowledge."

Harvard:

If federal policy initially allows embargoes, then it should reduce their maximum permissible length over time, eventually to zero. We could support a plan to do this gradually rather than suddenly in order give publishers time to prepare.

Researchers should be encouraged to make their work openly accessible throughout the research process. If there is a flaw in the methodology, it is best to find out before starting the research project - not after results are written up, in the peer review stage. Share the data as soon as it is collected.

#### [\[edit\]](#) **Comment 8b**

- Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?

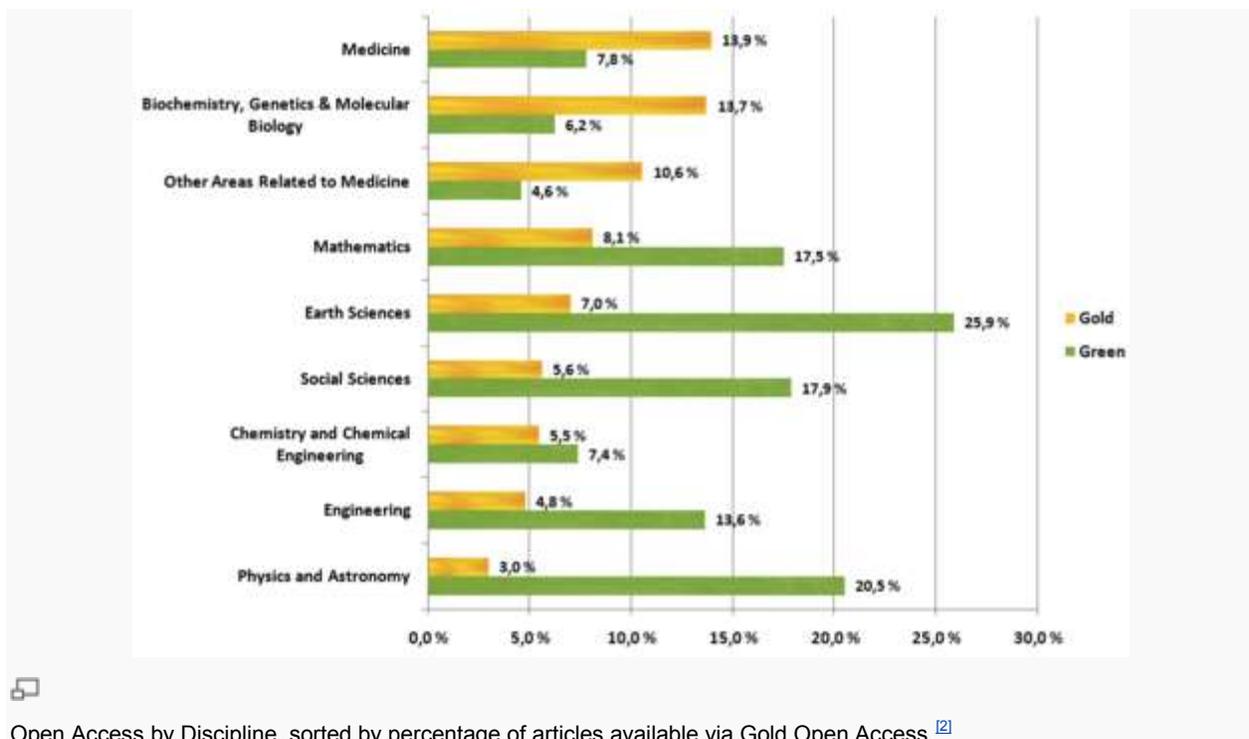
Harvard:

If government policy is to allow embargoes, even temporarily, it might allow different embargoes in different fields, on the ground that the demand for articles seems to drop off at different rates in different fields.

However, we have not seen good data on these different rates of demand decay. Publishers have this data, and if they wish to support differential embargo periods, they should provide data to justify them. In any case, variable embargo periods would burden universities by making compliance with an agency in one field different from compliance with an agency in another field (in tension with Question #6 above).

