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Support When It Counts: Library Roles in Public Access to Federally Funded Research

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Abstract

In November 2012, the National Institutes of Health (NIH) announced it would begin enforcing its April 2008 mandate of public access to NIH-funded research by delaying processing of investigators' grants reporting noncompliant publications. In response, the North Carolina State University (NCSU) Libraries offered to assist the University's sponsored research administration in supporting NCSU researchers who had publications stemming from NIH funding and had not achieved compliance. Since the 2008 NIH mandate, over 1,000 articles based on NIH-funding have been published by NCSU across research areas including veterinary medicine, life sciences, physical sciences, social sciences, engineering, textiles, design, math, and statistics. Many were published in journals which did not automatically deposit papers to meet NIH requirements. Although familiar with biomedical literature, author agreements, and open access, we did not fully grasp the complex web of investigator, author, publisher, institution, and funder relations involved in this mandate until we were deeply engaged in the process and gained access to the compliance monitoring data.

In this paper, we discuss the costs and benefits of library support for authors needing to attain compliance with an eye toward how this support may be scaled up if other federal funding agencies follow suit. We share practical strategies for supporting compliance efforts for individual researchers and at the campuswide level, as well as training newly funded researchers to facilitate future compliance. We discuss the advantages of leveraging existing relationships with publishers to help their researchers, strategies for getting involved in compliance support, and insights on how to skill-up and scale-up when engaging in this part of the research process.

Introduction

Access to federally funded research literature is important for many of the constituents served by libraries: academic researchers, industry partners, and individuals for professional or personal use. The National Institutes of Health (NIH) is one of many U.S. and international organizations that fund research and, therefore, focus on improving the dissemination of research findings. This case study of librarian support in increasing public access to NIH-funded research surfaces issues and lessons that will only be magnified as additional funders across domains require public access to research.

The connections between funding organization and dissemination mechanism are simplified in the case of NIH due to the unique relationship between NIH as funder and the National Library of Medicine (NLM). NLM is an institute of NIH that funds research and is the producer of both the PubMed database, which indexes the majority of biomedical journal literature, and the PubMedCentral (PMC) depository, which houses the deposited full-text articles resulting from funded research. The close connection and shared understanding facilitates willingness to adapt indexing and archiving systems and practices to accommodate the often changing funding agency needs and mandates. Almost all scholars and librarians dealing with health or science disciplines have searched PubMed and

likely followed links from PubMed into full text in PubMed Central. This familiarity with PubMed is a benefit, but it also creates confusion in the conversations as researchers and publishers have mistakenly thought that having a paper indexed in PubMed means the full text is publicly available in PMC and the mandate is fulfilled.

Public Access Memo of February 2013

The issue of support for public access to federally funded research remains timely because the NIH's policy serves as the basis for an increased push for access by the White House Office of Science and Technology Policy (OSTP). In February 2013, the OSTP released a memorandum directing all federal agencies that spend more than \$100 million per year on research and development "to develop a plan to support increased public access to the results of research funded by the Federal Government." Within parameters established by the directive, these plans will be customized to meet the needs of each agency, but all will follow the core NIH principles of open access for research articles and data.

Management of federally funded research and research data is expected to be an issue that researchers will grapple with increasingly in the years to come. Experience with the NIH policy, then, can be expected to be relevant not only for current NIH-funded research, but for other disciplines and agencies affected by the directive. At the North Carolina State University (NCSU) Libraries, we anticipate that supporting NIH-funded researchers in meeting the NIH Public Access Mandate is a start to scaling up support for a growing segment of our researchers over time.

Key Terms Used Throughout This Paper

- NIH—National Institutes of Health
- NLM—National Library of Medicine
- PubMed—online database of indexed biomedical literature from the National Center for Biotechnology Information (NCBI) which is part of NLM

- PMC—PubMed Central - online database of free full-text literature -- depository for NIH funded papers whether submitted by author or publisher; also contains full-text journal articles from participating publishers
- NIHMS—NIH Manuscript Submission System for NIH Public Access – site where publishers and researcher submit manuscripts for processing and assignment of NIHMS and PMCID numbers required to verify compliance.
- eRA Commons—Electronic Research Administration site for NIH Extramural (non-NIH staff who conduct research funded by NIH) principal investigators, grantees or applicants
- PACM—NIH Public Access Compliance Monitor - tool produced by NIH that shows the deposit status of articles indexed by PubMed that are associated with NIH grant numbers
- MyNCBI—the personal account functionality for saved searches and alerts in PubMed and other NLM databases that has been expanded to include MyBibliography and SciENCv (Science Experts Network Curriculum Vitae)

