

Date: April 30, 2020  
To: Lisa Nichols, Assistant Director for Academic Engagement  
Office of Science and Technology Policy  
[publicaccess@ostp.eop.gov](mailto:publicaccess@ostp.eop.gov)  
From: Roger Wakimoto, Vice Chancellor for Research and Creative Activities  
Virginia Steel, Norman and Armena Powell University Librarian  
University of California, Los Angeles  
About: RFI Response: Public Access

Dear Dr. Nichols:

We are writing on behalf of the University of California, Los Angeles, Office of the Vice Chancellor for Research and Creative Activity and the UCLA Library with regard to the Request for Information: Public Access to Peer-Reviewed Scholarly Publications, Data and Code Resulting from Federally Funded Research, issued on February 19, 2020. We are grateful for the opportunity to contribute to the Office of Science and Technology Policy's deliberations. The need for the results of publicly funded research to be immediately available to, and fully usable by, the public is a matter of vital public interest: the urgent public health crisis that we are now experiencing makes this need painfully clear.

Founded in 1919, UCLA is ranked first among public universities and is the most applied-to university in the nation. In 2019, it had a total student enrollment of 45,921. UCLA encompasses the College of Letters and Sciences; a number of graduate schools and programs, including a highly ranked school of management; and schools of engineering, law, art and architecture, and medicine. Forty UCLA doctoral programs rank among top 10 in their fields nationwide. The Ronald Reagan UCLA Medical Center is one of the top-ranked hospitals in the country. Since the year 2000, startup valuations built on UCLA's technology totaled \$33 billion.

The UCLA Office of the Vice Chancellor for Research and Creative Activities and the UCLA Library unequivocally support a zero-embargo policy for peer-reviewed author accepted manuscripts resulting from federally funded scientific research. We consider this to be a reasonable and considered step to minimize delay and maximize access to published research outputs that will enable new discoveries and progress on solving problems. However, we believe that the path to zero-embargo should occur over a period of time to provide not-for-profit scholarly societies time to adapt. We also support a policy that makes the data and code associated with federally funded research publications available to the public according to the FAIR Principles,<sup>1</sup> to support accessibility, interoperability, discovery, reuse, and continuing innovation. Our response to the specific questions raised in the Request for Information follows.

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<sup>1</sup> <https://www.go-fair.org/fair-principles/>

*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?*

The U.S. government spends billions of taxpayer dollars on research: the public has paid for this research and has a right to access and use the results of this work. All too often, however, the only way research results are disseminated is through publication in paywalled journals that require expensive, restrictive subscriptions or pay-per-view access. This creates uneven playing fields for individuals and institutions, limiting inquiry, discovery, competition, and innovation. Only researchers at the wealthiest institutions are able to read the articles that contain research results, so this system slows scientific discoveries and perpetuates inequities among researchers.

For example, even at a top-ranked public university such as UCLA, the library struggles to keep pace with the escalating costs of paywalled journal subscription—every time a subscription increases in price, the library is forced to essentially create a system of winners and losers: some researchers may have to do without the resources they need. Oftentimes, when the library cannot afford a subscription, it relies on pay-per-view access to provide copies of articles for individual researchers, which is expensive and contributes nothing to the body of resources that the library can make available to other researchers. Barriers to access imposed by the unaffordability of published research reduce the immediate value of that research. This is an especially acute problem when negotiating with the for-profit publishers.

All too often, even the basic data needed to validate or reproduce the research results appearing in peer-reviewed journals is unavailable, eroding trust in scientific research and limiting the value of our investment in science. At a minimum, the data, code, software, and other material needed for validation and replication of the research presented in articles should be made immediately available, and other data associated with taxpayer-funded research should, as appropriate, be FAIR—Findable, Accessible, Interoperable, Reusable.

Over the past several months, a number of the leading science, technology, and medical publishers have made portions of their paywalled content available free to libraries and the research community, in response to the Covid-19 crisis. While this action recognizes the essential role libraries have in connecting researchers with research, it is also an explicit, if indirect, acknowledgement of the impediments to research that are routinely imposed by paywalls. Without a zero-embargo policy, once the Covid-19 crisis is over, access to the research that was done to treat and prevent it will once again become restricted.

As the COVID-19 pandemic advances, health care workers are in urgent need of critical personal protective equipment. At UCLA, the Schools of Engineering and Medicine and the Library have responded by coordinating efforts to identify and produce prototypes for 3D-printed medical masks in our labs, as part of a national network of universities and libraries. Through basic online research, an Open Access prototype was identified, a discovery which vaulted the design-

phase and expedited the testing lifecycle. Once a viable prototype was approved, the design for these potentially life-saving medical masks was deposited into an open-access NIH repository so that they could be printed and distributed to hospitals and other medical facilities. This community effort speaks to the enormous value of barrier-free access to research.

*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?*

The federal government should implement a strong national policy to ensure that taxpayers get immediate, barrier-free access to the full results of the scientific research that our tax dollars have funded. The policy should include these elements:

- The 12-month embargo period on articles should be eliminated. Final manuscripts of peer-reviewed articles or published articles should be made available immediately.
- Articles should be openly licensed to ensure full utility, by CC-BY or similar license, or through a public domain designation.
- Final peer-reviewed manuscripts or published articles should be made available in open and machine-readable formats that fully enable productive reuse, including text/data mining and computational analysis.
- Free public access to, and long-term preservation of, final peer-reviewed articles or published versions and supporting data should be provided to the public via a digital repository maintained by the appropriate Federal agency or in any repository meeting the criteria for persistent, barrier-free, functional access.
- The data, code, software, and other material needed for validation and replication of the research presented in articles should be made immediately available.
- Other data associated with taxpayer-funded research should, as appropriate, be FAIR—Findable, Accessible, Interoperable, Reusable. Moreover, the types of data to be made available (raw, processed, products) should be clearly stated. The length of time these data are to be made available needs to be determined. All data in perpetuity is not a realistic or attainable goal.
- Agencies may need to rethink the current model of funding publications via awards to principle investigators. For example, agencies should be encouraged to talk to libraries where repositories are often supported.