#### [\[edit\]](#) **Additional comments**

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Open Access by Discipline, sorted by percentage of articles available via Gold Open Access.<sup>[2]</sup>

The discussions around Open Access have started out with the goal to remove barriers that prevent *researchers* from accessing the research literature. For 2009, a study found that, across disciplines, about 20% of research articles are available by way of Open Access publishing or self-archiving, with both options reaching an overall similar level of around 10%.<sup>[2]</sup>

This means that the vast majority of research articles is still hidden behind paywalls but it also means that around 20% of the contemporary scholarly literature is freely available to anyone, including researchers. Given that about half of this minority is available under free licenses (mainly CC BY, with some CC 0, and CC BY-SA), it makes sense to start exploring potential use cases for such materials beyond providing access to researchers. Wikimedia projects provide a whole battery of such use cases and can serve as a bridge between the worlds of Open Access, science outreach and Open Education.

Files listed in the Category [Open access \(publishing\)](#) on Wikimedia Commons are all imported, possibly with modifications, from Open Access sources, and most of them have been incorporated into educational content across Wikimedia projects. In November 2011, they have received a total of [over 20 million page hits](#).

In the following, we will provide a selection of image and media files that originated from Open Access sources and have been reused in different ways on Wikimedia projects.

## [\[edit\]](#) **Adaptation**

## [\[edit\]](#) **Retouching**

The left image has been cropped from a figure in an [article](#) published by William M. Gray in PLoS Biology and was then retouched to remove an inset showing a pulse-chase analysis of auxin signalling in the wildtype and

the mutant of the plant. The retouched image is used on multiple pages related to hormone signaling in plants, the original one - with the inset - on a page explaining the method of pulse-chase analysis.



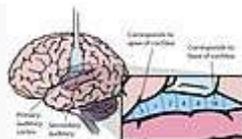
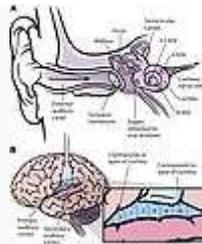
[The effect of a mutation in Auxin signaling on the growth of the model plant \*Arabidopsis thaliana\*](#)

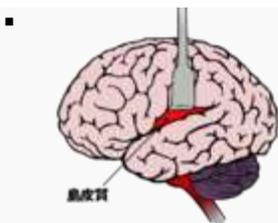
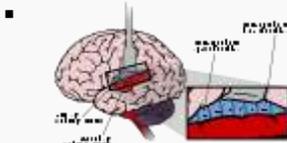


The original.

### [\[edit\]](#) Translations and other modifications

In the following series, the first image is a copy of the [original](#) (published by Lars Chittka and Axel Brockmann in PLoS Biology), converted from TIFF to JPG. The second file is a crop of the first, the third a conversion of the second into the editable SVG format, and the fourth a derivation thereof.

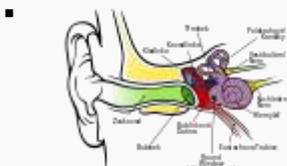




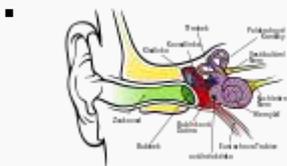
The following group consists of an editable version of the top part of the first image above, along with numerous derivations thereof, especially translations. Together, the files in this section have generated [319184 page hits](#) in December 2011.



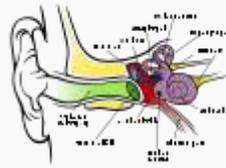
[Anatomy of the human ear – editable version](#)



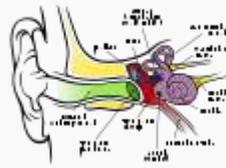
Česky



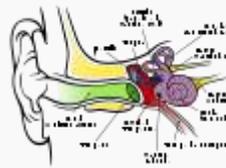
Česky



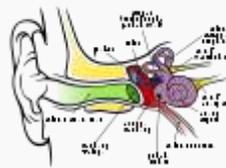
Deutsch



English



Español



Bahasa Indonesia

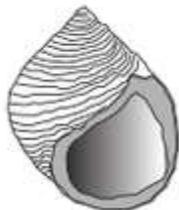


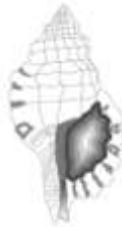




In a [similar case](#), images from several composite figures from an [article](#) by Regina Cunha et al. in BMC Evolutionary Biology have been used on over 7,000 pages on the English and Vietnamese Wikipedias, getting [over 160,000 page views](#) altogether during December 2011.