NIH Public Access Mandate—Evolution

The OSTP directive also highlights the importance of building on experience with the NIH policy, which has continued to evolve since it was first announced in 2008. Initially introduced as a "strong recommendation" for open access, the policy has continued to develop to further support compliance. In July 2010, NIH announced that the MyBibliography function in PubMed's MyNCBI would replace the eRA Commons bibliography functionality. Designed to improve tracking and produce publication reports, MyBibliography is used by researchers and their designates to manage citations, as well as monitor and demonstrate compliance with the policy.

AWARDS BY FEDERAL AGENCIES, FY12

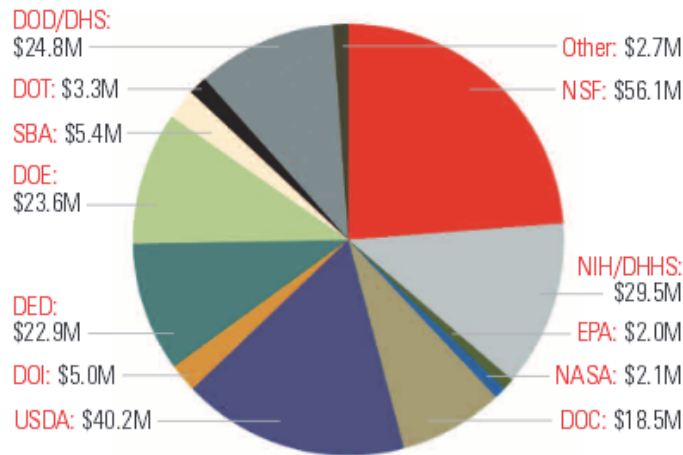


Figure 1. NC State Federal Funding Sources for FY 2012 (Source: <http://research.ncsu.edu/wp-content/uploads/2013/07/Results-Annual-Report-2012.pdf>)

The most significant change in the policy was made in 2012 when the NIH announced the mandate for open access with strong enforcement mechanisms. Researchers who were not in compliance with the policy when submitting progress reports after July 1, 2013, would see delays for continuing funding from the NIH until they resolved noncompliant publications.

North Carolina State University and the NIH Public Access Mandate

Like most science, technology, engineering, and medicine-focused universities, NCSU has a strong base in biomedical research. We have nine colleges: Design, Education, Engineering, Humanities and Social Sciences, Management, Natural Resources, Sciences, Textiles, and Veterinary Medicine. Research funding at NCSU comes from a variety of federal agencies (Figure 1).

NIH and Department of Health and Human Services combined are the third largest federal funding source for NCSU after the United States Department of Agriculture and the National Science Foundation. However, NCSU also received more than \$20 million each in FY 2012 from the Department of Defense, Department of Energy, and the Department of Education, making the OTSP

directive expansion very relevant to our researchers.

NIH Funding at North Carolina State University

Much of the NIH funding at NCSU supports departments with a biomedical focus, but we are seeing growing diversity across departments such as statistics, chemistry, math, and physics. NIH funding is also a crosscutting issue across many disciplines and departments at NCSU, and in its multi-university projects and centers with UNC-Chapel Hill and Duke University. In particular, training grants create complex relationships across departments, schools, and collaborating universities that require careful consideration to ensure that all scholars are included in outreach and support.

Figure 2 shows departments that consistently received at least 1% of the NIH funding awarded to NCSU from 2008–2012 along with the percentage of the funding received. Several departments have increased their proportion; others have remained stable. Other departments that received funding during that time period, but not consistently, were Animal Science, Applied Ecology, Entomology, Academic Affairs, Mechanical and Aerospace Engineering, Social Work, Economics, Sociology, and Anthropology.