Library subscription dollars currently play a significant role in supporting the operations of scholarly societies and other participants in scholarly publishing: at UCLA, the Library is eager to work with federal agencies and other stakeholders to explore new opportunities to leverage open taxpayer-funded research outputs. As a research university, we are committed to engaging with scholarly societies, and other partners in the academic enterprise, to develop risk-mitigation strategies to support equitable and open sharing of research outputs of all kinds across the full

research lifecycle and to support and sustain the scholarly societies. Libraries have already taken on extensive new roles in data management and curation and are committed to working in partnership with research administrators at our universities to support efficient, cost-effective support services to improve data management and sharing, and to reduce the compliance burden on investigators.

*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 colleges and universities cannot play a leadership role in science if our researchers routinely encounter paywalls that obstruct access to critical research articles and data. Even the most well-funded academic libraries cannot afford to subscribe to all of the journals their researchers need, and libraries struggling to support researchers working in interdisciplinary or emerging fields face the greatest challenges. Scientists cannot conduct leading-edge research with such obstacles in their way, nor can they train future leading-edge science professionals.

By implementing a repository-based, zero-embargo Open Access policy, the U.S. can gain the benefits of broadening access to its taxpayer-funded research outputs in a cost-effective manner. For example, the National Institutes of Health (NIH) reports that it costs ~\$4.6 million per year to run PubMed Central (PMC) and provide public access to 100,000+ articles reporting on its funded research each year. This modest expense represents a tiny fraction—only 1/90<sup>th</sup> of 1%—of the NIH’s annual \$40+ billion operating budget, an extraordinary value for American taxpayers.<sup>2</sup> The NIH’s investment in PMC has also created an opportunity for other agencies to benefit: nine other U.S. Federal Agencies are currently utilizing PMC to provide public access to articles resulting from their funded research, extending the value of PMC and the research that it makes open and available.

By stark contrast, the costs charged to authors, institutions and foundations by journal publishers in order to make research open by paying Article Processing Charges (APCs) have been steadily and sharply rising. Recent research has revealed hyperinflation in the APC market: data shows APCs have nearly doubled over the past decade, from a mean price of \$1,107 for open publication of a single article in 2005 to over \$2,065 in 2018.<sup>3</sup> Of course, APCs for some high-impact journals are significantly higher: the APC for a single article in the medical journal *The Lancet* is \$5000, and in the life-sciences journal *Cell*, the APC for a single article is \$5900.<sup>4</sup>

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<sup>2</sup> <https://tinyurl.com/lipmantestimony2010>

<sup>3</sup> Aasheim et al: <https://www.liberquarterly.eu/articles/10.18352/lq.10280>

<sup>4</sup> As of March 24, 2020. “Elsevier>About>Policies>“Pricing” at <https://www.elsevier.com/about/policies/pricing>

A government-wide, zero-embargo Open Access policy will also support informed, transparent, federal budget and policy decision-making and will improve the rigor and reliability of taxpayer funded research by providing more transparency and the ability for easier verification of results. Federal agency accountability will be materially increased and taxpayers will see improved accounting on the outcomes of research supported by federal agencies. It will also help appropriators and authorizers to more accurately assess the value of existing expenditures, and to target funding toward the most promising research areas. This will, in turn, improve public trust in science—and, in particular, U.S. government-funded science.

Open Access policies are becoming the global norm because providing open access to outputs of publicly funded research is a valuable strategy for increasing governments' return on investment in research, and, in turn, it boosts innovation and enhances national competitiveness. For instance, the European Commission has a full Open Access policy for articles and data, and Canada, India, China, and Brazil, to name a few, and major foundations ranging from the Gates Foundation to the Wellcome Trust also have or are implementing Open Access policies.

The United States has at least one sterling example of the benefits of Open Access to American science and the American economy: the Human Genome project. Its open data generated an economic return of \$796 billion on a \$3.8 billion investment—a return on investment (ROI) of 141:1. Every \$1 of taxpayer money generated \$141 in economic activity, including job creation.<sup>i</sup>

Another example is NOAA's open access to weather data that has stimulated the economy in the U.S. The availability of weather information has led to the growth of the private sector (e.g., the Weather Company) that is estimated to be worth \$6B. As other countries adopt meaningful Open Access policies and accelerate their scientific research, boost innovation, and increase competitiveness, the United States is being left behind.

On behalf of UCLA, we would like to thank the Office of Science and Technology Policy for facilitating a robust discussion of this important issue. We encourage you to support a strong immediate Open Access policy for the results of publicly funded research.

Sincerely yours,

Roger Wakimoto  
Vice Chancellor for Research and Creative Activity  
University of California, Los Angeles

Virginia Steel  
Norman and Armena Powell University Librarian  
University of California, Los Angeles

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<sup>i</sup> <https://www.genome.gov/27544383/calculating-the-economic-impact-of-the-human-genome-project>