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Association of College & Research Libraries
A division of the American Library Association

ALA American Library Association

These comments are provided on behalf of the American Library Association (ALA) and its division the Association of College and Research Libraries (ACRL), which serves nearly 10,000 academic and research librarians and interested individuals working in institutions of higher education, in response to a Request for Information issued by the White House Office of Science and Technology Policy. Our associations are in favor of public access to peer-reviewed scholarly publications, data, and code resulting from federally funded research. Public access to the results of federally funded research benefits all Americans, far beyond students and researchers.

There are more public libraries than Starbucks in the U.S. (16,568),[i] and the average American adult visits the library ten times a year—more than movie theaters, live sporting events, concerts, or museums.[ii] As such, librarians are uniquely positioned to understand the information needs of the U.S. population. Librarians help users learn the difference between a web search and research. For example, with so much health information online—much of it unreliable—librarians help their communities find health resources that are scientifically accurate and thoroughly vetted, playing a key role in promoting health literacy. Greater access to publicly funded research not only helps the general public understand health concerns but also provides access to critical research to those fighting the COVID-19 pandemic, as discussed later in these comments.

As reflected in our previous support for governmental policies and legislation that facilitate open access and open education—including the NIH Open Access Policy, the 2013 Office of Science and Technology Policy Memorandum, and the Fair Access to Science & Technology Research Act and Federal Research Public Access Act bills—ACRL is fundamentally committed to the open exchange of information to empower individuals and facilitate scientific discovery. Public access to taxpayer-funded research is a responsible measure to control library costs. The status quo of placing federally funded research behind a paywall is untenable and keeps libraries from providing equitable access.

In response to the specific question in the RFI, ACRL and ALA offer these comments.

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?*

Lack of access is the most significant limitation to the effective communication of research outputs, which acts as a barrier to scientific advancement and inhibits U.S. global leadership. The U.S. government spends billions of taxpayer dollars on research, but access to the results of that research is unnecessarily restricted. Costs to access the resulting literature (through subscriptions and through the purchase of individual articles) are so high that no researcher or research institution is able to afford to subscribe to all published research, and therefore no library can provide access to all publicly funded research until public access is a mandate. The cost of access is rising, creating an increasingly uneven playing field. Both subscription costs and article processing charges

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(APCs; fees many journals charge authors to publish their work open access) continue to increase at unsustainable rates. Libraries' expenditures for scientific journals and similar ongoing resources increased 160% between 1998 and 2018; by comparison, the Consumer Price Index increased only 54% during the same period.[iii] A second limitation to the effective communication of research outputs relates to how our current laws do not keep pace with technology. The power of artificial intelligence (AI) applied to machine-readable formats to machine-readable formats to discern patterns, identify trends, and otherwise analyze large data sets is limited by the availability of open access publications. This RFI frames the question of limitations around public access instead of open access. Public access provides a copy of the article in any format; open access to machine-readable formats is needed, especially to support U.S. Federal Government initiatives such as the American AI Initiative created through a 2019 Executive Order.[iv] The federal government should advance policies not just for public access, but for open access.

Lack of access to research data also poses great challenges to scientific research. Scientists are reluctant to share data while waiting for papers to be published. But even once the paper is published, there is little incentive to make their data public. Data is often in proprietary formats that make it difficult or impossible for others to use, and the work that goes into making such data available and usable is not typically recognized by scientists' institutions or publishers, even though many journals do require sharing the data underlying a paper. Journals do not incentivize the replication of studies; thus, there are few reasons to use other researchers' data, resulting in little effort to ensure the reproducibility or replicability of findings.[v] A federally mandated open access policy, with reasonable exceptions for human subjects research and research with national security interests, would require making this data more accessible and protect taxpayer investments in research and development.

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?*

Libraries have actively supported the 2013 Office of Science and Technology Policy memorandum requiring public access to research results.[vi] We educate and provide assistance to our researchers in complying with this policy. However, the 12-month embargo still limits timely access to the vast majority of taxpayers—those who do not have access to the journals in which those results were published. As noted in a recent op-ed, "open access publication enhances transparency and public knowledge, and thus is crucial for fostering patient and public engagement with academic endeavors."[vii] Federal funding agencies can take further action to improve access by removing the 12-month embargo on access to articles and making all taxpayer-funded work openly available upon publication. This would level the playing field and enable everyone to have the best information to use in making critical decisions.

Technical restrictions inhibit scientific progress as well. Open licensing and machine-readable formats enable text mining and AI applications to drive more rapid discovery and advancement. Now is the time to bypass the obstacles and make research outputs

widely available in machine-readable formats to leverage this knowledge and foster further inventions and innovations. We can use existing technologies to improve how research is disseminated, evaluated, and communicated. By reinforcing the research community's commitment to sharing research data and information, and by eliminating the obstacles that hamper progress, we can accelerate economic development and improve accessibility.