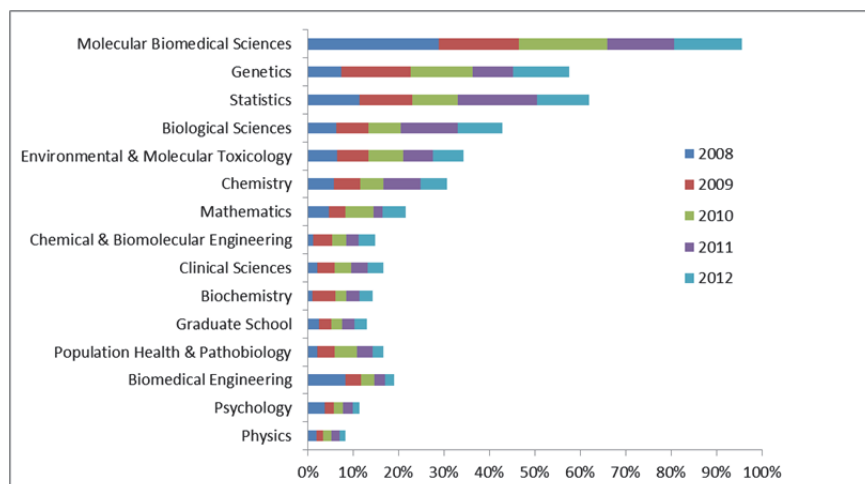


Figure 2. Diversity of Departments at NC State Receiving NIH Funding (Direct Research Grants and NIH Training Grants)

Traditionally the NIH-supported researchers have been in departments with science subject liaison librarians, but as you can see from the NCSU data, social science departments are also receiving NIH funding, and therefore, knowledge about public access compliance needs to be more widely shared.

All peer-reviewed publications resulting from NIH funding are subject to the Public Access Mandate. This includes those funded by research grants made to individual investigators, large center-type grants to collaborative programs, and training grant programs where the funding supports individual graduate student or post-doctoral stipends. In the case of training grants, all research publications produced by efforts of the trainee while receiving NIH support would need to be deposited. NCSU has several training programs in multidisciplinary areas such as Comparative Medicine and Translational Research (www.cvm.ncsu.edu/ccmtr/cmtrtp.html), Molecular Biotechnology (www.ncsu.edu/grad/financial-support/mbtp/index.php), and also targeted training grants such as the National Institute of Environmental Health Science Training Grant “Molecular Pathways to Pathogenesis in Toxicology” (www.tox.sciences.ncsu.edu/degree-programs/graduate-program/financial/niehs/) and “The Genetic Architecture of Quantitative Traits” (www.genetics.sciences.ncsu.edu/index.php/news

[/nih-institutional-research-training-grant-awarded1/](http://nih-institutional-research-training-grant-awarded1/)). The students supported by these grants work with faculty across departments and colleges and are at NCSU for a limited amount of time, making compliance with the mandate more challenging. The complexity and scale of investigators involved in training grants was an early indication to the Libraries that outreach efforts would vary from established researchers to budding researchers associated with training grants and that a variety of communication modes would be needed to have the greatest short-term and long-term impact on current and future researcher compliance.

Early Communication Efforts

As part of providing PubMed literature searching and training support to NCSU researchers and students, three liaison librarians were active users of MyNCBI accounts. The Director of the Veterinary Medicine Library shared news about PubMed and MyNCBI from the NLM-ANNOUNCES (list.nih.gov/archives/nlm-announces.html) and *NLM Technical Bulletin* with the NCSU subject specialist liaison librarians. In July 2010, NLM announced the addition of MyBibliography to MyNCBI, and this information was shared with the Scholarly Communication librarian who maintained the information about NIH public access on the NCSU Libraries Copyright and Digital Scholarship Center (CDSC) web site

The [NCSU subject librarians and the CDSC \(http://www.lib.ncsu.edu/askus\)](http://www.lib.ncsu.edu/askus) can help you achieve compliance with the mandate to make research related to your NIH funding available through PubMed Central. We can:

- Figure out whether you are already in compliance with the mandate for public access to your NIH-funded research
- Guide you in reviewing the publication agreements for your future and past articles to see whether or not your publishers will be making your work available, or whether you will need to directly submit your manuscripts
- Work with you to create or maintain a MyBibliography account in [MyNCBI](#) that contains both your articles indexed by PubMed, and any funded research articles published in journals not indexed by PubMed
- Help you or your delegate submit published manuscripts to PubMed Central when needed
- Help you or your delegate use your [eRA Commons](#) account for linking your PubMed Central article IDs to your grant progress reports
- Help train your students or collaborators or delegates to assist with maintaining your funded research projects' compliance

