



**The Genetics Society of America
Response to Office of Science and Technology Policy (OSTP)
Public Consultation on Public Access Policies for
Science and Technology Funding Agencies**

To:

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Introduction

Founded in 1931, the Genetics Society of America (GSA) is the professional membership organization for geneticists and science educators. Its more than 4,000 members work to advance knowledge in the basic mechanisms of inheritance, from the molecular to the population level. The GSA is dedicated to promoting research in genetics and to facilitating communication among geneticists. The GSA seeks to foster a unified science of genetics and to maximize its intellectual and practical impact.

GENETICS (<http://www.genetics.org>), the peer-edited journal of the GSA, has, since 1916, published high quality, original research on a range of topics, including classical transmission genetics, molecular genetics, theoretical and applied population genetics, developmental and behavioral genetics, cellular genetics, gene expression, and genome and systems biology. *GENETICS* is one of the world's most cited journals in genetics.

The GSA welcomes the chance to present its comments to the OSTP. All comments contained herein represent the views of the Genetics Society of America leadership and the responses to OSTP's questions relate primarily to the needs of the GSA membership and communities we serve.

The GSA supports the commitment of the Obama administration to, as stated by the President in his Open Government Directive memorandum, "[provide] information for citizens about what their Government is doing." The principle of transparency and open government requires that citizens have open and ready access to information about the expenditure of public funds, including research grants, contracts, and cooperative agreements. The contents of scholarly publications (either the final version of record or the manuscript version of that record) are, in fact, several steps (and sometimes several years) removed from the original action of the Government, i.e. the awarding of the grant, contract, or agreement. We recognize that there are may be compelling reasons why public access to the scientific record may be a desirable public good, but we do not believe that this access fulfills the spirit or the letter of President Obama's memorandum.

Whatever the rationale for doing so, the development of a responsive and responsible policy on public access to the scientific record requires a deliberate approach rooted in empirical data and facts. It must be developed in collaboration with scholarly publishers and scientific societies, and must address the varying degrees of formality and process for information sharing found in the different disciplines. For example, computer scientists regularly share conference papers and proceedings with one other, and researchers in physics have developed their own widely-used repository, arXiv, for sharing conference papers. On the other hand, researchers in the biological sciences publish almost exclusively in peer-reviewed and edited scholarly journals and have had low rates of compliance with voluntary publication repositories.

The careful development of a public access policy requires determining the true extent of the problem – what is the level of public demand for access to the scientific literature, and in what ways is that demand not currently being met? If the problem is such that a broad-based federal policy is needed to address it, care must then be taken to craft a policy that will meet public demand while ensuring that scientific publishing will not only survive, but will thrive in a way that allows continued innovation in publishing.

Responses to numbered questions posed by the OSTP for discussion

1. How do authors, primary and secondary publishers, libraries, universities, and the federal government contribute to the development and dissemination of peer reviewed papers arising from federal funds now, and how might this change under a public access policy?

Each of these parties plays a specific and important role in the creation, evaluation, and distribution of scientific research. Authors conduct the research, often with funding from federal government agencies, review and interpret the resulting data, write up their results and interpretation the select a journal to which to submit their work. Researchers choose the journals to which they send their work on the basis of several factors, including journal reputation, niche, editors, impact, reach, and other aspects.

Scholarly publishers (in particular, nonprofit society publishers such as the GSA) add value by adding quality.¹ Publishers provide the infrastructure, staff support, and financial support for peer review of manuscripts; professional editing of the final version; and the distribution, archiving and promotion of published research findings. Publishers appoint editors and select reviewers who have the appropriate expertise for evaluating submitted manuscripts. Final presentation, including graphic design and content presentation that maximizes search, retrieval, and usability, is also handled by the publisher.

Scholarly publishers drive the development of new technologies for delivering content and reaching readers. These technological developments have transformed the traditional research “paper” into a multi-media product that may include significant supplemental material containing information on methods and additional data, video clips, figures that can be downloaded as PowerPoint slides for teaching, and links to external sources. In one recent example of how journals add value to publications through technology *GENETICS* has developed a way to seamlessly link research articles with annotated and curate data contained in model organism databases. This allows the reader to click on a hyperlink in the article (e.g., a gene name) and land, on the information about the corresponding gene in a database.

