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December 1, 2008

Congressman Howard Berman
Chairman, Subcommittee on Courts, the
Internet, and Intellectual Property
B-352 Rayburn House Office Building
Washington, DC 20515

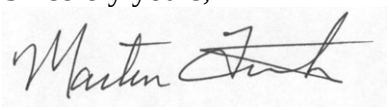
Attention: Rosalind Jackson

Dear Congressman Berman:

Once again, thank you for the opportunity to testify before the Subcommittee on HR 6845, the "Fair Copyright in Research Works Act." As requested, I have reviewed the verbatim transcript and made the necessary corrections in the document. In addition, I have attached my responses to the six questions included in your letter of November 12th.

If you have any additional questions or need further clarification, please contact me at 301-634-7118 or at mfrank@the-aps.org.

Sincerely yours,



Martin Frank, Ph.D.
Executive Director

Attachment

APS Response to Congressman Berman's November 12, 2008 Request

Question 1 *– You testified that the NIH mandatory open access policy may have negative consequences for the peer-review process. Can you provide a detailed description of the peer-review process and the role publishers play in it? Can you breakdown the average costs that a publisher incurs in providing peer-review for each published article? During the hearing Dr. Zerhouni seemed to imply that NIH pays for peer review. Can you distinguish between money that NIH allows authors to spend on page charges and the cost of peer-review?*

Answer – Peer review is a critical part of the scholarly publication process, contributing one of the most important functions—quality control—which ensures the integrity and excellence of published articles reporting on scientific research. Publishers organize and manage the peer review system, and establish, in partnership with the scientific community, codes of ethical practice for peer review. While peer review is taken on by some academics *pro bono*, editors are often paid, and the management of this process requires significant financial resources, which are provided by publishers. Publishers underwrite the development of special software and provide platforms for the online manuscript submission systems that are at the front-end of the peer review process, and they fund the staff to run and maintain them. Publishers invest in editorial office management systems which facilitate online peer review. In those cases where editorial administration takes place within the university system, the costs are usually charged back to the publisher. Many publishers pay journal editors, who devote significant amounts of time to ensuring journal quality. Prior to sending a manuscript to peer reviewers, the journal editor weeds out the ones that are inferior, irrelevant and out-of-scope articles. The editor then selects peer reviewers who can evaluate the strengths and weaknesses of a manuscript, including its experimental protocol and data interpretation. For clinical journals, the editor also arranges for statistical reviews to ensure that clinical trial data are interpreted correctly. The editor then assesses and aggregates the peer reviewers' recommendations.

Once the manuscript is reviewed, the editor provides the reviewers' comments to the author to facilitate revision if needed. These changes might be editorial or substantive, the latter requiring additional experiments or studies. Some manuscripts are rejected after peer review. For the APS journals, only about 50% of submitted manuscripts are accepted for publication. For *Science* and *Nature*, only 5-10% of the manuscripts are accepted. This serves to keep standards high and benefits the public and the research community.

The peer review costs incurred by publishers for these activities include a) editor fees, b) electronic-submission platform development and maintenance, c) administration and e) editorial. In addition, publishers cover the system costs of launching, building, developing, evolving, and promoting journals. While peer review ensures the quality and scientific integrity of articles, it is the journal "brand name" that places those articles in context for readers. Peer review is a short-hand term that represents what the publisher contributes, adding value through quality control, publishing, distribution and archiving of scientific discovery and knowledge.

