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Academic Library and Publisher Collaboration: Utilizing an Institutional Repository to Maximize the Visibility and Impact of Articles by University Authors

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Abstract

The George A. Smathers Libraries (Libraries) (<http://www.uflib.ufl.edu/>) at the University of Florida (UF) (<http://www.ufl.edu/>) and Elsevier (<http://www.elsevier.com>) have embarked on a pilot project to maximize visibility, impact, and dissemination of articles by UF researchers who have published in Elsevier journals. Article links and metadata are automatically delivered to UF's Institutional Repository, the IR@UF (<http://ufdc.ufl.edu/ir>), in the IR@UF-Elsevier Collection (<http://ufdc.ufl.edu/ielsevier>). The metadata, with links for approximately 31,000 articles by UF authors, is made possible through integration of the IR@UF with the ScienceDirect application programming interfaces (APIs) (<https://www.elsevier.com/solutions/sciencedirect/support/institutional-repository>) that are freely available to libraries. Access to the full text on ScienceDirect is available for all institutional repository users affiliated with a subscribing institution. In the next phase users without subscriptions will be able to access the manuscripts of articles published from 2013 forward. This will be done by embedding metadata and links to accepted manuscripts available on ScienceDirect into the IR@UF. We will conduct user and usability testing of this cross-platform user experience. This article provides an overview of the project's current status, how it works, what it delivers, and next steps expanding the project to include articles by UF authors from other publishers. It concludes with strategic considerations, future developments, and reflections on the value of library/publisher collaboration.

Introduction

The IR@UF-Elsevier Collection is a strategic collaboration between UF and Elsevier. The project addresses shared library and publisher needs for integrated systems to meet common goals including:

- improving compliance with current and future funder-mandated public access policies,
- efficient and responsible sharing of scholarly journal articles through university institutional repositories, and



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- increasing awareness of and showcasing of UF scholarship.

Enhancements beyond the initial phase will address the additional goal of improving access for users without subscriptions to ScienceDirect.

This is the initial phase of a larger collaboration. It presents the published version of open access articles by UF authors to all users while other articles by UF authors are currently available only to users affiliated with subscribing institutions. Phase I lays the groundwork for broader access for users without ScienceDirect subscriptions in Phase II and beyond.

Project Overview

Through an automated ingest, the IR@UF retrieves article metadata and links to the full text on ScienceDirect for inclusion in the repository. This helps IR@UF users more easily identify and link to the best version of the article available to them. Each article is labeled on the results page for the individual IR@UF users to indicate whether or not they can move directly to the full text on ScienceDirect if they click on the link.

Linking to the published version of the article on ScienceDirect means that users add to overall aggregated data on usage of the article, which is helpful for authors, their institutions, and the publisher. For authors a widening range of impact metrics are useful – for example metrics about usage, media mentions, sharing, and citations – and usage data are available faster and more regularly than some of the other impact metrics. For institutions usage metrics can help support collection development decisions and provide insights about the use and impact of institutional research outputs. For publishers usage metrics help drive the development of services, for example article recommendation tools. These aggregated data would not be available if different versions of the article existed across

multiple platforms, thus obscuring the true use of and merit of scholarly output.

The automated ingest of metadata and links into the repository currently enables access to both open access and subscription articles. The open access articles, which are currently 12% of the articles published since 2012, are available to all users, but subscription articles are available only to users affiliated with institutions that subscribe to ScienceDirect. Access is available to all users who can be identified by the APIs as affiliated with an institution that subscribes to ScienceDirect; it is not limited to users who are affiliated with UF. In instances where users are not identified by the API as affiliated with a subscribing institution, they are reminded that they may need to sign in or activate their VPN connection in order to be correctly identified. They are also reminded about other options for access such as interlibrary loan or purchase. In Phase II accepted manuscripts from January 2013 forward will be embedded in the IR@UF in order to provide an additional access option for users without a subscription.

The IR@UF currently contains metadata and links for approximately 31,000 articles by UF authors that were published in Elsevier journals between 1949 and 2015. In July, articles published in the first half of 2016 will be added, and updates will occur monthly thereafter.