Figure 3. NCSU Libraries' Support Communication for NIH-Funded Scholars in Meeting NIH Public Access Mandate (Source: <https://www.lib.ncsu.edu/cdsc/copyright/authors#NIH>)

(www.lib.ncsu.edu/cdsc/copyright/authors#NIH). In October 2010, information about MyBibliography was shared with subject specialist liaison librarians who supported life sciences faculty and graduate students. At that time, there was no plan for the Libraries to do broader outreach on the NIH compliance and reporting to NIH-funded faculty. The potential role of the Libraries in supporting researchers in complying with the NIH public access mandate did not really coalesce until faculty incentive to learn the systems would be generated by enforcement of the mandate. Expertise in NIH procedures and support lay with the librarians already most involved, but key partners in developing and executing the support plan were the Director of the CDSC and the then Associate Head for Collection Management (also in charge of Research Data Services support) to act as a liaison with publishers as we identified publisher-related issues.

Direct Engagement with Stakeholders

When NIH announced enforcement of the Public Access Mandate, the NCSU Libraries decided to proactively reach out to the NIH-funded researchers at NCSU with an offer of support. In December 2012, the Director of the Veterinary Medicine Library contacted the Associate Vice Chancellor for Research Administration and asked him (1) how compliance looked from his vantage point and (2) to partner with the Libraries by distributing a message to NCSU's NIH-funded

researchers (Figure 3). Through this dialogue, we discovered that the Office of Sponsored Programs and Regulatory Compliance (SPARCS) was not reviewing data to monitor compliance on an institutional level.

After the message from the Associate Vice Chancellor for Research Administration was distributed to individual researchers in late 2012, we were surprised to not receive any follow-up requests for support. Given the lack of response, we decided that we needed to get a sense of how NCSU was performing in terms of compliance and how to leverage that knowledge to engage both individual researchers and the NCSU research administration staff who would be affected by the downstream results of noncompliance. There are two levels of research administration that work closely together: central administration in SPARCS which handles the eRA Commons accounts and College Research Officers (CROs) who work with researchers within their colleges to ensure timely reporting and management of grant activities from the proposal stage to the final progress reports and renewal applications.

We also used our scholarly communication infrastructure to reach out to faculty researchers. Information was posted on the NCSU Libraries web page for the Copyright and Digital Scholarship Center, both in the established section on Author's Rights and more prominently with an offer for consultation and support.

Carrying Out the Libraries' Plan

We knew at the outset that for the immediate short-term, the Libraries would need to be responsible for identifying and reviewing the backlog of NIH-funded articles. Why? Because we knew (based on the grant award data) that we would have authors publishing in journals that were not indexed by PubMed and, therefore, not even on NIH's radar. Because we were best-equipped with the knowledge of how to extract that data out of our subscription to Web of Science (Scopus would be a possibility for libraries who subscribe). We also knew that we had the knowledge to unpack publishers' copyright policies to determine which versions of the NIH-funded articles could be used to meet the mandate. In hindsight, getting access earlier on to the NIH Public Access Compliance Monitor (PACM) would have helped us prioritize which articles needed attention first.

There were two paths that we could have taken: (1) Simple path that would support compliance for the articles indexed by PubMed and, therefore, tracked by PACM; or (2) Complex (but comprehensive) path that would enable us to support compliance for the broadest set of articles including those that NIH did not track.

Partly because we did not initially have access to the NIH Public Access Compliance Monitor and partly because we wanted to help NC State be 100% compliant, we went for the complex, but comprehensive path.

Road Toward Compliance—Data and Tools

Starting out, our goal was to identify which NCSU researchers had NIH-funded articles that were not in PMC and, therefore, probably not in compliance with the mandate, with a few exceptions. When we figured out what those articles were, we needed to work with publishers to deposit the articles into PMC or with the authors, if the publishers were not depositing on behalf of the authors. We started our work in January 2013—6 months prior to the July 1 deadline for compliance.