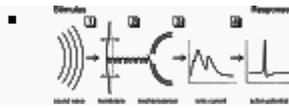




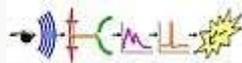


[\[edit\]](#) **Remixing**

Free licensing also allows to combine materials from different sources. The image on the left is a copy of the original file taken from an [article](#) by Tim Gollisch and Andreas Herz in PLoS Biology), converted to SVG. The image on the right has added colour, a representation of a sound source (a whistle, taken from [another freely licensed image](#)) and a mental representation of a sound.



A SVG copy of the original.



An illustration for [Qualia of sound](#)

## [\[edit\]](#) **Supplementary files**

Many scholarly articles nowadays have supplementary materials. These are rarely accessed at the publisher's sites, but those published under free licenses can be reused in other contexts, e.g. to illustrate pages on Wikimedia projects.



[The sound of a black smoker](#)





[Chlorobalius leucoviridis mimicking the song of its prey](#)



[Shimmering bees drive hornet away](#)



[Burying behaviour of an adult sandfish \(Scincus scincus\)](#)



[A lab notebook containing the record of research described in a scientific paper](#)

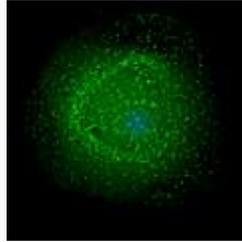
## [\[edit\]](#) Discoverability

Having an Open-Access image incorporated into a Wikipedia article may provide a considerable boost to the visibility and discoverability of the underlying research. The following image from Wikimedia Commons is the first result brought up by a (non-personalized) [image search for "Sorghum"](#). Originally published by Liza Gross [in PLoS Biology](#).



## [\[edit\]](#) Wide exposure

Wikimedia projects have various ways in which specific content can be highlighted. This way, freely licensed materials from Open Access sources can reach very large audiences.



A [Featured Picture](#). Originally published by Nolwenn Jouvenet et al. [in PLoS Biology](#)



[Picture of the Day on Wikimedia Commons](#), May 5, 2007. Originally published by Steve Bunkin [in PLoS Biology](#)



[Featured](#) on the main page of the Czech Wikipedia ([that receives ca. 150,000 hits each day](#)) in the first week of 2012. [Over 5,000 times](#), users clicked through to the image during that period. Originally published by Ewan Wolff et al. [in PLoS ONE](#).



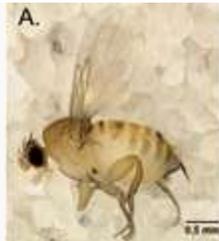
Finalist for [Picture of the Year 2007](#) on Wikimedia Commons. Originally published by Liza Gross [in PLoS Biology](#).

[\[edit\]](#) **Speed**

The Harvard response under [Comment 1d](#) mentions the delay normally incurred when trying to get permissions for reuse of previously published materials. Free licenses circumvent this problem, and it is thus not rare for Wikimedia projects to display content from Open Access sources within days or sometimes hours of publication.

A recent example is the case of the parasitoid fly *Apocephalus borealis* (left): last week, an [article](#) by Andrew Core et al. came out in PLoS ONE that associated the species with [Colony collapse disorder](#). The first edits on the matter were made the same day, and now, the image below is already in use at seven different pages related to the species or the disorder.

Another example is that of *Paedophryne amauensis*, a species of frog that is now the [smallest known vertebrate](#). The description of the species was [published](#) (also in PLoS ONE) on late January 11, the respective entries in the [English](#), [Dutch](#), [Finnish](#), [Portuguese](#), [Russian](#), [French](#), [Bulgarian](#), [Hungarian](#), [Thai](#), and [Spanish](#) Wikipedias, at [Wikispecies](#) and [Wikimedia Commons](#) have all been started - with images imported from the paper - within less than a day from then on, and the article was featured "[In the news](#)" on the [Main page](#) of the English Wikipedia on January 12, 2012 ([WebCite](#)) as well as - with image - on the Thai Wikipedia ([WebCite](#)).



[An adult female fly, \*Apocephalus borealis\*.](#)



A *Paedophryne amauensis* frog on a [US dime](#).



Screenshot of *Paedophryne amauensis* as featured in the news section of the [Main page](#) of the Thai Wikipedia.

Similar [screenshot from the English Wikipedia](#).