Technical Collaboration between Elsevier and UF

To develop and implement this project, UF and Elsevier each set up internal teams to manage the communication and feedback needed for a successful launch. At the Libraries, the project team included representatives of information technology, digital scholarship, digital services, the institutional repository, metadata services, assessment, and administration, who met regularly to review the interface field mapping, user views, and usability considerations and to plan



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for future phases. The Elsevier project team included members from the Access & Policy and Research Products groups. The Libraries and Elsevier held regular phone calls between the two groups, and subgroups held calls on specific issues.

Throughout implementation of the project, collaboration proceeded smoothly. Elsevier communicated API details with both static and online documentation. Elsevier also clarified and modified documentation in response to UF questions and addressed issues through periodic conference calls and emails. As UF worked through practical issues ranging from requests for support for new arrangements of API parameters to simple clarifications within the API documentation, Elsevier responses were prompt and thoughtful, and support was accurate and accommodating.

In the next phase, UF and Elsevier will work together to embed accepted manuscripts for recently published articles within IR@UF, which removes the burden of submission to the IR from UF researchers and expands access for users without ScienceDirect subscriptions. This means all IR@UF users will be able to read a full-text version of articles by UF authors published from January 2013 forward – the final published version of the article for users affiliated with subscribing institutions, and the post-embargo accepted manuscript for other users. In both cases, the user will view the full text from the ScienceDirect platform, although it may appear as if the manuscripts are in the IR@UF. This will greatly increase access for users without ScienceDirect subscriptions, which is part of the

¹ All of these factors led the Libraries to approach Elsevier about this collaboration.

Because the overall volume of publishing at UF is high and there is not a culture of deposit of author manuscripts in the IR@UF, the Libraries contacted Elsevier to see if they could provide UF author manuscripts. The Libraries assumed

overall plan for the UF and Elsevier collaboration. In addition, in Phase II, discovery will be based on indexing the full text.

Other libraries can already adopt this methodology to identify and increase awareness of Elsevier articles on behalf of the authors from their own institutions, and both the Libraries and Elsevier are participating in efforts to expand the project to incorporate articles from other publishers. This expansion could happen through collaboration with organizations such as CHORUS (<http://www.chorusaccess.org/>) - a nonprofit organization that facilitates a simple compliance process, optimized search and dashboard services, and multi-party archiving and preservation capabilities - and SHARE (<http://www.share-research.org/>) - an initiative of the Association of Research Libraries, Association of American Universities, and the Association of Public and Land-Grant Universities to create an infrastructure and process of metadata management and dissemination that describes higher education research and activities.

Strategic Considerations

Acquisition of Articles by UF Authors

UF faculty members publish approximately 8,000 journal articles a year, and 1,100 to 1,300 of those articles are published in Elsevier journals. Elsevier articles represent 13.75% to 16.25% of UF-authored articles published each year. In addition, as shown in Figure 1, this is the largest volume of articles by UF authors from any publisher and the Elsevier articles have a very high share of citations.

that Elsevier would have recent manuscripts and know what rights the authors had assigned or retained. Elsevier was immediately open to discussion and this led to disclosure that they had developed, and were ready to test, an API that would provide enhanced metadata for articles by UF authors for the IR@UF and other



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complementary APIs that would allow the Libraries to link subscribers to the published articles on the ScienceDirect platform. (See Figure 1.)

Because UF authors have told the Libraries they prefer that users access the published version of their articles, the Libraries quickly switched their focus and agreed to test the APIs.

The Libraries were interested in obtaining both retrospective and prospective information on articles by UF authors. Elsevier responded with a bulk transfer of metadata for articles from 1949 to 2012 and the Libraries began working with that data to design the user interface while preparing to use the API to identify and download information about more recent articles and the other APIs to link to all of the articles on the ScienceDirect platform.

Digital Preservation

The focus of this project is not on digital preservation, in large part because the full text of articles by UF authors published by Elsevier is preserved in CLOCKSS

(<https://www.clockss.org/clockss/Home>), the Dutch Royal Library e-Depot (<https://www.kb.nl/en/organisation/research-expertise/long-term-usability-of-digital-resources/information-for-international-publishers>), Portico (<http://www.portico.org/digital-preservation/>), and of course in Elsevier's own data centers. The external archives provide independent confirmation of content within their collections. For example, a Portico report, verified by the KEEPERS registry (<http://thekeepers.org/registry.asp?action=search&naecache=4>), confirms the availability of Elsevier content in Portico.

