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Taking Flight to Disseminate Translational Research: A Partnership between the UMass Center for Clinical and Translational Science and the Library's Institutional Repository

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Abstract

eScholarship@UMMS is the University of Massachusetts Medical School's open access digital archive of research and scholarship, managed by the Lamar Soutter Library. The Library began

collaborating with the UMass Center for Clinical and Translational Science (UMCCTS) in 2011. eScholarship@UMMS facilitates knowledge and resource sharing of the UMCCTS by collecting and organizing its research products, including Research Retreat posters and presentations, Community Engagement Symposia products, the UMCCTS Newsletter, the UMCCTS Seminar Series, and publications that are the result of UMCCTS-supported research. eScholarship@UMMS provides long-term stable URLs for access to content, which are highly discoverable in Google and other search engines, maximizing readership and impact of UMCCTS products. UMCCTS administrators receive usage statistics for inclusion in grant progress and assessment reports to demonstrate this public impact. From July 2011 – mid-July 2015, 657 UMCCTS products were downloaded 43,380 times. Further, eScholarship@UMMS not only facilitates discovery of UMCCTS products, but also provides long-term preservation of these products, ensuring their accessibility beyond the UMCCTS grant cycle. This case study, which is relevant to the sharing and dissemination phase of translational research, will explore this partnership, which has been a win-win for both the Library and the UMCCTS.

Getting Ready to Board

The University of Massachusetts Medical School (UMMS) was founded in the 1960s and graduated its first class of physicians in 1974. We are the only public medical school in the state and while our students specialize in many areas, our primary purpose is to train primary care doctors. Today, the Medical School is home to three graduate schools; the Medical School, the Graduate School of Biomedical Sciences, and the Graduate School of Nursing.

Over the past decade, UMMS has become a thriving biomedical research center. Expansions in facilities, research funding, and faculty make the University a leader among academic health sciences centers in the United States.[1] In 2006, professor Craig C. Mello, PhD, shared the Nobel Prize in Medicine with his colleague, Andrew Fire, PhD, of Stanford University, for their discovery of RNA interference. Gene function and expression, and gene development, continue to be prominent areas of work for UMMS researchers.

In 2010, the University of Massachusetts Center for Clinical and Translational Science (UMCCTS)[2] received a $20 million Clinical and Translational Science Award from the National Institutes of Health. The award encompasses research across all five UMass campuses, establishing the UMCCTS at the Medical School. This award, along with major backing from the Commonwealth's Life Sciences Initiative, allows UMMS to develop new curricula, programs, and partnerships that are transforming the way medicine is taught, medical research carried out, and healthcare provided.

Throughout the growth of our campus, the Lamar Soutter Library sits at the center of service, evolving like our larger institution to meet its changing needs. For years, our focus was on

providing very traditional library services to the medical students; access to resources and instruction in the same. As the University expanded and technology changed everyone's lives, the Library looked to new and different ways to remain at the heart of the academic community.

One of the most effective means we found for reaching the research community was through the passage of the NIH Public Access Policy in 2008. The requirement of NIH-funded researchers to deposit their publications into PubMed Central was the perfect opportunity for us to gain access to departments and groups that had eluded us in the past. Here was a topic that they needed to understand and they looked to the Library to explain it to them. Building a collaborative working relationship with our Office of Research Funding helped us to be seen as the point of contact for educational purposes, while they addressed issues of compliance. It also ensured that the Library remained free of any bad feelings and frustrations on behalf of the researchers that arose from the Policy. We were there to help, not police.

Once we had our foot in the door, we were able to share with these same groups some of the other resources we now had available for them, most notably our institutional repository (IR), eScholarship@UMMS.[3] The Library had launched eScholarship@UMMS in 2006 to showcase the medical school's achievements in research and scholarship. Institutional repositories help universities manage and disseminate digital materials created by their faculty, staff, students, and administrative units. These digital materials are typically organized into "collections" by department, research group, or program, and are in a wide range of formats: articles (including pre-prints and post-prints), audio files, book chapters, conference posters and presentations, datasets, dissertations and theses, e-books, reports, videos, etc. The primary benefit of institutional repositories is that they raise the visibility and enhance the accessibility of digital

content by providing free, unrestricted, online access to these publications. Collections in IRs serve as showcases to attract prospective students, researchers, and faculty to a university, and can help institutional groups manage and track their publishing output.

By the time the UMCCTS was created in 2010, eScholarship@UMMS was well-established and flourishing, with over 100 collections. We picked departments strategically, focusing on established relationships and projects involving the IR that we thought would be particularly suited for a group. One of these groups turned out to be the UMCCTS.