The total publication cost for a journal article averages $3000 - $5000. Publisher costs for peer review have been estimated at about $230 to $920 per manuscript published.[1] For the APS, approximately 20% of the $3000 it costs to publish an article represents the cost of peer review. As rejection rates increase, so do the costs per published article. Some journals reject as many as 95% of submitted manuscripts. Cost per article rises substantially for high-quality, prestige journals because the published articles bear the costs of processing all the manuscripts

NIH allows grantees to use a portion of their research grants to pay for some publication charges, such as page charges and color figure fees. Such charges do not pay for peer review and any implication otherwise is mistaken. Therefore, it is misleading to assert that NIH pays for peer review. As explained in my testimony, costs paid in the form of page charges cover only part of the total cost of publication. The remainder must be recovered through subscription sales to academic institutions in the U.S. and abroad, pharmaceutical companies, hospitals, etc. For the APS, about $1,000 or one-third of the $3,000 cost to publish an article is recovered through author fees for publication-related charges. Page and color charges are applied to cover direct costs of production and manufacturing. They do not cover the costs of peer review nor the infrastructure that supports the online peer review of manuscripts. For APS, these fees help to reduce subscription prices, but many publishers do not charge such fees, depending entirely on subscription fees.

While funding agencies such as the NIH allow researchers to use a portion of their grant funds to defray the publisher fees, if the researcher fails to set this money aside, or if the grant is completed when the researcher submits the article for publication (as often happens), NIH does not pay so either the researcher or the institution must find a way to come up with funds to pay the author fees.

Lastly, it is unclear how Dr. Zerhouni arrived at a figure of $80-100 million figure. As recently as 2005, NIH noted in its *Policy on Enhancing Public Access to Archived Publications Resulting from NIH Research* that NIH was making payments of $30 million a year for publication charges. Only open access journals -- which currently charge authors or funding agencies up to $3,000 per article -- seek to recover the full cost of publication. Few publishers have moved to this author pays publication model because it would place the full cost burden on researchers and diminish resources available for the research needed to develop treatments and cures for disease. In addition, there are questions about the sustainability of the author-pays publishing model. It was estimated that in 2007 only about 21,000 articles were published in open access journals across all scientific, technical and medical disciplines. Of that number, it is unlikely that any more than a couple of thousand were based on NIH-funded research and thus would have been covered under NIH's public access policy. Even if NIH paid the $3,000 for each of the approximately 2,000 articles, the total would have come to only $6 million. That does not come close to explaining the difference between the $30 million in 2005 and $80-100 million two and a half years later.

[1] Donovan, B. 1998. The truth about peer review. Learned Publishing, 11: 179–84.

Question 2 – *Improving patient access to the most current scientific research is an important goal of the NIH's mandatory open access policy. What measures, if any, are publishers currently undertaking to provide patients access critical medical research that might affect their treatment?*

Answer – NIH is not the only organization providing public access to the scientific literature. Publishers have done this very effectively since online access became possible in the mid-1990s. Indeed, the public has greater access today than ever before. Most university libraries allow walk-in access to online and print journals. In addition, many publishers, especially the not-for-profit society publishers, provide free access to the content of their journal after an embargo period that lasts from 2 months to 2 years.

A number of journals also participate in PatientINFORM, a public health literacy project of the American Cancer Society, American Heart Association, and American Diabetes Association. Publishers provide patients and caregivers with free online access to up-to-date research and interpretive commentary about specific diseases at www.patientinform.org. Publishers also provide immediate free access links from these patient-friendly interpretations to the final published articles. Many publishers also allow members of the public free access to specific articles if they certify they need the information because of their own or a family member's medical condition. In addition, many publishers have a communications department that writes press releases and lay language summaries designed to educate the public about critical research findings. Similarly, the public information offices of universities work cooperatively with publishers to disseminate information of research findings of interest to patients. These are ongoing efforts that predate PubMed Central.

Finally, publishers have been working to give free access to content to those in developing countries. HINARI (http://www.who.int/hinari/en/), is short for "Health InterNetwork Access to Research Initiative." This is a partnership with the World Health Organization to ensure that relevant health information and the technologies to deliver it are widely available and can be used by health personnel, including professionals, policy makers, researchers and scientists. AGORA (http://www.agricultureresources.info/), short for "Access to Global Research on Agriculture" is a partnership with the Food and Agricultural Organization that provides researchers, policy-makers, educators, and students in developing countries with access vital research that will ultimately help increase crop yields and food security. OARE (http://www.oaresciences.org/en/) or "Online Access to Research in the Environment," is a partnership with the United Nations Environment Program to expand the capacity of developing world organizations to improve the quality and effectiveness of environmental research, education and training in low-income countries. These services, supplied by publishers, provide over 100 developing countries with low cost or free access to over 4,500 peer-reviewed journals.