Implementation Costs

The Elsevier APIs are provided without charge to UF and other institutions that wish to utilize them, affording access to the metadata and the

ability to link to the published articles on ScienceDirect. UF contributed the time of one programmer who worked on the project intermittently for about 18 months. Other staff participated as well. Because this is a pilot, there has been considerable dialogue within the Libraries and with the technical staff at Elsevier about implementation of APIs and expectations for the project. The discussions and collaboration have led to adjustments in the Elsevier APIs and in the way UF presents search results.

Now that the API integration is operational, the expectation is that the Libraries' ongoing costs will be minimal and that the investment for next phases will be decidedly lower. Implementation should be easier and faster for others who choose to pursue this opportunity. This has been a worthwhile investment that has already provided a significant return by identifying and increasing the visibility of approximately 31,000 articles by UF authors and it will provide an even greater return when the next phase allows access to 3,000 or more accepted manuscripts for articles published since 2013.

Elsevier has invested considerable staff time in the project and in the collaborative process with UF. In addition to developing and testing the APIs, Elsevier staff have been working with UF to improve the APIs and make it easy for others to utilize them. Elsevier has made the existing APIs freely available, and simultaneously invested in the creation of a plug-in for DSpace for use by other partners in recognition that some institutions might require an alternative way to implement this type of project.

Compliance with Funder-Mandated Public Access

The Libraries at UF have taken a leadership role in working with faculty to inform them about the requirements of various funders and advise/assist them with funder deposit require-



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ments (<http://cms.uflib.ufl.edu/Schol-Comm/publicaccess>). The Elsevier pilot project further facilitates compliance because the Libraries will share the information about UF-authored publications with the Division of Research Compliance in the Office of Research. This will allow the compliance office to identify articles that have been published and may have a deposit requirement. Deposit can be verified, and if it has not yet occurred, the compliance office can contact the authors to remind them of the need to deposit. Since UF authors publish an estimated 1,100 to 1,300 articles a year in Elsevier journals, and many of those articles report on federally funded research, this increases the University's ability to monitor compliance for a substantial percentage of its published research. In doing so, this collaborative project ensures both easier administration of compliance and greater visibility for published research by UF authors.

Availability of the APIs

Elsevier provides the standard ScienceDirect APIs without charge to institutions for use with their own institutional and subject repositories. Each API allows for the specification of a desired format in which to receive its results. The Phase II API service will be available without charge for ScienceDirect subscribers as part of license agreements.

Presentation of Results

Open Access

Phase I employs an API that identifies open access articles from the ScienceDirect platform and allows all end users to access the full text of those articles. This includes post-embargo access to articles from the 105 journals in Elsevier's Open Archive. Open access articles, which are available to everyone, are identified by an indicator in the search results within IR@UF (Figure 2). Approximately 500 open access articles by UF authors published between 2012 and 2015

were included when the project was launched. (See Figure 2.)

Access for Subscribers

In instances where the API can identify users as affiliated with a subscribing institution, UF-authored articles that are not open access are indicated in the results list by a label "Publisher version - You have access" (Figure 3). If users select an article with this label, they will immediately obtain access on the ScienceDirect platform. (See Figure 3.)

Access for Users without Subscriptions

In instances where the API cannot identify users as affiliated with a subscribing institution, articles will appear in the search results with the label "Publisher version - Check access" (Figure 4). If users select an article with this label, they will be redirected to a landing page that reminds them that articles can be obtained through an interlibrary loan request or purchased through various options that are offered by Elsevier. Users are also reminded that they may need to sign in or activate their VPN connection in order to be correctly identified as a licensed user. The result is specific to each user. For example, in Figure 3, the article with the label "Publisher version - Check access" was included in the search results for a UF user because UF does not license the back file that includes that journal for that year. Another user, from an institution that has licensed that back file, would see the label from Figure 3, "Publisher version - You have access". (See Figure 4.)