Taxiing to the Runway

(Sally) In 2011, I took a continuing education class offered at MLA's annual meeting held in Minneapolis, MN. Taught by Cathy Sarli and Kristi Holmes from the Becker Medical Library at Washington University Medical School (St. Louis), "Forging a Path for Translational Science Support at Your Institution" was an interactive session that left me with a whole list of ideas for ways that we could partner with the UMCCTS.

I came back from the conference and immediately made an appointment with the Center's Director of Operations, Nate Hafer. I knew Nate from having helped him with things related to the Public Access Policy, as well as some literature searching. Lisa and I met him and one of his staff members with our list of ideas in hand:

- **Conference/symposia event organization.** The IR includes functionality for organizing a conference and publishing its proceedings. The UMCCTS was about to hold its first

research retreat, and eScholarship@UMMS would be an ideal tool for archiving the presentations and posters and making them accessible, now and in the future.

- **Collection of grant-supported publications.** We proposed to set up an automated alert in PubMed to search for new publications supported by the UMCCTS grant. This alert would help bring these publications together into a cohesive collection in the IR, and keep the collection updated. An RSS feed of new publications would be available to embed on the UMCCTS website if they wished to take advantage of that functionality.

- **Project collections.** Individual collections of publications could be established for specific projects funded by the UMCCTS. These would be similar to collections already in the IR, which showcased the publications of specific research laboratories at the medical school.

- **Newsletter publishing platform.** We proposed to use the IR as both a publishing platform and archive for the Center's monthly newsletter.

I also wanted to create educational materials and standards on topics related to properly citing UMCCTS-funded articles, as well as the Public Access Policy, and the use of My NCBI. Tracking publications related to the UMCCTS was difficult and it seemed like an ideal place where we could help.

Taking Off

(*Lisa*) We were excited about this proposed endeavor with the UMCCTS for a number of reasons. We already possessed the tool and expertise – a mature, successful institutional repository coordinated by an experienced repository manager – that we could leverage for this

project. Existing IR collections could demonstrate our "proof of concept." We hoped to achieve the following goals:

- Dynamic new (and previously unpublished) content for the IR

- Increased usage/downloads

- Increased campus visibility and awareness of library services and expertise

- Successful demonstration of IR utilization for grant support

- New partnership with the UMCCTS

We anticipated that our proposed collaboration would also be persuasive and attractive to the UMCCTS. The Library has an acknowledged reputation at the medical school for teamwork and responsiveness, which would certainly be helpful. In preparation for a meeting, we identified additional positive benefits and outcomes for the Center:

- Library services provided at no cost to them, utilizing infrastructure already in place at the medical school

- Visually appealing display which could be customized to match the look and feel of the UMCCTS website

- Immediate exposure of UMCCTS-supported scholarship through Google, Google Scholar and other search engines to maximize readership and impact, more than simply a bibliography of published work

- Wide dissemination of UMCCTS scholarly products, both peer-reviewed publications and grey literature

- Monthly usage statistics as evidence of impact

- Ease of participation

The outcomes of the June 2011 meeting were very positive. The UMCCTS staff immediately responded to the idea of creating a conference proceedings collection in the IR for their recent research retreat, which had produced about 100 posters and presentations. Lisa sent Nate comprehensive follow-up information and provided wording about eScholarship@UMMS for an email that he agreed to send to all participants requesting that they submit their abstract, poster, or presentation for inclusion in the collection. They were also very much in favor of creating a collection of grant-supported research publications. The timing was excellent; while some publications were in process, none had been published at that point in time.

The UMCCTS was not quite prepared to support project collections or to migrate their newsletter to the IR platform, but agreed to revisit these initiatives down the line. They welcomed the idea of working closely with Sally to develop and disseminate educational materials about the NIH Public Access Policy for their members.

Our role was to manage the set-up and maintenance of the collections in eScholarship@UMMS, including serving as the liaison to the repository vendor. Other library responsibilities included gathering the content, submitting it into the IR with accurate and complete metadata, addressing copyright concerns, and overall management of the project. The UMCCTS, as the content provider, provided background information and publication lists, sent out the requests for participation to the faculty, and provided encouragement and promotion of the project.

We immediately began to collaborate with UMCCTS administration to specify the information needed by our IR vendor to build and design a customized research retreat website in the repository. For branding purposes, it was important to make the collection within

eScholarship@UMMS look like it was an official part of the UMCCTS website. After much discussion and multiple iterative mock-ups, the eScholarship@UMMS site for the UMass Center for Clinical and Translational Science Research Retreat launched in July 2011.

