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Subject: AAAS Response to Request for Information: Public Access to Peer-Reviewed Scholarly Publications, Data and Code Resulting from Federally Funded Research

Dr. Nichols:

We are writing to communicate the views of the American Association for the Advancement of Science (AAAS), the world's largest multidisciplinary scientific society, on the Office of Science and Technology Policy's request for information on public access to peer-reviewed scholarly publications, data and code resulting from federally funded research.

Improving access to scientific and technical information is a longstanding commitment of AAAS and the *Science* family of journals, one tied closely to our mission of advancing science and innovation throughout the world for the benefit of all people. We appreciate the opportunity to submit these comments as part of OSTP's goal to "explore opportunities to make the knowledge, information and data generated by federally funded research more readily accessible to students, clinicians, businesses, entrepreneurs, researchers, technologists, and the general public who support these investments."

Our comments respond directly to the questions raised in the RFI, and AAAS would welcome opportunities to discuss further and provide additional information on other issues that may arise as you consider the range of comments you receive. Opportunities to make scientific knowledge and information available can take many forms and benefit from efforts in science communication and other forms of public engagement. Furthermore, "access" does not mean equity and advancing public access does not address other challenges that the research enterprise faces, including longer training periods for young investigators and increased competition for federally funded grants.

Question 1: 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?

AAAS and the *Science* family of journals support open access (OA) options that are informed by the scientific community, contribute to the accurate record of published scientific content, and

protect the overall integrity of that content. Read more on OA at AAAS:
www.sciencemag.org/authors/open-access-aaas.

Effective communication of the scientific literature is jeopardized when versions of a scientific paper are not properly labeled. AAAS supports the author-accepted version of a paper being broadly and immediately shared; for example, authors may post their accepted papers immediately on their institutional (or personal) website. However, only the final version of a manuscript overseen by a publisher committed to maintaining the accuracy of the scientific record can be counted on to be corrected, retracted or otherwise updated with clear notation for the global scientific research community. The ability to follow up on versions of the scientific record requires substantial resources. For example, a 2016 *Science* [study](#) by Siddappa N. Byrareddy *et al.* that proposed a new approach to thwarting HIV; after having issued an Editorial Expression of Concern (EEOC) on the study in March 2019, when the journal learned the study had used an SIV virus variant not explicitly stated in the manuscript and that could have affected results, *Science* issued an official Correction six months later, in September 2019, to denote the virus used was not the wild-type. Both the EEOC and Correction were highlighted to the research community and to a global network of reporters to make clear the initial 2016 result “[was] not robust and therefore [did] not provide a good basis for guiding work on therapies for HIV.”

At AAAS, we believe that publisher oversight of a final version is essential not only to maintaining the quality and accuracy of scientific research but also to advancing the subsequent work from which new research stems.

How scientific communication evolves to accelerate public access while at the same advancing the quality of scientific research is a complicated question. High-quality scientific publishing, as AAAS does, requires considerable resource investment throughout the peer review and publication process, in order to identify the papers that have the potential to significantly impact the pace of science. Peer review itself involves not only the review of technical merit but also confirmation of adherence to editorial policies and maintaining the partnership with the scientific community to establish standards that support transparency and reproducibility.

This and related efforts are resource-intensive; the demand for quality assurance is only increasing with time as the advancement of scientific knowledge continues to accelerate across academic institutions and laboratories. It is AAAS’s view, with extensive experience as a leading global publisher, that scientists across disciplines look to non-profit scholarly journals like ours as filters for quality and merit. Every researcher who requires access to the broad range of research articles and news that is provided by the *Science* family of journals – researchers at large and small research institutions alike – has that access. The liberal green open access policies AAAS has supported for many years can overcome any temporary limitation.