The development of this technological innovation involved many hours of work on the part of *GENETICS* staff and editors, the staff at the model organism databases, and Highwire Press, the online host for *GENETICS*. This kind of significant investment of time and financial support is illustrative of the value of scholarly publishers to the research enterprise, and is done without government support.

Scholarly publishers work closely with libraries and universities to ensure that the results of research are accessible and properly archived. Society publishers such as GSA are sensitive to the needs of libraries and research institutions, as evidenced by our recent decision to freeze subscription prices in the wake of the economic crisis facing universities.

¹ Morris, Sally, 2008. What is quality in journals publishing? *Learned Publishing*, 21, 4–6 doi: 10.1087/095315108X248383

Federal funding for research projects contributes to the production and analysis of research data, but this funding does not pay for the materials, work, or technology that make up the current state-of-the-art in scholarly publishing. To claim that federal funding “pays for” the content of *GENETICS* ignores the cost and added value of the publishing process.

A public access policy has the potential to limit the ability of publishers to recoup the costs of publication and to have sufficient net revenue to drive further innovation in the field of scholarly publishing. For this reason, the development and implementation of such a policy must be done with care, based on sound empirical evidence that such a policy is truly needed or desired by taxpayers.

Indeed, such a policy may be quickly superseded by the marketplace. For example, DeepDyve (www.deepdyve.com) is now offering the content of scholarly journals (including *GENETICS*) on a rental basis. Right now, anyone who doesn't want to wait six months for an article in *GENETICS* to become accessible for free can pay \$.99 to view the full article from the journal for 24 hours. Other rental options are available.

2. What characteristics of a public access policy would best accommodate the needs and interests of authors, primary and secondary publishers, libraries, universities, the federal government, users of scientific literature, and the public?

This question presumes that each of these interest groups needs or is interested in a public access policy. The truth of that assumption is not known, and research is needed to determine exactly what are the needs and interest of these stakeholders, particularly the public, which a “public access policy” would address). Does a problem exist (i. e., is there a public demand for this content?) and, if so, how is it best addressed? In the biomedical sciences, where data on demand for and usage of the content available in PubMed Central presumably exist, these data have not, as far as we know, been made available to anyone (including the taxpayers who have paid for PubMed Central) for analysis.

3. Who are the users of peer-reviewed publications arising from federal research? How do they access and use these papers now, and how might they if these papers were more accessible? Would others use these papers if they were more accessible, and for what purpose?

Researchers and teachers are the primary users of *GENETICS*. Our readers access the journal's issues from 1916 until December 2009 as print copies in university and institutional libraries or as individual subscribers, or in electronic form online through university and institutional or individual subscriptions. Beginning in January 2010 *GENETICS* is available only online. As mentioned above, articles are available to anyone on a rental basis for six months after the date of publication. Access to the content of *GENETICS* online becomes available to anyone free of charge six months after the date of publication.

4. How best could Federal agencies enhance public access to the peer-reviewed papers that arise from their research funds? What measures could agencies use to gauge whether there is increased return on federal investment gained by expanded access?

As noted above, in the US federal funding for research projects contributes to the production and analysis of research data but this funding does not pay for the materials, work, or technology that make up the current state-of-the-art in scholarly publishing. To claim that peer-reviewed publications “arise from” research funds ignores the cost and added value of the peer review process.

It is not clear what kind of “increased return” is expected from “expanded access” that will come at a cost to scholarly publishers. Therefore, it is difficult to suggest ways to measure this return. As mentioned above, the government has a current investment in PubMed Central, and the return on that investment has not yet been determined or measured. We suggest that efforts to calculate the increased return on the government’s investment in public access begin with an analysis of the usage statistics for PubMed Central.

5. [What features does a public access policy need to have to ensure compliance?](#)

A successful public access policy must be grounded in empirical evidence for need and demand, and must be the result of careful, deliberate, and cooperative efforts to earn the full support of funding agencies, the scientists whose work is to be disseminated, publishers, and scientific societies. It is crucial that a public access policy be structured so that it does not undermine the quality of the scientific record (by providing access only to the final version of record) or the survival of scientific publishers.

