May 4, 2020

Lisa Nichols
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Re: RFI Response: Public Access to Peer-Reviewed Scholarly Publications, Data and Code Resulting From Federally Funded Research

Dear Dr. Nichols:

STM is fully committed to the common goal to promote sustainable Open Science. I appreciate the continued dialogue with OSTP and the Administration on how to best promote openness and sharing and I particularly appreciate OSTP's recognition that publishers are valued partners that make important contributions to the advancement of research.

The International Association of Scientific, Technical and Medical Publishers (STM) is the leading global trade association for academic and professional publishers. It has more than 150 members in 21 countries who each year collectively publish more than 66% of all journal articles and tens of thousands of monographs and reference works. The majority of its members are small businesses and not-for-profit organizations, that represent tens of thousands of publishing employees, editors, reviewers, authors and readers, and other professionals across the United States and the world. They comprise the bulk of a $25 billion publishing industry that contributes significantly to the U.S. economy and enhances the U.S. balance of trade.

STM supports its members in their mission to advance research worldwide. As academic and professional publishers, learned societies, university presses, start-ups and established players, we work together to serve society by developing standards and technology to ensure research is of high quality, trustworthy and easy to access. It promotes the contribution that publishers make to innovation, openness and the sharing of knowledge and embrace change to support the growth and sustainability of the research ecosystem. As a common good, it provides data and analysis for all involved in the global activity of research, such as the [STM Report](#) series.

STM stands ready to work with OSTP, federal agencies, and others in the research community to expand on our efforts to make outputs "more readily accessible to students, clinicians, businesses, entrepreneurs, researchers, technologists, and the general public." The potential for working together to improve innovation and practice has been evident during the current global health crisis, as publishers worked with OSTP, NIH, and global health and research agencies to make articles related to COVID-19 available. At the same time, these articles only exist with high quality and integrity because of publisher investments in research communication. Publishers are also accelerating the review and dissemination of new research because of their ability to continue to invest. It is critical that the need for sustainable models of access that ensure the integrity and permanence of the scholarly record be addressed as we move towards a more open scholarly communication ecosystem, and that the Government allow a variety of means to achieve shared

goals.[1] As potential approaches are considered, the government should work with all communities to assess the positive and negative impacts before implementing them more widely.

Some of these concerns were previously raised in [my letter to Director Droegemeier](#), where I also indicated we would be pleased to work with OSTP to continue building a more open, cutting-edge vision for the future of scholarly communication and research, in coordination with all of those whose efforts and budgets underpin the scholarly communications ecosystem.

STM notes that the issues surrounding public access to research outputs are significant and differ widely between publications, data, and code. Due to the restriction on length for this RFI, STM has focused here on public access to publications. For comments on data, I refer you to our previous submissions on the topic to OSTP, NIH, and in response to the Federal Data Strategy, amongst others, as well as the [STM 2020 Research Data Year initiative,](#) and welcome opportunities to expand on efforts to make data and code publicly available.

What current limitations exist to the effective communication of research outputs (publications, data, and code) and how might communications evolve to accelerate public access while advancing the quality of scientific research? What are the barriers to and opportunities for change?

Challenges to quality, integrity, replication and reproducibility continue to threaten effective scholarly communication. While the academic community is always focused on research quality and integrity, there are opportunities to improve these efforts further. Publishers serve an important role in validating and disseminating research outputs, and STM's members actively explore how to improve upon and develop new solutions.[2] These include supporting the pre-registration of research, investing in existing and new form of peer review and infrastructure, developing automated checks for research misconduct (e.g. image manipulation, plagiarism, etc), and more. There is potential to develop these initiatives further through wider collaboration across the scholarly community as well as a need for explicit incentives to encourage their use.

There are also opportunities to improve access through existing initiatives. Publishers have invested significantly in discoverability, search engine optimization, and other efforts to make sure that published articles can be found and used to advance scientific research. Initiatives such as [seamlessaccess.org](#), and [GetFTR](#) have been launched to accelerate access, and these could benefit from refinement and wider adoption. Many publishers are experimenting with, and investing in, tools to improve the dissemination of new forms of content, including video and interactive information, alongside efforts to promote the sharing of data (as through the STM 2020 Research Data Year) and code. These experiments need to be fostered and recognized.