- We created a highly customized query for identifying NCSU-authored publications (all variants within address) that were funded by NIH (all variants within funding agencies field text) = 1066 articles.
- We used student labor to look up each article in PMC to see if it was deposited (documenting the PM IDs and PMC IDs). We found over 340 articles that were not in PMC. A handful of articles were exempt from the mandate (e.g., letters, commentaries, review articles).
- We used the NCSU Research Administration Data and Reporting (RADAR) database and the publicly available NIHMS Grants Lookup Tool (http://nihms.nih.gov/db/grants/suggest_grant.fcgi) to search authors or grant numbers to identify whether the NCSU authors were also the funded investigators involved with the individual articles.
- We used SHERPA-RoMEO (<http://www.sherpa.ac.uk/romeo/>) and publishers' copyright/permission policies to determine (at the publisher level) which articles (and which versions of those articles) could be deposited into repositories (specifically, PubMed Central) and which were undefined = 230 different journals were reviewed.
- From that list, we split the articles into two piles: (1) tackle as publisher-mediated deposit = 220 and (2) tackle as author-mediated deposit (which version) = 120.

Working with Publishers

Before involving the CROs more directly, we wanted to see how much of this noncompliance could be managed by contacting the publishers whose policies stated they would promptly deposit the articles. This took anywhere from days to months, in some cases.

For the articles that should have been deposited by the publishers, we sent lists of article citations to each publisher, identifying the NCSU authors,

DOIs, NIH grant funding numbers, etc. We explained that these articles were funded by NIH, our authors were going to be out-of-compliance in July, and we needed the publishers' assistance in making the deposit to ensure that our researchers would be able to submit progress reports to NIH and get their continued funding.

In many cases, this process of working through a publisher contact worked great. Many publishers responded quickly and took care of the deposit for our researchers in a matter of days or a few weeks. In other cases, we found that publishers' policies did not always match the individual journal's practice and/or interpretation on what the publisher was obligated to do. In those cases, it took up to 6 months to get resolution, and some are still not resolved as of November 1.

We encountered some interesting experiences in working with publishers. Some publishers did not recognize that an article was NIH-funded if it did not include the NIH grant number in a specific way (e.g., in the acknowledgements or if a box was not checked as part of the publishing agreement). Some publishers were unaware of NIH's mandate and needed to learn their piece of the NIHMS process; these publishers were usually open to helping with the deposit process after learning more about the mandate. Some publishers were confused as to the difference between PubMed and PubMed Central, incorrectly claiming that they had deposited content to PMC when the journal was merely indexed in PubMed. Some articles were published in journals that had traded hands, and neither publisher claimed responsibility for depositing NIH-funded articles. Some publishers interpreted the language of the mandate too strictly: NIH's mandate states, "Author may post the final draft of the Work, as it exists immediately prior to editing and production by the Publisher." Publishers who interpret this strictly end up putting the burden on authors to track down the appropriate prepublished version of articles. However, the NIH mandate FAQ clarifies that NIH will also take the published

version as long as the author has permission from the publisher to submit the final published article (<http://publicaccess.nih.gov/FAQ.htm#780>).

Even when publishers were able to deposit articles in PMC, we still had to liaise with authors to make them aware that they then needed to approve the deposits. In some cases, we worked with the NIHMS help desk to assign additional authors the rights to approve deposits in cases where the corresponding author could not be reached.

Working with Authors and College Research Officers

After working with publishers to get as many of the NIH-funded articles deposited into PMC as possible, there were still over 150 articles that were considered out of compliance for a variety of reasons: (1) publisher never deposited articles, (2) author never deposited articles, or (3) author never approved the submission of an article that had been deposited by the publisher. Regardless of who starts the process, the NIH Awardee is ultimately responsible for compliance, therefore, the CROs, who support the researchers in grant compliance, were key to resolving these problems. We met with the CROs to give them the opportunity to take up as much of this communication as they wanted, but we offered to help guide them and even take the lead in many cases.

The central SPARCS administration gave individual librarians access to the institutional view of compliance, called the Public Access Compliance Report (PACR) via an eRA Commons account. We were now able to see which articles were in PubMed and, therefore, tracked by the system and which ones were not (about 60!). All of the CROs had already been provided access to this PACM report, but when we met with them in April 2013, none of them had used it. Discussing this report as a starting point and an illustration of the steps in the process was useful in helping them get up to speed (Figure 4).

