

PRESIDENT

Joey P. Granger
University of Mississippi
Medical Center

PAST PRESIDENT

Peter D. Wagner
University of California,
San Diego

PRESIDENT-ELECT

Susan M. Barman
Michigan State University

COUNCILLORS

Kenneth Baldwin
University of California,
Irvine

David P. Brooks
Johnson & Johnson

Dennis Brown
Massachusetts General
Hospital

Ida Llewellyn-Smith
Flinders University

Patricia E. Molina
Louisiana State University,
Health Sciences Center

Usha Raj
University of Illinois at
Chicago

Jane F. Reckelhoff
University of Mississippi
Medical Center

Curt D. Sigmund
University of Iowa

Alan F. Sved
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