Question 3 – *During the hearing, Dr. Zerhouni stressed that there was great value in the NIH's efforts to interconnect the multitude of NIH databases with peer-reviewed articles published on PubMed Central. Do publishers provide similar linkages and interconnectivity in the products they offer? If so, would you consider the NIH a competitor in providing such information? Are there any established standards in the manner in which linkages are provided? If so, to what degree has the NIH adopted these standards?*

Answer – In his testimony, Dr. Zerhouni suggested that only NCBI/PubMed Central could create a dynamic discovery environment by linking articles to the many databases that exist within NCBI. In reality, many journal publishers already embed database accession numbers in published articles for nucleic acid, genome mapping, and protein expression databases to facilitate reader discovery and also provide further linking from the text of the article to a variety of such database resources. Links may be provided to privately-held databases as well as those maintained by the NIH. Publishers further use "forward citation linking" so that reader can trace how articles have been cited by other scientists and even the popular media. Publishers developed the widely used Digital Object Identifiers (DOI) and CrossRef to standardize article reference linking across primary journal databases and link information elements within an article to a range of data repositories, as described more fully below.

Through the licensed use of their copyrighted works, publishers permit the linking of their content to other integrated databases of information such as Thomson Reuters' (ISI) Web of Science; Reed Elseviers' Scopus, and ACS' Chemical Abstracts Service. Publishers devised their own systems of web linking and specialized nomenclature (e.g., Chemical Abstracts Service (CAS) Registry Numbers) so that information about chemical structures and reactions was available within their primary journal content (e.g., American Chemical Society (ACS) and its CAS registry and project PROSPECT from the Royal Society of Chemistry). NIH is directly competing with the private sector in this instance by linking PubMed Central article records to NIH's own PubChem database, a data source that seeks to replicate much of the functionality and content of ACS' own Chemical Abstracts Service and SciFinder discovery tools.

As previously noted, publishers use linking technology to enable public access via initiatives such as PatientINFORM, where interpretive materials written by communications specialists at American Diabetes Association, American Cancer Society, and American Heart Association are linked to the original research articles, which are made freely available from publishers' web sites via cooperative agreements with publishers as rights holders. Although similar arrangements could accomplish the legitimate public access goals of the NIH, the agency has spurned such cooperative activities. Publishers have also cooperated with NIH and its various databases via NLM's own "Linkout" technology to integrate the literature with government-operated databases. This can be done across web platforms, and does not require a central repository of the sort NIH seeks to mandate with PubMed Central.

The many society publishers who use HighWire Press as their online delivery platform also avail themselves of linking opportunities. Indeed, society publishers proposed on several occasions that NIH could use its "Linkout" technology to accomplish its public access goals more expeditiously than the cumbersome procedures associated with a central manuscript repository. Since 1995, HighWire Press has been inserting links into online articles. These links point to

databases, to other web sites, and to other articles. Some of the links point to NIH databases, so the NIH repository is not the exclusive locus of links to NIH databases. Thus, journal publishers and NIH are both suppliers and users of content linking services.

In the clinical realm, the Cochrane Collaboration provides an example of a cooperative international endeavor that maintains a database of evidence-based medical analyses and consensus statements to help clinicians separate "fact from fiction" in terms of statistically relevant clinical advances. It offers links from its analyses to the underlying cited literature via Digital Object Identifiers and CrossRef links. Medical publishers have also cooperated with web-based information services such as WebMD to provide linking arrangements that enable both physicians and patients/caregivers to navigate authoritative information resources with trustworthy medical information.