PMID	PMCID	NIHMSID	Grant Number	PI Name	Publication Date	NIHMS file deposited	NIHMS initial approval	NIHMS tagging complete	NIHMS final approval
21534005		376722	P50 DA123456	SMITH, JANE JONES, TOM	03/01/12	05/10/12			
21540055			R01 DK456789 P50 DA987654	DOE, JOHN DAVIS, ANDREW	07/15/11				
21549724		297370	R01 DA543211 T32 DA567012	SMITH, JOHN DOE, JOAN	07/25/11	05/17/11	05/18/11	05/27/11	
21595857			T32 DA012789 K12 HD023654	SMITH, ADAM	01/01/12				
21607759		318261	U54 HD019256	DAVIS, ANNE	01/01/12	08/12/11	08/12/11	08/25/11	
21612774			U01 DK011727	JONES, ANN	07/01/11				

Figure 4. Generic Screenshot NIH Public Access Compliance Monitor (Source: <http://www.pubmedcentral.nih.gov/utills/pacm/static/pacm-user-guide.pdf>)

Reactive and Proactive Work

While we were working with the publishers, the CROs, and authors of NIH-funded articles to get articles into the NIH compliance workflow, we also found ourselves engaged in reactive work to resolve noncompliance notification received by researchers from NIH. These researchers and their CROs wanted help navigating the system in order to resolve or explain noncompliance cases or delays in processing so they could continue to receive funding from their NIH grants.

In some cases, after liaising directly with NIH compliance staff, we found that delays in processing of articles were due to bottlenecks within NIH's workflows. In those cases, we tried to communicate a message of reassurance to researchers by helping them understand what clues to look for when they logged into their MyNCBI accounts and reviewed their own compliance status, compared to what we could see when we viewed compliance status from the institutional view. In many cases, we could determine that the author had taken all steps possible so far and that the rest of the steps depended on NIH to complete the work of preparing the full text for display in PMC.

After working through the backlog of noncompliant articles and reacting to noncompliance warning notices from NIH, it became apparent that the newly funded (and sometimes early career) NIH researchers were the

sweet spot for our initial training attempts. We focused on training researchers to make informed choices about copyright and ownership of their publications, how to acknowledge funding from NIH and other funding sources in their manuscripts and/or manuscript submission systems, and demonstrated the specific NIH systems that they can use to link their publications, grants, and PMC access to their research.

Time and Staffing Resources

Our support for the NIH Open Access Mandate compliance effort has involved the Director of the Veterinary Medical Library, the Interim Head of Collection Management, the Director of the Copyright and Digital Scholarship Center, two library assistants, and one library student assistant.

In the first three months, we invested much of our time in gathering data, analyzing and verifying it, and developing communication strategies for both internal decision making as well as external contact with publishers. The next four months were focused on verifying funding in ambiguous cases, communicating with publishers that were accountable for depositing the articles on behalf of authors, and engaging with campus research administration to get buy-in and establish a partnership in supporting authors who were impacted by the mandate.

Since the July 1 deadline for achieving compliance went into effect, the following months have been devoted to following up with authors and their CROs to help them determine next steps to get their articles into PMC, following up with publishers who had not yet deposited articles that they should have already deposited, and deploying a nascent training program with NIH-funded authors, especially those on training grants.

The Director of the Veterinary Medical Library had the most expertise in working with NIH-funded researchers, thinking through the impacts of compliance, connecting the right administrative stakeholders early on, and driving the workflows needed to put NCSU on the path toward compliance. The Interim Head of Collection Management had direct experience in collecting bibliometric and funding data from Web of Science and could leverage existing relationships with publishers through her work in negotiating for journal collections and access provisions. The Director of the Copyright and Digital Scholarship Center had deep experience in assessing and advising on copyright policies pertaining to repositories and to NIH's early efforts to provide open access to NIH-funded scholarship. The library assistants and the library student assistant supported much of the work of determining if the articles were in PubMed Central, clarifying inconsistencies in funding information, and mapping authors to specific departments and colleges on campus to facilitate later communications with the relevant CROs.

In addition to getting approval from the Libraries administration to commit time and resources, critical stakeholders from the rest of campus included the Associate Vice Chancellor for Research, one of the key administrative program specialists (in charge of compliance and responsible conduct of research) within the Sponsored Programs and Regulatory Compliance Services unit, and all of the College Research Officers who had NIH-funded researchers. With our help, they are up-to-speed on the issues and understand the process of achieving compliance so they can work with their researchers on day-to-day issues such as tracking the status of an article

on its way to compliance. Their feedback on support from the Libraries has been overwhelmingly positive. They commented that they now have a good understanding of the workflows and impacts as well as a better understanding of the overall aim of the NIH Public Access Mandate and related copyright issues.

