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

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

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.shtml>

<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/Rnmns>

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 public-access 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 well-known 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

[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

(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 interest 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 to 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).