Dr. Zerhouni expressed a desire to have NIH create a single standard for making connections between journal articles, databases, etc. Unfortunately, NIH has decided to work at cross purposes to efforts of publishers who conceived, promulgated, and implemented the wide use of Digital Object Identifiers (DOI) and CrossRef to standardize article reference linking across primary journal databases. The same Digital Object Identifier technology can link information elements within an article to a range of data repositories. The enabling technology is there to facilitate this. NIH has been encouraged to utilize the publisher-developed DOI in order to link back to the publisher's version of record. Instead, NIH has created its own standard (PMCID), separate from CrossRef, and has mandated that investigators utilize the PMCID when submitting NIH applications and progress reports. NIH contributes funds to the publication of only about 80,000 articles each year, but because it controls the allocation of $29 billion in research funds, biomedical researchers are under pressure to obtain a PMCID for their work. By creating its own standard, NIH is competing with existing industry standards. This duplication is wasteful and undermines the efforts of the publishing industry to create a universal system of persistent digital links. Moreover, the PMCID also creates competition for the publisher's website because it directs users to the final submitted manuscript on the PubMed Central website, whereas the DOI directs users to the final published article that resides on the publisher's web site.

Question 4 – *You mentioned in your testimony that APS makes available online all of its articles 12 months after publication? How is this any different than the NIH making those same articles available on its PubMed Central website? What would happen to you journals if researchers chose to read your articles on PubMed Central instead of on your website?*

Answer – As stated in my oral testimony, the APS publishes approximately 4,000 articles annually, making them all freely available after 12 months from our online journal site at HighWire Press. The Society made this decision in 2000 without government intervention because it served scientists and the public. It was a decision that we could modify had 12 months proven to be disadvantageous to the Society's business model. We were able to make the decision because the Society controlled copyright on the articles and we had subscription revenue to support the necessary infrastructure. We also were able to monitor downloads on our web site to determine whether to adjust the timeframe. The difference is that the NIH policy requires public access after 12 months, and NIH has not supplied adequate information about user access to APS journals on PubMed Central. As a result, we do not know if adjustments are needed, and we would not be allowed to make them if they were needed.

Publishers are now concerned that some subscribers might decide to drop their subscriptions because content is available at PubMed Central. Loss of subscriptions would undermine our scholarly publications. As stated in question 1, the peer review process creates the journal brand, something that is lost under NIH's mandatory submission program. The layout and page design for the articles appearing on PMC are not those of the APS journals, but of PubMed Central. This re-branding of our content on PMC jeopardizes the copyright protections that have spurred the investments and infrastructure that are needed to maintain a robust and thorough pre-publication peer review process in the digital age. These are costly endeavors, and if publishers cannot recover their costs, the quality of our journals will suffer to the detriment of our members' science.

Because the NIH mandate in effect reduces copyright protection for publications to only one year, it risks undermining the revenue stream -- derived principally from subscriptions -- that enables publishers to add value to research articles and to enhance readers' ability to discover and use scientists' work. As the number of full-text articles based upon NIH-funded science in PMC increases, concern grows that current journal subscribers will access the text from that website, rather than from the journal's own online site. Based upon surveys about librarians' decision making process, it is clear that the more content that is available from centralized repositories, the greater the risk that subscriptions will be cancelled. If publication costs cannot be recovered through subscriptions, journals will have no choice but to try to recover them through author fees or similar mechanisms. Such measures would reduce funding available for research by amounts much greater than the cost of subscriptions themselves. We are gravely concerned that the funding base of some journals may become eroded to the point where they can no longer adequately serve their communities and will be forced to implement or increase their authors' fees at a time when funding levels are shrinking. In both cases, researchers are disadvantaged – in one case by having less freedom to choose where to publish, or what community to reach, and in the other, failing to have adequate resources to fund research designed to develop treatments and cures for disease.