Skilling Up and Scaling Out

We recognize that supporting expectations for open access to research outputs is an ongoing commitment especially as strategies develop in response to the OSTP directive that Federal agencies with more than \$100 million in annual research and development expenditures find ways to make the published results (publications and datasets) of federally funded research freely available to the public within one year of publication.

For NIH-funded research, the Libraries will continue to identify articles that were supported by NIH but do not appear in the Public Access Compliance Monitor reports due to where they were published. Expanding this kind of support across other library staff is growing increasingly important as more and more researchers are diversifying their grant activity as a reflection of their engagement with interdisciplinary scholarship. Our plan is to train librarians who have liaison responsibilities with NIH-funded departments to expose them to the relevant terminology, help set up accounts in MyNCBI, and demonstrate the steps necessary for understanding what status an article might be in and how it can achieve compliance.

For the CROs, our plan is to share with them a collaboratively edited spreadsheet (via Google Drive) that will allow them to track the status of communications with publishers and update it as they work with researchers.

Our colleagues at the Duke Medical Center Library are natural partners in this work. In fact, there are numerous grants shared between researchers at NCSU and Duke. One interesting thing that Duke Medical Center Library is doing is that they have started working with their CROs to help track the status of publications to help prepare for progress

reports. We would like to expand on this work as well.

In terms of skilling up and scaling out, the questions that loom before us are: Will it work if other federal agencies take this same approach? Who will support compliance? Who will vet compliance? Nonetheless, we have a valuable role to play and a unique opportunity to be engaged directly as trusted partners in the research process.

Lessons Learned

On the whole, this project was tremendously beneficial and much appreciated by faculty scholars. The process was often confusing, and a few researchers received multiple, and occasionally conflicting, messages from publishers, the NIHMS help desk, the CROs and the library staff. Most accepted that we were all in learning mode on these issues. Particularly in cases of cross-departmental and interinstitutional partnerships, confusion over who was the responsible party, busy schedules and inertia had to be overcome in order to shepherd funded research to the depository. We struggled especially in cases where grant recipients were not in the same department or institution as the authors of funded work. This issue arose often with training grants where the authors had graduated and their faculty mentors were no longer involved with the grant.

Not all researchers were passionate about the values of public access to support taxpayer and small business innovation. Open access may be very important for graduate students who are on training grants who will later apply for jobs that are in industry or smaller educational institutions that do not necessarily have large journal subscription budgets.

So we were able to articulate the value of open access to research publications as a career incentive for those scholars who could have their publications discovered online by potential employers.

Researcher resistance seems to relate to these negative incentives. Some papers that listed NIH

funding did not fall under the mandate, so we faced a choice to either spend energy on explaining why that article should be exempt or simply making it available. Although the amount of time required for scholars to approve is roughly comparable to the amount of time needed to claim an exemption, we were surprised to find that some scholars would rather spend the time exempting a paper than making it available. When we have shared these options using the language below, the value of having the article freely available does not seem to overcome the effort to respond to the multipart NIHMS approval process.

You can log in to the NIHMS system to indicate that it is not research and therefore would not be subject to the NIH Public Access Policy mandate. However, since you have the right to make it freely available and the publisher is depositing it on your behalf, the action to approve their deposit makes your article more available online to your community of readers.

We also learned some hard lessons about working with publishers who have committed to facilitating deposit of funded research. Some publishers misunderstood or were simply not informed about the process of deposit. Others chose to read the language of the policy in the most limited way possible or interpret the option to use different versions of the article as a requirement to use only the post-print and then required the author to locate and upload that document.

Finally, we encountered some difficulties with the NIH policy itself. In some cases the language of the policy was poorly worded, leading to poor interpretation of NIH policy. The NIH workflows were also clunky and convoluted in a way that presented a barrier for many scholars looking to comply. We also found that the NIH was understaffed, particularly in the weeks leading up to the July deadline, making it difficult for the existing staff to respond to last minute scramble. Processing times have increased from two weeks back in January to 6–8 weeks according to the current NIHMS FAQ.