As more content is made available, it will be important to use the opportunities offered by machine learning and artificial intelligence to aid with synthesis, to identify themes and trends, and so forth. Publishers have developed tools, services and platforms that support and enhance machine learning, but machine learning and artificial intelligence are not without their own specific challenges. Funding, incentives, and intellectual property concerns will all need to be addressed to ensure that these opportunities reach their full potential.

Current funding mechanisms pose significant limitations to the effective and immediate communication of research and the sharing of research outputs. Many stakeholders will need to be

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[1] See our statements on options at https://www.stm-assoc.org/policy-advocacy/access-open-science/
[2] See greater detail in our response to the [NSTC JCORE RFI on the American Research Environment](#)

engaged to shift funding, and likely to expand the overall funding pool, in order to adapt and create systems that accelerate public access. For example, immediate open access publishing costs for all articles reporting on federally funded research have been estimated from $600 million to $1.35 billion per year, and there are additional costs for the preparation and curation of data and code. The work processes and funding flows that currently enable the communication of high quality validated and vetted outputs related to federally funded research will also need to be investigated, in order to find ways to provide dedicated funding; level the playing field for grantees regardless of career stage, institution or discipline; and enable unfunded researchers to contribute to the advancement of scholarship.

STM believes that with careful and collaborative consideration, solutions are possible. Scholarly communication is a fundamental part of the cycle of discovery and innovation, and a holistic view of these issues has the potential to reap dividends. Proceeding through pilots and targeted initiatives could ensure that we achieve the best outcomes without undermining the quality and integrity of the system upon which U.S. research excellence relies.

What more can Federal agencies do to make tax-payer funded research results, including peer-reviewed author manuscripts, data, and code funded by the Federal Government, freely and publicly accessible in a way that minimizes delay, maximizes access, and enhances usability? How can the Federal Government engage with other sectors to achieve these goals?

Scholarly publishers are excited to work with OSTP to experiment with new approaches to scientific communication. STM believes that well-designed pilots are the best way to collect evidence and assess the impacts on the cost and quality of scientific communication before policy changes are implemented. Pilots need to be designed and implemented collaboratively with inputs from researchers, institutions, publishers and agencies, in collaboration and coordination with aligned efforts such as the STM 2020 Research Data Year.

Where immediate access is desired, appropriate funding needs to be identified to support gold open access publishing, together with guidance for researchers to help them understand the benefits of this publication route, and to help them comply with policy. STM would welcome the opportunity to work with OSTP and federal agencies, together with others, to explore what economic and behavioral factors, including attitudes toward immediate open access models, may be contributing to a resistance toward greater adoption of gold open access.

STM notes that only about 1 in 5 NIH-funded researchers currently use available research funds to support publishing. Surveys indicate many researchers believe that supporting publishing is an inappropriate use of grant funding.[3] We believe these and other questions could be fruitfully explored by agencies to find the best, evidence-based policy that "minimizes delay, maximizes access, and enhances usability." As these approaches are considered, they need to be paired with an assessment of the full extent of impacts on the American research environment.

Exploration will show that rewards and incentives need to be restructured to encourage the broader sharing of materials related to federally funded research earlier in the research cycle.[4] An entire open scholarship ecosystem is being developed – of which immediate access is just one part – that offers the potential to minimize delay in sharing findings, increase impact, and achieve public access goals. Publishers support and invest in this evolution of research practices, in order to

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[3] E.g. nearly 1 in 6 in the 2016 *Pay It Forward Report* and 1 in 5 in the 2019 *Taylor & Francis Researcher Survey*
[4] Additional detail provided in our response to the NSTC JCORE RFI on the American Research Environment

advance transparency, rigor, efficiency and hence the overall quality of scholarship.

The Federal government has a role to support the development of these services and incentivize their use, by providing recognition for various open scholarship practices. These include, but are not limited to, the sharing of data, preregistration of studies, open research methods, the publication of negative results, and similar activities. There is a role for institutional incentives here, and also for Federal incentives in grant review, awards, and the like.

It is critical that the Federal government work to reduce complexity and streamline practices, by aligning policies in collaboration with key stakeholders.[5] Alignment is necessary across Federal agencies, to reduce the administrative burden associated with working with multiple agencies. Alignment is also necessary between the Federal government and research sectors, on emerging standards and best practices. For example, federal agencies are already active in the Research Data Alliance, and should seek opportunities to collaborate and engage in industry and non-profit initiatives, including Scholix for linking research objects, the FAIR Data initiative, the STM 2020 Year of Research Data, and other similar initiatives.