AAAS makes all research articles of immediate relevance to public health concerns, including those on COVID-19, free. As the COVID-19 pandemic grips the globe, we are deeply committed to this effort – publishing [leading research](#) on SARS-CoV-2 structure, epidemiology, and therapeutics which readers can consume right away. However, the approach the *Science* family has taken to ensure all COVID-19 studies are swiftly reviewed and freely available – just as it does with other research on immediate public health concerns – is not sustainable across the journal portfolio for a publisher like AAAS, which seeks to do high-quality peer review. It is also not in the best interest of advanced scientific communication; when we publish this content “immediate release” (without our standard, four-day reporter embargo), science journalists who

look to journals like ours as filters for quality content may not write stories at all. Or, even the most veteran among them, we've learned, will write related stories after speaking to fewer sources and doing narrower analysis. This affects the quality of news stories for the public.

While this is a tradeoff AAAS is willing to make for this issue so that COVID-19 content can reach the research community immediately upon publication, it is not a result we, as a mission-driven organization focused on accurate and relevant science communication, would seek for all research we publish. The embargo system AAAS utilizes to provide content to reporters with short advance notice shows time and again it supports more accurate and contextualized science communication, which in turn builds awareness of scientific findings and public trust. This is a service our authors routinely tell us they value; it improves broader access to and use of their work, leading to new research, new academic collaborations, and beyond.

An opportunity for change as relates to effective communication rests with federal agencies that fund science in partnership with non-profit scholarly publishers. These agencies should implement guidelines for access to data in publications sufficient to ensure the ability to reproduce the research results that publishers can enforce. In such a scenario, authors funded by such agencies should have data management plans that allow scholarly journals to include links to the relevant data repository in their publications. These guidelines would further help efforts to ensure data and code underlying research outputs are accessible, as discussed in more detail below. Any guidelines, however, must ensure the protection of confidential business information, personal identification information, informed consent agreements, and material transfer agreements.

Question 2: 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?

Access is a foremost consideration at AAAS, where our mission is to communicate science accurately and broadly. AAAS publishes one gold open access journal and five subscription-based journals that have liberal green open access policies; authors may place their accepted manuscripts in an institutional repository immediately upon publication, with no delay.

To make data underlying taxpayer funded research results even more accessible, federal agencies that fund science should implement guidelines for data availability in publications. These guidelines should include a clear set of criteria for data deposition and ease of linking to that data, for use by readers. Publishers could be the enforcers of such guidelines. AAAS, for example, could require that authors funded by federal agencies include links to the relevant data repository in their manuscripts, as a criterion to publish.

To enhance usability of taxpayer funded research results, federal agencies should require that versions of a manuscript – be they preprint, author-accepted, or final – be clearly labeled. Only the final version handled by a publisher committed to maintaining the accuracy of the scientific record can be counted on to be corrected, retracted or otherwise updated with clear notation. The ability to manage and update on versions of record requires substantial resources, as noted previously. At AAAS, we believe oversight of a final version is essential not only to maintaining

the quality of scientific research, but also to advancing subsequent work from which new research stems.

Question 3: 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.

American science could help maintain global leadership in scientific competitiveness by guiding federal agencies that fund science to require that versions of a manuscript – be they preprint, author-accepted, or final – be clearly labeled. This guidance would help our nation’s non-profit scholarly publishers advance their leadership in protecting the scientific integrity of the research record and in ensuring that derivative work is based on the most up-to-date science. Research published during the COVID-19 pandemic is but one example of when such efforts are essential; the use of basic research and new efforts to improve diagnostics or develop therapies, for example, will best serve Americans and the world when based on the most accurate, up-to-date work as reflected in the final versions.

Federal agencies that fund science should ensure the researchers they fund understand the importance of data deposition and accurate version labeling. AAAS, among other publishers, could partner with these agencies by enforcing related guidelines as a criterion for publication.

Question 4: 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.

It is AAAS’s view, and its extensive experience as a global publisher, that scientists across disciplines look to non-profit scholarly journals like ours as filters for quality and merit. We remain committed and focused on the community’s needs and goals through our subscription and open-access publications. We support open access options that are informed by the scientific community, contribute to the accurate record of published scientific content, and protect the overall integrity of that content.

If federal agencies adopted the policies proposed above, AAAS would be an eager partner in helping to develop such policies and enforcing them, to help make America a global leader in scientific integrity-keeping and research advancement, while maintaining our commitment to author freedom and broad science communication.

Thank you for the opportunity to provide comment.

Sincerely,



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