Expanded Access for Users without Subscriptions

While Phase I does not provide access to all UF-authored articles for all users, in Phase II the availability of embedded manuscripts for articles by UF authors published since January 2013 will provide greater access for users not affiliated with a subscribing institution. It will also



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allow both Elsevier and UF to test whether users prefer the published version or the manuscript version when there is a choice. In addition, UF has proposed an exploration of whether users without subscriptions choose to purchase access to the published version after viewing the manuscript. Many UF authors indicate that they prefer delivery of the published version of their article where possible. Both Elsevier and the Libraries assume that most users will prefer the published version as well, but have not yet validated (or invalidated) that assumption or documented the behavior of unsubscribed users after they view the manuscript version.

UF authors, with rare exception, have assigned copyright to Elsevier for articles they have chosen to publish under the subscription business model. In this collaboration, UF is utilizing information that Elsevier already has and is willing to share. Now that the APIs are in place and working, the Libraries are using automated processes to identify and offer access to Elsevier articles with minimal effort compared to the effort required by the Libraries and by UF authors to gather the manuscripts for deposit in the IR@UF. This saves valuable time for UF librarians and researchers

Future Developments

Plans for Usability Testing

Usability testing will include assessment of the current design, evaluation of users' ability to complete representative tasks on the IR@UF-Elsevier Collection, and examination of stakeholder perceptions of the overall value of this approach to improving visibility and providing access to articles by UF authors. This beta testing will include informal, collaborative testing with a variety of stakeholders using both the talk-aloud protocol and a post-test survey.

The beta testing may be followed by a more formal and broader user perception study of institutional repository policies and practices in the

context of the IR@UF-Elsevier Collection. The IR@UF-Elsevier Collection team is in the process of recruiting the key stakeholder sample and is also preparing the scenarios and tasks to be tested. Assessment will include examination of both users with and without subscription access and will evaluate user preference between the published and manuscript versions of articles.

IR@UF Integration with Other Publishers

The UF team is now in active discussion with CHORUS about extending this collaboration to other publishers on a pilot basis. This expanded partnership looks very positive, with interest from several commercial, scholarly society, and university press member publishers. This would extend the coverage of UF-authored publications substantially and demonstrate the scalability of this collaboration both technically and administratively. It would be an administrative challenge to expand this process to multiple publishers without a central coordinating body like CHORUS.

Elsevier ScienceDirect API Integration with Other Repositories

Elsevier is working with other institutional repository and development partners, including development of the DSpace plugins mentioned above. Elsevier has created an information page (<https://www.elsevier.com/solutions/sciencedirect/support/institutional-repository>) for potential partners who would like to better understand the opportunity and register interest.

The Role of Institutional Repositories

UF has embarked on collaboration with Elsevier as the first of several projects to increase the discoverability and the visibility of articles from UF authors and other content of significant value and interest to the university community, as well as expand the use and enhance the value of the content in the IR@UF. This collaboration



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supports, and is consistent with, the purpose of the UF institutional repository:

The UF Libraries acquire, manage, and preserve digital resources so that they remain accessible to its constituents over the long term. Certain limitations may be placed on access due to legal, donor and/or other reasons, but, in general, in so far as possible, the UF Libraries endeavor to make its digital resources accessible to all users. (sec.1)²

This project has allowed the Libraries to think carefully about, and demonstrate, how best to achieve this vision with respect to UF-authored articles in ways that are efficient, cost effective, and in particular minimize administrative burdens on UF authors.

Institutional repositories are increasingly common in research libraries, but each has a distinct scope specific to its own institutional mission. Unlike some other institutions, the IR@UF is on the same platform as, and the content is commingled with, the complete UF Digital Collections (UFDC) (<http://ufdc.ufl.edu/>). Within UFDC, there are several sub-collections where access to individual items is restricted to authorized users. While most content in UFDC, including content in the IR@UF, is accessible to all users, access to items or collections may be restricted because of cultural sensitivity, author or donor embargoes, or copyright restrictions. This project is appropriate to the scope and purposes of the IR@UF as it exists within the UFDC, and is consistent with the roles of institutional repositories as they are described below.

In 2002, Raym Crow stated in “The Case for Institutional Repositories”:

Institutional repositories – digital collections that capture and preserve the intellectual output of university communities – respond to two strategic issues facing academic institutions: 1) they provide a central component in reforming scholarly communication by stimulating innovation in a disaggregated

publishing structure; and 2) they serve as tangible indicators of an institution’s quality, thus increasing its visibility, prestige, and public value. (2)³

In 2003, Clifford Lynch wrote “Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age” in which he spoke of important new opportunities with MIT developing DSpace which was soon to be installed at multiple institutions, moving universities on the path Crow envisioned for establishing IRs.