Question 5 – *The NIH contends that its policy is less aggressive than other countries in terms of the embargo period; that is, the NIH employs a one-year period while other countries with similar policy employ a six-month period. What effect, if any, has this shorter embargo period had on scientific journal publishing generally? Are there any scientific journals that have a large percentage of their articles originate from sources subject to shorter embargo periods? If so, what effect, if any, has the shorter embargo period had on those journals?*

Answer – Some have suggested that the NIH public access policy requiring that manuscripts of scientific articles be made available for free access on the Internet is more conservative than similar policies in other countries. This is not the case. While public access policies in Canada, Australia and France have a 6-month embargo period, they are conditional policies that ***do not require*** authors to deposit their manuscripts.

The Canadian Institute of Health Research policy specifically states publications must be made freely accessible "*where allowable and in accordance with publisher policies.*"[2] Australia's public access policy "*encourages researchers to consider the benefits of depositing their data and any publications,*" rather than requiring deposit, making this policy voluntary.[3] The Agence Nationale de la Recherche in France also *requests* rather than *mandates* that authors submit their articles for public access.[4]

The majority of UK agency policies are flexible on the timeframe for public access deposits and require that copyright policies be respected. In addition, these policies are not all are mandates. For instance, the Economic and Social Research Council (ESRC), a UK government agency, has a policy that publishers' copyright, licensing and embargo policies must be respected.[5]

In addition, these foreign government agencies facilitate publisher compensation by allowing authors to include public access charges in their grants or to charge public access costs back to the agency. For example, the UK Medical Research Council (MRC) facilitates use of agency funds for public access costs.[6]

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[2] See CIHR "Policy on Access to Research Outputs," section 5.1.1 available at: http://www.cihrirsc.gc.ca/e/34846.html.

[3] See "Discovery Projects; Funding Rules for funding commencing in 2008," section 1.4.5, page 13. Available at: http://www.arc.gov.au/pdf/DP08_FundingRules.pdf

[4] L'ANR incite les chercheurs à intégrer leurs publications dans le système d'archives ouvertes available at: http://www.agence-nationale-recherche.fr/actualite/13?lngInfoId=159

[5] See "Research outputs - the ESRC's guidance" available at: http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/Support/access/

[6] See "Further Guidance and Frequently Asked Questions on Open Access Publishing," section 10.1. Available at: http://www.mrc.ac.uk/PolicyGuidance/EthicsAndGovernance/OpenAccessPublishingandArchiving%20/FAQonOpenAccess/index.htm#P106_13538.

Proponents of the NIH public access policy have argued that the NIH policy is more conservative than the policies adopted by private funding bodies that require authors to deposit their articles within six months of publication. It is important to note, however, that these private funding bodies such as Wellcome Trust, Howard Hughes Medical Institute, British Heart Foundation, and Arthritis Research Campaign provide either the authors or publishers funding of between $1,000 and $5,000 per article to help offset the cost of peer review and other publishing costs to make articles free for public access. The NIH has made no such arrangements with publishers. It allows the grantee to use a portion of their grant funds to defray the publisher fees, but leaves the author paying from his or her own pocket when the grant period is over or when grant funds are used up for research.

While these other countries have policies on public access to private sector articles reporting on government-funded research, the NIH's policy is certainly not more conservative than these other policies—to the contrary. In contrast with the NIH policy, the policies of these other countries allow for flexibility and respect for copyright and publishers' policies.

Question 6 – *You cite studies that suggest subscribers to scientific journals would cancel their subscriptions if they could access the journal articles for free 12 months after publication. Are there any studies that discuss what subscribers would do if journal articles were freely available 24 or 36 months after publication? If not, do you think you would see much of an impact on subscriptions if the embargo period was 24 or 36 months?*