How would American science leadership and American competitiveness benefit from immediate access to these resources? What are potential challenges and effective approaches for overcoming them? Analyses that weigh the trade-offs of different approaches and models, especially those that provide data, will be particularly helpful.

Immediate access provides an opportunity to showcase new products and services described by articles (e.g. new pharmaceuticals, economic stimulus). Ultimately, a more open research environment may speed up the advancement of science and academic research, facilitate increased collaboration and interdisciplinary research, and drive the innovation and discovery that solves pressing societal problems and improves the American economy.

However, it is critical that immediate access policies do not risk the quality and integrity of scholarly communication that is necessary to achieve those benefits. We have seen in the current global health crisis that the current system continues to support high quality research communication that can advance public health. Embargoed green open access options – supported by business models that allow publishers to invest in producing the final published articles – help populate repositories without undermining the quality and integrity of the system, and allow publishers to recoup the investments incurred in their creation. STM is concerned that lowering embargoes for public access mandates below the current 12-month compromise would slow momentum for open science by limiting author choice and the ability of publishers to provide the options that scholars require. Rather than introducing government regulation, STM recommends harnessing the innovative spirit of the research community and its partners in the research enterprise to ensure the desired outcome.

As many studies have shown, there are significant costs involved in ensuring the provision of immediate access – costs that could be far in excess of current levels. For example, the 2016 *[Pay It Forward Report](#)* showed that, to transition to open access, resources beyond those currently allocated to universities would be necessary.[6] Other studies and reports have indicated that that

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[5] Additional detail provided in our response to the [NSTC JCORE RFI on the American Research Environment](#)
[6] "[O]ur analysis confirmed that for larger research-intensive institutions, publication charges in a fully APC-based OA environment are likely to exceed current journals budgets alone. Additional funds available to the researcher, including grant funding, should be considered to "top off" the funds redirected from libraries." (pp. 116-117).

scientific societies may not be able to make the transition to provide immediate access to all articles reporting on federally funded research. The costs of supporting open scholarship when it comes to data, code, and other practices are likely even larger.

Moreover, there are global and disciplinary differences in scholarly communication practices, both in the pace of research and its communication and in the available funding for supporting the communication of discoveries and stewardship of research outputs. There are also challenges with respect to intellectual property and proprietary interests. Policies that undermine the current system of scholarly communication by providing unreciprocated free access to US outputs may cause private sector researchers – or those of competitor nations – to strategically reduce sharing their practices or results, and unintentionally reduce the speed and communication of research.

A careful, evidence-based approach that engages stakeholders in solutions can address all of these challenges. The Federal government can help innovation to flourish, new models to emerge, and encourage new entrants by approaching these issues in an experimental and collaborative manner. STM believes that there are opportunities for public-private cooperation around specific "pilots" designed to test out new ideas, enhance cooperation between agencies and the private sector, collect data and feedback, and avoid unintended consequences. The costs of such initiatives could be managed through regular review and assessment.

Any additional information that might be considered for Federal policies related to public access to peer-reviewed author manuscripts, data, and code resulting from federally supported research.

In order to promote open scholarship, it will be crucial to provide the required support and training for researchers alongside necessary incentives. Topics for such education include methodological training, guidelines for responsible research and integrity, and the identification of best practices and appropriate venues for research outputs. STM notes that OSTP has taken some steps in this direction with the RFI on guidance for data repositories, and publishers are engaging as well. Some examples include Think Check Submit to help researchers choose appropriate venues for publishing, and support for Sense about Science, which promotes peer review. Most publishers also have training programmes and resources for researchers. We would welcome further collaboration on these topics.

In addition, I refer you to STM's response to the NSTC JCORE RFI on the American Research Environment, which provides additional comments related to the questions in this RFI.

The issues that define the research enterprise are important and weighty, and publishers continue to be important contributors to moving the enterprise forward. STM and its members look forward to a long-term dialogue with OSTP and federal agencies to enhance scholarly communication and economic competitiveness and stand ready to work with you on collaborative solutions that serve the public and the research enterprise.

Sincerely,

Ian Moss
CEO