Lynch proceeded to define an IR for a university as:

... [A] set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access or distribution. (1)⁴

Both Crow and Lynch focus on IRs not only as places to collect and share scholarship, but also as places for transformation and change through the usage of those materials. Lynch’s statements in particular focus on services to the institution and its community members, and then stewardship for materials through organization, access, distribution and preservation. This is consistent with the use of the IR@UF for the collaboration with Elsevier.

Value of the Library-Publisher Collaboration

The project provided a meaningful opportunity for library faculty and staff to work closely with Elsevier staff. This led to greater understanding of the points of view and constraints under which we each operate and to mutual respect. Both teams were open minded and candid. They worked collaboratively toward our common goals and were able to have constructive dialogue about our different approaches to issues.



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For example, the librarians felt it was important to remind users who did not have access to the published version that they could work with their local library to obtain the article through an interlibrary loan request, so they were presented with options other than purchasing access and Elsevier quickly accepted that recommendation.

So often librarians' primary contact with publishers is with the sales force, and while librarians are aware of the high value of these resources to their users, they are also extremely conscious of the high price paid for them from increasingly constrained library budgets. As a result, the relationship between librarians and publishers can be oppositional or even contentious. This project connected UF librarians and staff with other representatives of Elsevier and allowed them to collaborate with those individuals in a very different context to address common goals and objectives. Similarly, the project connected a wider array of staff at Elsevier directly with the library team in a collaborative and constructive way.

The value of this collaboration cannot be fully understood without acknowledging the way it has strengthened the Libraries relationship with the UF Office of Research. As explained above, the Libraries are using the information derived

from this project to assist the Division of Research Compliance to identify published articles that may have a deposit requirement in order to assure compliance with less burden on the authors. Elsevier understands the significance of compliance with funder-mandated public access for the University and welcomed the opportunity to work with the Libraries to identify a practical and cost effective way for the Libraries to facilitate the UF compliance efforts.



Figure 1. 2009-2014 distribution of articles by UF authors among the 10 most frequently used publishers.

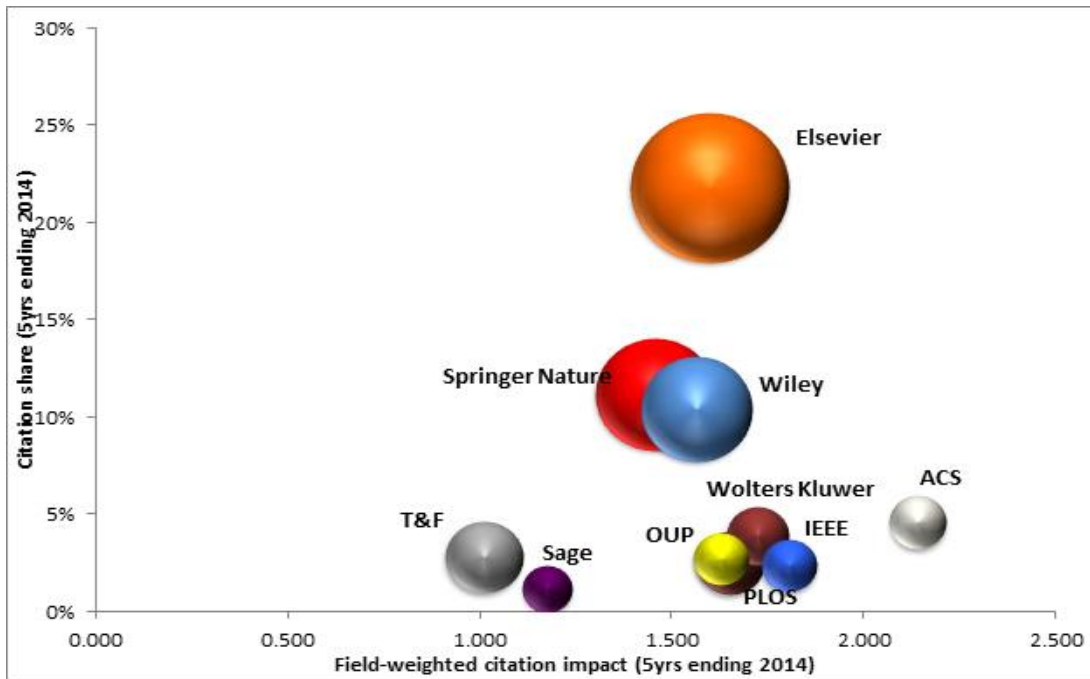



Figure 2. Citation results display indicating 'Open access'.