Additional UMCCTS collections were brought online later that year and over the next few years. In September 2011 we launched a conference proceedings website for the annual symposium of their Community Engagement Section, featuring posters, abstracts, and presentations from the event.

A collection of grant-supported research publications was established in May 2012. For this collection, we routinely harvest metadata from PubMed for publications that cite our UMCCTS grant number and add records for these publications into eScholarship@UMMS. Our process includes determining which version of the paper we can archive in the IR. For articles that are clearly open access with a Creative Commons license, the full text of the published articles is uploaded into the IR. If an article's publisher permits self-archiving of pre-prints or post-prints – many publishers allow this as demonstrated in the SHERPA/RoMEO database of publishers' policies on copyright and self-archiving, managed by the University of Nottingham[4] – we can contact the authors to encourage them to provide us with that version for uploading. For articles where the publisher does not allow self-archiving, or where a pre-print or post-print is not available at the time of harvesting, we provide a link to the publisher's website or to a PubMed Central version if available.

In November 2014 we rounded out the UMCCTS community in the repository with archives for the Center's monthly newsletter and presentations from its seminar series (Figure 1).

Figure 1. Screenshot of University of Massachusetts Center for Clinical and Translational

Science collections page in eScholarship@UMMS, http://escholarship.umassmed.edu/umccts/.

A Little Turbulence

Although both the Library and the UMCCTS view our ongoing collaboration as very successful, the project has not been without its challenges.

Some researchers have been reluctant to deposit the full text of their research retreat posters into the IR because it is "work in process." They haven't finished working with the data, have goals of publishing it in the near future, feel their conclusions aren't fully formed, or do not want to publicly disclose on the internet research that might lead to a patent. We've tried to overcome their hesitancy by providing embargo periods, and we've also compromised by accepting abstract-only submissions for posters. The UMCCTS now includes language in their annual call for proposals that makes clear their expectation that posters and presentations will be archived in the IR, and benefits of doing so such as permanent links, wide exposure, and usage statistics. The number of retreat submissions archived in eScholarship@UMMS has increased each year.

The other major challenge of this project has been limited Library staff resources to populate the collections with content. Like many institutional repositories, we follow a mediated deposit model; Library personnel deposit publications into the repository on behalf of faculty authors in order to reduce barriers to content recruitment. The UMCCTS projects were particularly demanding because of the large number of original publications involved; for example, the 2014 Research Retreat produced 140 posters. Also like many other institutional repositories, we have only one full-time employee dedicated to the repository (Lisa, who has additional duties but dedicates 50-75% of her time to the IR). Since we are a standalone graduate school, we can't draw from a pool of undergraduate work-study students. We have met the challenge for projects with large amounts of content as best we can by utilizing Library assistants and Library fellows

to assist Lisa with high-priority projects, and batch uploading content to the repository through spreadsheets.

One more minor challenge we experienced, which is common to any project involving websites, was keeping the design updated. The UMCCTS redesigned their website and adopted a new logo in 2014. As a result, to maintain consistency, the Library managed the process of making similar changes to the websites for the UMCCTS collections in eScholarship@UMMS. This process was labor-intensive but ultimately rewarding with the positive response of the UMCCTS staff in response to the refreshed websites.

Global Flight Path

The potential benefits and outcomes we outlined for the UMCCTS back in June 2011 have all come to fruition: wider dissemination and exposure of their research products, through a collaboration that has not been burdensome to the Center in terms of either cost or time. eScholarship@UMMS provides long-term stable URLs for access to their content, and these items are now highly discoverable in Google and other search engines which maximizes readership and the overall impact of UMCCTS products. Usage statistics are easily available for inclusion in grant progress and assessment reports to demonstrate this public impact. Between July 2011 and July 2015, 657 UMCCTS publications were added to the repository and were downloaded a total of 43,380 times by readers all over the world (Figure 2). Further, eScholarship@UMMS not only facilitates discovery of UMCCTS products, but also provides long-term preservation of these products, ensuring their accessibility beyond the UMCCTS grant cycle.