## [\[edit\]](#) Conclusion

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From Cameron Neylon:

To conclude, to focus on the final disposition of intellectual property arising from the authoring of research outputs relating to federally funded research is to continue a sterile and non-productive discussion. Given that the federal government funds research, and provides its agencies with a mandate to support research through direct funding to research institutions, it is incumbent upon government, federal agencies, and the recipients of that funding to ensure that research communication is carried out in such a way that it optimally supports the exploitation and the generation of outcomes from that research.

To achieve this it is necessary to purchase services that support effective communication. These services have traditionally been provided by scholarly publishers and it is right and proper that they continue to receive a fair price for those services. The productive discussion is therefore how to develop the markets in these services that means service providers are viable and sustainable, and that there is sufficient competition to prevent price inflation and encourage innovation. That such services can be economically provided through a direct publication service model where the full costs of review and publication are charged at the point of publication has been demonstrated by the success of PLoS and BioMedCentral.

However this is just a starting point. A fully functional market will encourage the development of a wide range of competitive services that will enable researchers to select the most cost effective way of communicating and disseminating their research and ensuring that it reaches the widest possible audience and in turn is exploited fully. This in turn will enable federal agencies to support research, and its communication, in a way that ensures that the public investment is exploited fully for the benefit of the U.S., its citizens, and its economy.

## [\[edit\]](#) References

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1. ↑ Michael Eisen. "[Research Bought, Then Paid For](#)", *New York Times*, 10 January 2012.
2. ↑ <sup>a</sup> <sup>b</sup> Björk et al. (2010). "Open Access to the Scientific Journal Literature: Situation 2009". *PLoS ONE* 5 (6): e11273. doi:[10.1371/journal.pone.0011273](https://doi.org/10.1371/journal.pone.0011273). PMID [20585653](https://pubmed.ncbi.nlm.nih.gov/20585653/).

## [\[edit\]](#) See also

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## [\[edit\]](#) **Publicly available responses by third parties**

*In this section, responses to the RFI that are publicly available and have been consulted for the drafting of our response are listed, along with some key quotes that provide an idea about the approach taken in that response. The listing of these quotes here does not imply endorsement on the part of the Wikimedia Foundation.*

### [\[edit\]](#) **American Library Association and the Association of College and Research Libraries**

#### [\[edit\]](#) **Björn Brembs**

1. "I would dispute any actual intellectual property rights of publishers over publicly funded research. I am aware that legally there are such rights as researchers most often hand over their copyrights to these publishers. However, since commercial publishers do not usually add any value to the published research results (even peer-review is performed pro-bono by researchers themselves), this practice needs to end. Publicly funded research has been bought by the public and belongs to the public. Ensuring publication licenses such as CC-BY for literature about publicly funded research is one of the possibilities to ensure the public retains its intellectual property on the research it funded."
2. "The benefit is maximized by minimizing the costs associated with access. The costs are minimized by preventing third parties from adding costs to the process. One way to establish a short and thus cheap supply line is to have scholars deposit their work directly at their libraries, avoiding the costs of intermediaries such as publishers. The process of this deposition would still be identical to the current process (i.e., peer-review), albeit without intervening entities which withdraw funds but add little to no value."

#### [\[edit\]](#) **Cameron Neylon**

#### [\[edit\]](#) **Ecological Society of America**

1. "It is not appropriate for the federal government to expropriate the additional value publishers add to research results." / "Government mandates for publishers to make their work available online without compensation will endanger the U.S. scholarly publishing system"
2. "Subscription revenue from [ESA's] journals is crucial to ESA's publishing program." / "any potential embargo period will do little to mitigate the financial losses that would result from full open access."
3. "The Society also permits liberal use of ESA publications for educational purposes."
4. "require federally-funded grantees to provide a second version of the research summaries they already prepare, specifically for the lay reader"

#### [\[edit\]](#) **Geoffrey Irving**

1. "The single and most important step to take is to explicitly grant the authors of federally funded scientific papers the right to make copies of their work freely available"
2. "The embargo period should be negative: researchers should be allowed to freely distribute their work whenever they choose, including before publication or even before completion. " / "Any other embargo period, even zero, would cause an unnecessary drag on the speed of dissemination and advancement of scientific knowledge."