Certain federal agencies have already taken steps to improve the accessibility of taxpayer funded research. For example, NIH's draft policy for data management and sharing would require scientific data resulting from research conducted using federal funding to be shared.[viii] The policy's definition of scientific data goes beyond just making available the data underlying publications (indeed, as mentioned, many journals already require the sharing of this type of data), but also any recorded factual data material required to validate and replicate research findings. Adopting this policy across all federal agencies would improve the accessibility of federally funded research.

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.*

Immediate open access to federally funded research publications, data, and code would provide opportunities to advance quality research, ensuring America retains its place as a leader in scientific innovation and development. The importance of immediate open access to research is evident in the current COVID-19 pandemic. On March 13, 2020, the OSTP announced that President Trump's Science Advisor and government science leaders from around the world are calling on publishers to make all COVID-19-related research publicly available. The announcement also said that "research and data is more important than ever as we combat the COVID-19 outbreak."[ix] Open access would allow quicker development of effective vaccines and treatments, better understanding of how the virus operates in the body and in populations, and quicker turnaround from science to public health policy.

Immediate open access should be the norm for all scientific papers and underlying data. Open access research will improve the responsiveness of the scientific community and reduce the consequences for all subsequent disease outbreaks—not just for community-transmitted pandemics, but also for vector-borne illnesses like Zika and West Nile. This will not be the last pandemic. A zero-embargo open access policy will improve American and global security in the face of future public health crises.

Lack of access and rising costs also hinder start-ups and small businesses. While academic libraries serve their university and its community, when students graduate they often lose access to scientific publications entirely. Many land-grant universities and other public institutions allow anyone from the community into the library to access subscribed resources, but not everyone lives near such a library, meaning that access is not equitable, especially in rural areas with lower population density.

The Human Genome Project is commonly cited as an example of the successful translation of government-funded research into increased economic activity. The federal government invested $3.8 billion between 1988 and 2003. The project directly and

indirectly returned an economic impact of $796 billion and an estimated 3.8 million job-years of employment.[x] Similarly, investment in research at NASA has enabled commercial inventions, products, and businesses. In 2019, NASA's annual technology *Spinoff* reports cited over 2000 inventions, products, and businesses in areas as varied as health and medicine, public safety, and industrial productivity resulting from their initial research.[xi]

Other parts of the world have explored the economic impact of increasing access to government-funded research results and have found significant benefits to providing immediate access. For example, the European Union conducted a study on the reuse of information that public bodies produce, collect, or pay for and found that the direct economic value of public sector information was estimated to be €52 million. Projections for the value in 2028 ranged from €150 billion to €215 billion, depending on the policy implemented.[xii] U.S. science leadership will be at a disadvantage if it does not adopt similar policies.

As OSTP Director Droegemeier wrote in 2019, "Our Nation leads global scientific progress by example, promoting core principles of freedom of inquiry, scientific integrity, collaboration, and openness."[xiii] However, in the 2018 Science and Engineering Indicators report, the National Science Board noted that although the U.S. is currently the global leader in science and technology, our global influence is decreasing.[xiv] Open sharing leads to innovation and drives scientific advancement, and the U.S. scientific leadership position will be bolstered by expanding openness.

Beyond business interests, state and local governments need timely access to research to solve the problems they are facing. Doctors, teachers, and practitioners across all sectors need timely access to the best research to inform their treatments and practices.

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.*

We are preparing this letter in the midst of the outbreak of COVID-19. This public health crisis is wreaking havoc on economic markets and causing most sectors to drastically alter operations. The crisis also provides a clear and timely example of the dysfunction of the closed scholarly communication system. While several of the largest commercial publishers signed onto a Wellcome Trust statement to ensure that research findings and data relevant to the COVID-19 outbreak are openly available, it is not sufficient. One analysis found that more than half of articles on coronaviruses remain behind paywalls. Even if those articles were opened, researchers would still not have access to all cited sources.[xv] Elsevier has deposited its published COVID-19-related research into a new COVID-19 resource center and granted temporary permission to make this research available with provisional rights for unrestricted research reuse and analyses in any form and by any means with acknowledgement of the original source. However, these permissions are only "granted for free by Elsevier for as long as the COVID-19 resource center remains active."[xvi] The legal ambiguity created in this language is counterproductive and Elsevier has claimed that it can revoke permission, thus breaking any systems that were built on the data set. There is a clear need for immediate unrestricted access to scientific articles and data. The American scientific community will accomplish so much more if immediate access to published research became the default.

Conclusion

To advance scientific progress, student learning, U.S. global leadership and competitiveness, and quick and informed response to health threats such as COVID-19, we urge the Administration to provide for immediate open access to taxpayer-funded research. Thank you for your consideration.

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[iii] https://www.arl.org/wp-content/uploads/2019/10/expenditure-trends.pdf.

[iv] https://www.whitehouse.gov/ai/.

[v] http://blogs.nature.com/naturejobs/2016/10/21/why-dont-scientists-always-share-their-data.

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[xvi] https://www.elsevier.com/connect/coronavirus-information-center.