Figure 2. Screenshot of "Readership Activity Map" on July 17, 2015 for UMass Center for

Clinical and Translational Science collection page in eScholarship@UMMS,

http://escholarship.umassmed.edu/umccts/.
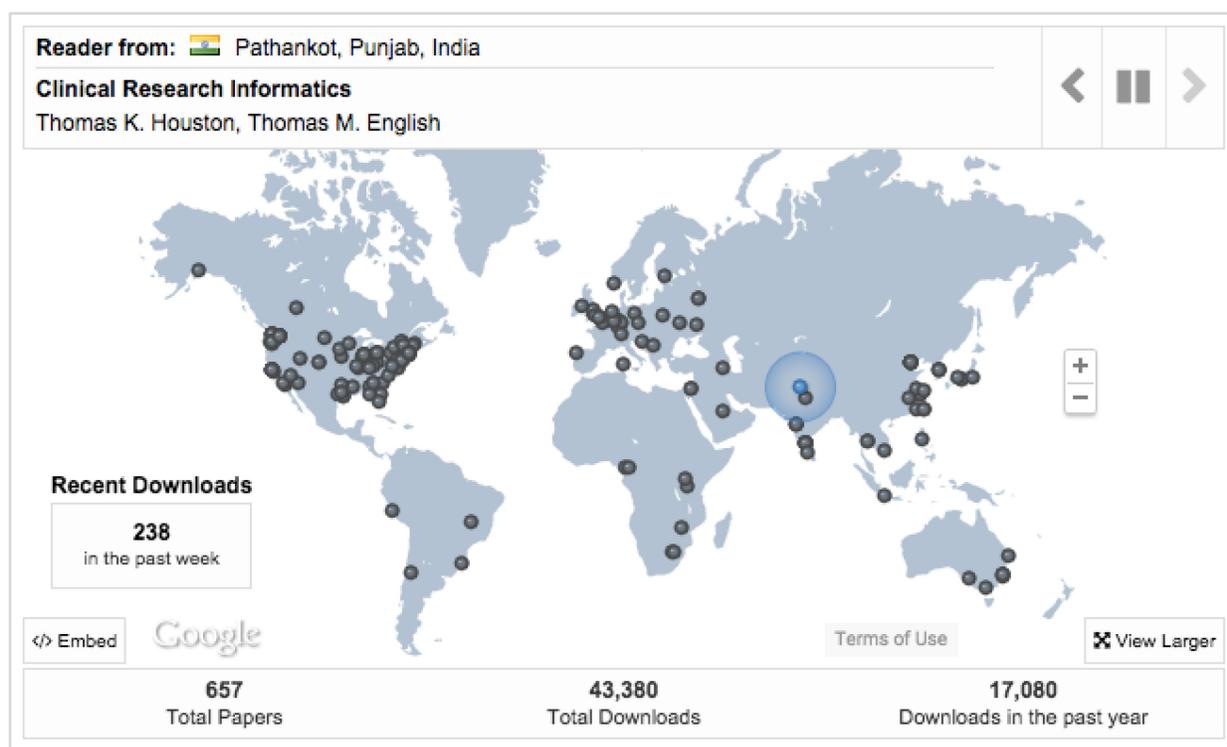
UMCCTS Director of Operations Nate Hafer summarized his perspective as follows:

> "One of the ways we measure impact is to track how UMass scholarship is disseminated
> out into the community. The eScholarship@UMMS repository is an excellent way we
> can showcase our work and follow usage metrics. It's exciting to see that our events
> from years past are still generating interest and contributing to the scientific process."[5]

We have also heard anecdotally from researchers that exposure to their research through

eScholarship@UMMS has benefitted them and their research. At the UMCCTS Research Retreat

in 2011, Barbara Olendzki, assistant professor of medicine, and her colleagues presented their

poster entitled "Pilot Testing a Novel Treatment for Inflammatory Bowel Disease."[6] This poster quickly became one of the most downloaded items in eScholarship@UMMS, to the delight of Olendzki.

> "We are really happy about this, and humbled by the response. Due in part to the call to action by the public with Inflammatory Bowel Disease (IBD), we have begun an (underfunded) trial in patients with Crohn's Disease, and invite all patients with IBD to participate alongside those patients, to learn the IBD-AID diet. Without the tremendous response of our tiny pilot study, we would not have undertaken such a risk in forging forward with our current study. We greatly appreciate the exposure eScholarship@UMMS has provided for us in pursuing this groundbreaking and important research."[5]

Her co-author David Cave, professor of medicine, was also pleased at the level of interest generated by the study's exposure through the institutional repository.

> "Diet and inflammatory bowel disease has become a hot area for public research as it relates closely to the intestinal microbiome, which in turn has been shown to influence disease activity of both Crohn's disease and ulcerative colitis. The astonishing level of interest, as measured by eScholarship@UMMS, in an abstract presented at a small meeting is a testament to this. Assessment of the benefit of dietary modification has been highly controversial, at least in part because it is difficult to measure benefit, and difficult for patients to be consistent in what they eat. Our preliminary data supports the benefit of the IBD-AID diet, in that some patients were able to reduce or eliminate the traditional medications used for IBD. We are now embarking on a randomized trial to try to provide

conventional scientific evidence for the benefit of the diet. This type of trial is essential but a real challenge to execute with minimal funding."[5]

The benefits to the library have exceeded our expectations. We have added local, unique, digital collections to our institutional repository, increasing the value and novelty of our holdings. We now have a convincing narrative about the UMCCTS and eScholarship@UMMS that we can share with researchers, administrators, and other librarians as we pursue additional collections of value.