[[edit](#)][Harvard University](#)

1. "Yes, there are steps to grow new and existing markets arising from access to cutting-edge research. The most important step is to require public access (also called open access and free online access) to the final versions of the authors' manuscripts of peer-reviewed articles arising from publicly funded research."

[[edit](#)][Heather Etchevers](#)

[[edit](#)][John Wilbanks](#)

[[edit](#)][Kitware](#)

[[edit](#)][National Digital Stewardship Alliance](#)

[[edit](#)][Stevan Harnad](#)

The minimum should be to mandate that:

1. the fundee's revised, accepted refereed final draft
2. of all refereed journal articles (including refereed conference articles) resulting from the funded research must be
3. deposited immediately upon acceptance for publication
4. in the fundee's institutional repository.
5. Access to the deposit must be made gratis OA (online access free for all) immediately (no OA embargo) wherever possible (over 60 % of journals already endorse immediate gratis OA self-archiving).

[[edit](#)][University of Oregon](#)

[[edit](#)]**Similar public consultations**

- [Research:Committee/Areas of interest/Open-access policy/Request for Information on Public Access to Digital Data Resulting From Federally Funded Scientific Research](#) (same deadline of Jan 12, 2012)

- [US National Science Board seeks comments on a report on Data Policies, Digital Research Data Sharing and Management](#) (deadline: Jan 18, 2012)
- [Research:Committee/Areas of interest/Open-access policy/EU Consultation on scientific information in the digital age](#) (2010)
- [OSTP's Public Access Policy Forum](#) (2009)

Matt Cooper

[lcc@nagps.org](mailto:lcc@nagps.org)

President & CEO, National Association of Graduate-Professional Students

Washington, DC

**Background:** NAGPS represents over 50 major U.S. universities and 2.6 million graduate and professional students in the United States. NAGPS is a non-profit organization [501(c)(3)] dedicated to the continual improvement of the graduate and professional student experience and of the member associations that serve graduate and professional students. Our mission is to develop and sustain a member network that connects graduate and professional students and their associations, to provide resources and support to empower members, and to advocate on behalf of graduate/professional student interests across the nation.

NAGPS has been an avid supporter of public access policies because we believe that our future as students and as members of the academy and the world at-large is intimately connected with the dissemination of information via the Internet and the right to access such information. Graduate and professional students currently do not have access to all the scholarly research they need to pursue their education, research, and career goals.

**Comment 1: Are there steps that agencies could take to grow existing and new markets related to the access and analysis of peer-reviewed publications that result from federally funded scientific research? How can policies for archiving publications and making them publically accessible be used to grow the economy and improve the productivity of the scientific enterprise? What are the relative costs and benefits of such policies? What type of access to these publications is required to maximize U.S. economic growth and improve the productivity of the American scientific enterprise?**

As the United States continues its shift toward a knowledge-based economy, making publicly funded research available to all graduate and professional students is a direct investment in America's future. Open-access to publically funded research will facilitate the development of new entrepreneurial ventures by bright, innovative, and talented new graduates. Many graduate and professional students are already funded by federal dollars either directly through federal loans, or indirectly through NSF, NIH, USDA or other federal agency grants. The skills and talents that graduate and professional students develop are reliant upon having access to the most recent and up-to-date knowledge generated in their field.

Not having access to the most up to date research means that federal investments are being allowed to dull. Expanding the public's access to cutting-edge research will help graduate and professional students to enter the workforce running, allowing them to continue to develop new innovations and industries while they are still students, and after leaving their institutions of instruction. It is today's graduate and professional students in the humanities, arts, biological/health sciences, social sciences, engineering and computer sciences that will develop and found the Fortune 500 companies of the next century. Open access can help these new job-creators and job-holders to get their ideas and companies into the marketplace.

**Comment 2: What specific steps can be taken to protect the intellectual property interests of publishers, scientists, Federal agencies, and other stakeholders involved with the publication and dissemination of peer-reviewed scholarly publications resulting from federally funded scientific research? Conversely, are there policies that should not be adopted with respect to public access to peer-reviewed scholarly publications so as not to undermine any intellectual property rights of publishers, scientists, Federal agencies, and other stakeholders?**

The United States public would be best served by making public access available for all published peer-reviewed works or presentations that were funded by federal dollars. Many are already available freely in University repositories, where faculty may be encouraged to store pre-published versions of their manuscripts, or on federal agency and personal websites. Developing an open-access policy could move these databases and archives to a more easily searchable and centralized location similar to the current PubMed and Google scholar databases.