Answer –The more content available for free twelve months after publication, the more likely it becomes that libraries will choose to wait for the content to become freely available instead of subscribing to the journal. This was one of the findings from an independent study commissioned by the Publishing Research Consortium (PRC) to determine how decision making factors such as price, embargo period and article version would affect librarians' cancellation of subscriptions. The study was conducted by Scholarly Information Strategies in July 2006 through a survey of over 400 librarians internationally. The study reported that a significant number of librarians say that they are likely to cancel subscriptions when some of a journal's peer-reviewed manuscripts are available freely through open access. The PRC study looked at different embargo periods and assessed librarians' preference for free content with these various delays. It found that with a 12 month embargo period when only 40% of the content available for free, a large proportion (44%) of librarians said they would prefer the free content over a paid subscription to the entire journal. Even with a 24 month embargo period, 37% of librarians still preferred 40% of the free content over a paid subscription to the entire journal.[7] I should also note that this study was conducted before the current economic crisis, which is expected to have many ramifications in higher education, including the likelihood of cutbacks to library budgets.

Since the NIH Public Access Policy applies to NIH grant holders, some journals will suffer more serious impacts than others. Journals that are published weekly or bi-weekly and contain a small proportion of research based upon any NIH funding would experience only minimal effects. However, in some journals, more than 50% of the articles report research with some NIH

[7] *Self Archiving and Journal Subscriptions: Co-Existence or Competition? An International Survey of Librarians' Preferences*. 2007. Pg. 20. Available at: http://www.publishingresearch.net/documents/Self-archiving_summary2.pdf

funding. Notably, the majority of such journals are published by non-profit publishers. Journals with a higher proportion of NIH funded research are more vulnerable to subscription losses when the material is made available for free on the NIH website. Journals that are published less frequently will also suffer greater exposure as fewer issues would be missed during the embargo period. In addition, if the NIH public access policy were applied to other federal agencies, the proportion of articles posted on government websites would increase, thereby raising the threat to subscriptions not only for biomedical journals, but also for journals in other disciplines.

Since every niche of science is different, no one embargo period will suit all journals. Some journals may be able to survive with only minimal subscription cancellations if content were made freely available at 24 or 36 months. Others that cover fields where research retains its currency longer, might not. For example, the American Psychological Association has noted that only 15% of the "lifetime readership" of an article in psychology occurs in the first year, leaving 85% of the lifetime usage in periods more than one year after publication. These articles have much longer "tails" than those in the bio-medical field. This represents another case where one size does not fit all.

As open access advocates have said, libraries would prefer to have free access to journal articles rather than paying the publishers who have invested in these journals. Dr. Harold Varmus, a founder of the Public Library of Science and long time advocate of public access, noted in an April 11, 2008 interview on NPR *Talk of the Nation*, that "one of the motivations for doing this [NIH public access policy] is the increasing cost of subscription-based journals in biomedical sciences."[8] There are very good reasons for these costs increases, including the fact that research funding itself has increased substantially in the past decade, yielding substantially more research articles and therefore more journal pages each year. However, the notion that open access will have an impact on subscription costs clearly shows that there is an expectation that such free access will replace paid subscriptions.

It is imprudent for the federal government to set mandates for the free access of journal articles without clear evidence of their impact. Further study of this issue is important. In fact, this kind of study is happening in Europe. The Publishing & Ecology of European Research (PEER) project, launched in September 2008 and expected to run until August 2011, will develop an "observatory" of 300 journals from a wide range of types and subjects. It will allow deposit of peer reviewed manuscripts that have been accepted for publication into European repositories where they would be made freely accessible after embargo periods of varying lengths appropriate to the discipline and the economics of each journal. Supporting research studies will address issues such as: (1) How large-scale archiving will affect journal viability; (2) Whether it increases access; and (3) Models to illustrate how traditional publishing systems may coexist with such embargoes. With little information to go on about customer cancellations, we encourage this kind of study in the U.S.[9]

[8] Interview with Dr. Harold Varmus, NPR Talk of the Nation, April 11, 2008. Available at: http://www.npr.org/templates/story/story.php?storyId=89562597.

[9] See, *New Collaboration Project of Publishers, Repositories, and Researchers Launched—PEER*. Weekly News Digest, October 20, 2008. Available at: http://newsbreaks.infotoday.com/wndReader.asp?ArticleId=51180.