Benefits of Library Getting Involved

From the Collection Management perspective, the ability to leverage our existing relationships with publishers was beneficial, indeed. Our customer service and sales representatives had a stake in maintaining a positive business relationship with the Libraries and often served to help us navigate complex organizational charts to find the right person to aid in deposit of articles into the NIHMS to achieve compliance. We are still finding that publishers are struggling to submit the author articles within the 3 month window post-publication, requiring additional follow up.

One of the primary roles of a subject liaison is saving the time of researchers as they engage in the publication and knowledge dissemination aspects of their work. The process for a subject liaison to check on individual researchers or respond to problems is the same as what it takes to do it for many investigators across units so there are economies in batch processing. The time saved by the university having a librarian identify the list of noncompliant articles by publisher and send one list of many articles to a publisher is great compared to each researcher who does not do this very often having to find publisher information and submit a single request. Researcher time is better spent on things that add value and that cannot be performed by any other university employee. Before the project, there were fewer consultations carried out by subject liaisons about author copyright agreements and publisher's open access policies. After the NIH Public Access Compliance mandate, many more biomedical trainees and faculty are learning to be aware of the policies of the journals in which they publish or are planning to publish, making compliance much easier going forward.

From the scholarly communication perspective, this represented a golden opportunity to support open access in a way that also benefitted our institution and our researchers. The Libraries have a powerful ability to advocate on behalf of our researchers with publishers to lessen the burden on researchers to achieve compliance. We also benefitted from the opportunity to gain familiarity with the systems and vocabulary of funded research which improved our own work. Likewise,

we were often able to share information with researchers and publishers about the NIH policy that seems to improve their ability to interpret and apply the policy and achieve compliance.

Another important scholarly communication benefit of the project was the information gathered about publisher behavior. Our early environmental scan familiarized us with the trends and best practices for publisher interface with funded research and gave us a broad sense of how the major publishers were engaging with scholars. We also learned a lot about publisher practice through our communications with publishers, developing greater facility with outreach and strategies for communication. Finally, this experience helped us identify the good and the bad actors in the field so that we can better guide and advise our researchers as they make particular decisions about where to publish their scholarship. Our subsequent conversations with authors were better informed so we could advise them that certain publishers would be good stewards of their work while others were likely to misunderstand or ignore their obligations, leaving authors in the lurch.

Partnerships

One of the primary benefits for the Libraries was the development of partnerships that will continue to benefit all stakeholders as we support federally funded researchers in the years ahead. Partnerships with college research officers were fruitful for us, as we developed better connections across the research enterprise. We were also able to share our own expertise with the NIH infrastructure with them. Similarly, our partnerships with research administration were informative for us—we learned quite a bit about support for research and effective communication channels for working with scholars.

We also benefitted tremendously from the opportunity to build credibility for engaging in the research process. With researchers we were able to build relationships that established our ability to be valuable partners that could offer support at a difficult moment. We also were able to develop new expertise around scholarly practice that prepared us to better understand and

communicate with scholars about the nuts and bolts of research. Our work with scholars also gave us a chance to “walk the walk” in terms of open access, providing support that made open access a less daunting process and providing concrete support for an issue for which we often advocate.

Future of Open Access to Research

These partnerships also paid dividends for the Libraries’ strategic initiatives. We were able to persuade our administration to support this project as it turned to service and then to demonstrate the value of those partnerships, which will be important as a proof of concept when we respond to the next set of mandates. This issue represented a convergence with our Research Data Committee, Data Management Plans, and compliance and emerged under an umbrella of Research Services Support, Scholarly Communication, and Copyright/Author’s rights. These scholarly communication issues will only be more frequent with the OSTP memo and the new policies that will follow, and we feel we are much better positioned to participate in an informed, credible, and useful manner as a result of this process.

Try This at Home—Useful Resources

- Broad A&I database (such as Web of Science, Scopus, Google Scholar, or NIH RePorter)

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- SHERPA RoMEO: <http://www.sherpa.ac.uk/romeo/> plus Publishers’ copyright info
- MyNCBI account: <http://www.ncbi.nlm.nih.gov/books/NBK3842/>
- eRA Commons account plus Public Access Compliance Monitor (PACM): <http://www.pubmedcentral.nih.gov/utills/pacm/static/pacm-user-guide.pdf>

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