Prevention of Atrial Fibrillation by Bucindolol Is Dependent on the Beta1389 Arg/Gly Adrenergic Receptor Polymorphism

Links: [\(external resource | internal citation \)](#)

Publication Date: 2013-08-31

Creator: O'Connor, Christopher M. (author)
 Fiuzat, Mona (author)
 Davis, Gordon (author)
 Abraham, William T. (author)
 Anand, Inder S. (author)
 Liggett, Stephen B. (author)
 Bristow, Michael R. (author)
 Section of Cardiac Electrophysiology, University of Colorado
 Denver, Denver, Colorado (host institution)
 Aleong, Ryan G. (author)
 Sauer, William H. (author)
 Murphy, Guinevere A. (author)
 Port, J. David (author)

Publisher: American College of Cardiology Foundation. Published by Elsevier Inc.

Format: Pages 338-344

Subjects: Arrhythmia
 genetics
 Norepinephrine
 Heart Failure
 beta adrenergic receptors


Source Institution: American College of Cardiology Foundation. Published by Elsevier Inc.

Publisher version

Open access



Figure 3. Citation results display indicating 'You have access'.



Publisher version

You have access

α -Adducin polymorphism associated with increased risk of adverse cardiovascular outcomes: Results from GENetic Substudy of the INTERNATIONAL Verapamil SR-trandolapril Study (INVEST-GENES)

Links: [\(external resource | internal citation \)](#)

Publication Date: 2008


Creator: College of Pharmacy, University of Florida, Gainesville, FL (host institution)
 Pepine, Carl J. (author)
 Gerhard, Tobias (author)
 Gong, Yan (author)
 Beitelshees, Amber L. (author)
 Mao, Xianyun (author)
 Lobmeyer, Maximilian T. (author)
 Cooper-DeHoff, Rhonda M. (author)
 Langae, Taimour Y. (author)
 Schork, Nicholas J. (author)
 Shriver, Mark D. (author)
 Johnson, Julie A. (author)

Publisher: Mosby, Inc.

Format: Pages 397-404

Source Institution: Mosby, Inc.

Figure 4. Citation results display indicating 'Check access'.



Publisher version

Check access

A "blind-folded" test of equilibrium beach profile concepts with New Zealand data

Links: [\(external resource | internal citation \)](#)

Publication Date: 1993

Creator: Coastal and Oceanographic Engineering Department, University of Florida, 336 Weil Hall, Gainesville, FL 32611, USA (host institution)
 Dean, Robert G (author)
 Healy, Terry R (author)
 Dommerholt, Albert P (author)

Publisher: Elsevier B.V.

Format: Pages 253-266

Source Institution: Elsevier B.V.

Endnotes

¹ Who Participates in Portico: Publishers (<http://www.portico.org/digital-preservation/who-participates-in-portico/participating-publishers>, accessed June 16, 2016).

² University of Florida, George A. Smathers Libraries. "The Institutional Repository at the University of Florida" In University of Florida Digital Collections. Accessible at <http://ufdc.ufl.edu/ir>.

³ Crow, Raym, "The Case for Institutional Repositories: A SPARC Position Paper," *The Scholarly Publishing & Academic Resources Coalition*, (2002): 1-38. Accessible at http://ils.unc.edu/courses/2015_fall/inls700_01/Readings/Crow2002-CaseforInstitutionalRepositoriesSPARCPaper.pdf.

⁴ Lynch, Clifford, "Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age," In *Association of Research Libraries Bi-monthly Report on Research Library Issues and Actions from ARL, CNI and SPARC*, (2003): 1-11. Accessible at <http://www.arl.org/storage/documents>.