Future Itineraries

(*Sally*) Several years after that successful June meeting, the Library's connection with the UMCCTS is stronger than ever. I'm now a full-time member of the UMCCTS staff, moving here in December 2014 to become their Research Evaluation Analyst.

I was able to convince the UMCCTS leadership of my skills and abilities for this position, in large part, because of many of the areas the Library had moved and/or was moving, and my role in those moves. The means and tools to measure scholarly communications and research impact are changing rapidly and, like the NIH Public Access Policy, this is an area where our department took the lead in investigating trends, trying out tools, helping the Library's administration persuade the University administration of the need for allocating resources to these tools (e.g., Scopus, SciVal, Plum Analytics, etc.), raising awareness of alternative metrics, and educating the research community on them. I'd had success in doing this within the Community Engagement Section of the UMCCTS, I'd presented a poster on the topic at the UMCCTS Research Retreat, and all of the success we enjoyed with our partnership with the

UMCCTS gave me a personal vote of confidence from the Leadership team. We work well together.

I came on board as the grant application for receiving another CTSA from NIH was just about due. Everyone was frantically writing and proposing and discussing how the different research cores and programs could grow in another funding cycle. I was there to write how we will evaluate these cores and overall program, and the one paragraph that was the easiest to write was the one describing how the UMCCTS has and will continue to partner with the Library to achieve some of our goals. From my new position, I was able to include items in our proposal that involve partnerships with the Library in areas of instruction regarding alternative metrics, dissemination of information through the institutional repository, and continuing support in helping the UMCCTS measure the impact of the scientific research generated by the Center.

(Lisa) I continue to work closely with the UMCCTS staff to insure that the collections in the IR remain current, that the products are disseminated widely, and that metrics are kept to show the impact and reach of the Center's work. Currently Sally and her colleagues are planning to redesign their website, and I have suggested embedding the eScholarship@UMMS readership map or an RSS feed of recent publications to add dynamic content to their website. In the future I would also like to explore incorporating alternative metrics into the display of the UMCCTS materials in eScholarship@UMMS.

My department in the Library is involved in efforts to coordinate institutional support for research data management on our campus. Our main focus is on education and outreach, and the UMCCTS would be a natural partner in these endeavors. We are also offering

eScholarship@UMMS as a solution for publicly sharing research data, which may be useful to UMCCTS investigators. The Library has been a strong and valuable partner to the UMCCTS and I look forward to providing additional service in the future.

Flight Souvenirs

- **Leverage What You Have.** There are several natural connections between what librarians do and what CTSA centers on campuses need. We are the best resource for expertise and support when it comes to all things related to scholarly communications. Teaching, supporting, and promoting the NIH Public Access Policy and open access initiatives are perfect fits. These movements are leading to many opportunities to support work related to research dissemination, tracking research impact, and research evaluation. Depending upon one's skills, interests, and available resources, these are emerging as important possible roles for librarians and libraries. All are enhanced by IRs and the library with a thriving IR is well-positioned to build successful collaborations with their CTSA centers.

- **Put in the Time.** Successful collaborations do not happen overnight. Building relationships is an essential part of the process and one that takes time. Going to programs sponsored by your CTSA, showing interest and support, learning who's who and what's what - these are all important parts of the process. It's much easier to propose ideas to people that you know. It's also much more likely that you'll propose successful ideas, if you have a good understanding of what your center does and how your library can best help.

- **Pretend That Everything Is a Pilot Project.** Pilot projects are an opportunity to learn, be creative, expand the scope of your IR, work through technical and process issues, and produce a proof of concept to demonstrate your success. Welcome these opportunities.

- **Work with Other Academic Health Sciences Libraries.** Our professional associations offer us a tremendous opportunity to network, learn, and share. Collaborations between CTSA centers are being highlighted at the national level now. If it's easier to approach a library colleague to propose an idea than your own CTSA office, give that a try. Working together is a huge part of translational science.

- **Don't Forget Your Institutional Repository.** Institutional repositories provide new ways of engaging with researchers and can be a strong component of library services offered to your CTSA. Increased dissemination, exposure and impact of their research products motivate faculty, departments, and CTSA centers. Supporting grants in this way to help researchers demonstrate the impact of publicly funded projects is an excellent utilization of the institutional repository.

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