Developing such a database without infringing on copyrights could best be accomplished by ensuring that federally funded researchers be required to publish their findings through appropriate Creative Commons CC-BY licenses. High impact journals will always have the need and desire to publish high quality articles and research in order to keep their journals relevant. Researchers and scientists will continue to maintain their need to publish in high impact journals in order to remain relevant in

their fields and ensure their knowledge is widely disseminated. Requiring the use of Creative Common CC-BY licenses would allow publishers and scientists to continue to publish the highest quality articles in the highest impact academic journals while still allowing for appropriate and legal dissemination of these works.

**Comment 3: What are the pros and cons of centralized and decentralized approaches to managing public access to peer-reviewed scholarly publications that result from federally funded research in terms of interoperability, search, development of analytic tools, and other scientific and commercial opportunities? Are there reasons why a Federal agency (or agencies) should maintain custody of all published content, and are there ways that the government can ensure long-term stewardship if content is distributed across multiple private sources?**

Long-term stewardship would be best guaranteed by the hosting of databases by government agencies. The NSF, NIH, USDA, and other government institutions are the most appropriate stewards to ensure that publicly funded articles are permanently preserved, and made both accessible and usable by the general public. The hosting of such articles in a centralized database would best enable innovative companies and individuals to develop new services and companies. In order to accomplish this wide availability - approved repositories that meet conditions for public accessibility, usage rights, interoperability, and long-term article preservation could be maintained by third-parties and innovative public/private partnerships.

**Comment 4: Are there models or new ideas for public-private partnerships that take advantage of existing publisher archives and encourage innovation in accessibility and interoperability, while ensuring long-term stewardship of the results of federally funded research?**

No comment at this time

**Comment 6: How can Federal agencies that fund science maximize the benefit of public access policies to U.S. taxpayers, and their investment in the peer-reviewed literature, while minimizing burden and costs for stakeholders, including awardee institutions, scientists, publishers, Federal agencies, and libraries?**

No comment at this time.

**Comment 7: Besides scholarly journal articles, should other types of peer-reviewed publications resulting from federally funded research, such as book chapters and conference proceedings, be covered by these public access policies?**

Peer-reviewed conference papers and proceedings represent a significant portion of published literature and information that is relevant to their respective fields. Often, these papers and proceedings will contain additional or unique information on research that is otherwise unpublished. Due to both their impact and contribution, these types of publications should be included in the same category as journal articles with respect to public accessibility. Additionally, conference proceedings and papers can often represent first step towards journal publications, whose purpose keep the field's community of authors and researcher up-to-date on both current trends and current work being done in the field. For this reason, public access to these types of publications is important, allowing readers to remain apprised to both current research and current trends. Certain conference proceedings and papers may contain comprehensive reviews of published research to date, keeping both old and new authors informed on a comprehensive outlook in a particular field of interest. For this reason, public access remains important as it enables a wider audience of readers to both understand and perhaps enter a field of research. Conference proceedings and papers allow authors to share their research with the broader community as it progresses. Public access to such publications will enable others to keep up-to-date with current and future trends on specific subject, enabling a fast dissemination of knowledge throughout the research process. Book chapters that are derived in part from publicly funded research may represent a separate category from journal articles or conference proceedings, due not only to their publication medium, but the content contained within the chapters that may not derive from federal funding.

**Comment 8: What is the appropriate embargo period after publication before the public is granted free access to the full content of peer-reviewed scholarly publications resulting from federally funded research? Please describe the empirical basis for the recommended embargo period. Analyses that weigh public and private benefits and account for external market factors, such as competition, price changes, library budgets, and other factors, will be particularly useful. Are there evidence-based arguments that can be made that the delay period should be different for specific disciplines or types of publications?**

An embargo period no longer than 6-12 months.

open access

Thu 1/12/2012 3:57 PM

Amber Langston

I support open access. As a taxpayer, I'm interested in the advancement of medical science. I oppose any efforts to curtail open access as it would definitely slow down progress of medical cures, which our world sorely needs.

Please don't ban this access between researchers, general public, and others.

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Amber