6. [What version of the paper should be made public under a public access policy \(e.g., the author’s peer reviewed manuscript or the final published version\)? What are the relative advantages and disadvantages to different versions of a scientific paper?](#)

The GSA believes that the version of record should be the final published version, without exception. The final published version has had value-added by the publisher, including editing, copy-editing, layout, table and figure work, the addition of technological features such as the database links described above. The simplest means of providing this access would be to provide a link to the final version of record, rather than establishing a separate repository of manuscripts.

7. [At what point in time should peer-reviewed papers be made public via a public access policy relative to the date a publisher releases the final version? Are there empirical data to support an optimal length of time? Should the delay period be the same or vary for levels of access \(e.g. final peer reviewed manuscript or final published article, access under fair use versus alternative license\), for federal agencies and scientific disciplines?](#)

To our knowledge, there are no data to support an optimal subscription embargo period. Delay periods should be determined by each publisher, because the optimal delay likely varies by discipline and publishers themselves are best equipped to decide how best to provide access to the articles submitted to the journals they publish and whose value they have helped to create.

GENETICS recently participated in a randomized, controlled study that measured the impact of immediate, free access to randomly selected articles in the journal on the rate of citation of those articles in subsequent publications. The study found that immediate free access did not confer a citation advantage.² In other words, the articles in *GENETICS* were read, accessed, or cited at a similar rate regardless of free access or subscription control. This was true for all of the 36 participating journals and over 3000 articles in the study.

8. How should peer-reviewed papers arising from federal investment be made publicly available? In what format should the data be submitted in order to make it easy to search, find, and retrieve and to make it easy for others to link to it? Are there existing digital standards for archiving and interoperability to maximize public benefit? How are these anticipated to change?

This question implies that it is currently not “easy to search, find, and retrieve and . . . link to” peer-reviewed papers that report on federally funded research. Search engines such as Google, Google Scholar, and DeepDyve have worked with publishers to allow crawling of content for rapid and easy search and retrieval. These search engine technologies are currently capable of locating and listing articles that carry the proper attribution of funding by the federal government.

Data formats and metadata specifications for interoperability and preservation change rapidly, as illustrated by the changes over the past 10 years. Successful publishing industry-led initiatives like CrossRef, Portico, and LOCKSS are examples of effective collaboration that fosters innovative advances in archiving and retrieval. Similar efforts continue to improve discoverability and the ability of researchers to “mine” published data.

9. Access demands not only availability, but also meaningful usability. How can the Federal government make its collections of peer-reviewed papers more useful to the American public? By what metrics (e.g. number of articles or visitors) should the Federal government measure success of its public access collections? What are the best examples of usability in the private sector (both domestic and international)? And, what makes them exceptional? Should those who access papers be given the opportunity to comment or provide feedback?

The results of government funding of research can be made meaningful to the American public independent of access to peer-reviewed papers. Access to databases containing data on funded grants, contracts, and agreements such as abstracts, funding levels, award dates, and progress reports in lay language would serve the purposes of transparency and openness better than would access to peer-reviewed publications.

Scientific societies and publishers have been and are, appropriately, focused on developing and improving usability of publication archives, databases, and other private-sector repositories for their primary users – scientists – whose needs are readily determined and addressed.

A constructive government policy would direct funding and efforts to determine the wants and needs of the American public for scientific research results – in other words, what are the uses to

² http://www.katina.info/conference/2009presentations/Fri530_Davis.ppt

which they will put this information. From this, it will be possible to define “usability” and then determine how to achieve it.

One of the best examples of public demand driving usability is the development and growth of iTunes. iTunes has, with some measure of success, addressed the consumer’s desire to sample and share published content while protecting the financial interests of music publishers and recording artists. iTunes’ (and other Apple products’) exceptional quality and usability is the result of significant investment in software development, architecture and design, human factors and usability research, documentation and customer support.

The Genetics Society of America appreciates the opportunity to submit these comments.

Sincerely yours,

Handwritten signature of R. Scott Hawley in black ink.

R. Scott Hawley, Ph.D.
President

Handwritten signature of Sherry A. Marts in black ink.

Sherry A. Marts, Ph.D.
Executive Director