

Initial Summary Report: Access to Scholarly Journals – Information Request Project

Prepared January 14, 2020

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Executive Summary

What does it take to ensure access to scholarly publications and data resources essential to Drexel researchers? Though individuals have expressed frustrations with not having access to specific licensed e-journals, the magnitude of the problem's impact on the University's support of research is unknown. Furthermore, lack of a holistic assessment of current Drexel's dispersed and uncoordinated strategies to connect researchers to disseminated scholarly resources hampers improvement of the institution's most effective and cost efficient solutions to support quality research and competitive reputation.

To help address this challenge, the Drexel University Libraries [DUL] and Office of Research and Innovation [ORI] conducted an exploratory data gathering exercise to both better understand the size of the problem of connecting researchers to critical scholarship and cost effectively resolve challenges to improve solutions. It involved an emailed questionnaire sent during October-November 2020 to an estimated 500 funded PIs, and a discussion among ADRs [scheduled for January 2021]. Insights gained aim to help prioritize decisions for licensing e-journal titles essential to research and for utilizing other access services to support research. This initial report summarizes the survey findings and the analyses DUL staff conducted to gauge the magnitude of the problem to connect to scholarship for research, and estimate costs to license identified titles that it currently does not manage.

Respondents of the 95 [c. 19%] completed questionnaires identify with expected broad categories of Drexel's most funded areas of research [life sciences and medicine] and primarily affiliate with Colleges of Arts & Sciences and Medicine. The majority of respondents [72%] acknowledge they were unable to access all e-journals and articles needed for their research since January 2020, and alternatively most of them admit that they submitted ILL requests [n=31] or requested copy from a colleague [n=15]. They have identified 883 unique titles as critical either to their current research projects [n=663] or to stay abreast of their research field [n=388]; 168 titles were identified critical for both purposes. Of these critical resources, convenient availability to 74% [n=651] titles were provided at the time of the survey through the Libraries' management of currently licensed access to information resources [prioritized in support of curriculum]. The identified gap of titles not currently licensed consists of 172 unique titles identified for support of current research projects and 98 unique titles identified for support of staying abreast of research fields. An initial analysis of obtained costs to license access to meet the respondents' collectively identified gaps, estimates a **minimal additional allocation of \$874,540** specifically:

- **\$728,089** to conduct currently funded research, and another
- **\$413,764** to stay abreast of their research fields
- (\$267,313 costs for titles identified for both purposes)

[These allocations are results of an investigation of identifiable citations and easily available vendor estimates to offer access; staff did not receive several quotes in time to include in this preliminary report. In spite of not renewed subscriptions, back files are available for 149 titles.]

Fifty-five respondents made over 60 suggestions for how to prioritize which titles to license when inadequate funds are allocated to contract access to all expected titles. These are summarized by eight

approaches, including making decisions that rely on: faculty choices of specific titles, revenue generated by research, disciplines reflecting Drexel research activities, characteristics of journal titles or publishers, availability [and frequency] of access through ILL services, alignment with accreditation or student educational needs, and negotiated costs for access.

Limitations of this exploration preclude drawing conclusive evidence to identify processes and costs to improve institutional support of all research dependencies on scholarly information resources. However, the exercise has provided insights on a notable portion of e-journals that funded researchers at Drexel identified as essential to their work and enabled DUL staff to estimate the minimal shortfall to meet this gap. It also raises awareness that since this enquiry focused on researchers with external funding, its results do not reflect needs of those in fields with less funding opportunities [e.g. social sciences and humanities].

This initial report is prepared as background to engage ADRs, faculty and other research stakeholders in improving research support of access to scholarship. The findings indicate that within the past year, most researchers perceive that they were unable to access all e-journals and articles critical to conducting their research. Analysis also confirms that convenient access to a large portion of identified e-journals is available to Drexel researchers through DUL-managed licensed titles selected in support of curriculum, and that delayed access to some other titles is available through well-utilized ILL services.

Like other universities, Drexel will not have adequate resources to license access to all sought research publications. No R1 institution connects its entire population of highly active researchers through a singular strategy to purchase or license all resources reflecting comprehensive disciplines. Toward ensuring access to disseminated scholarship [research publications and data output], the DUL shifted its investment decisions from building collections to managing four tiers of access services: 1) procurement of **licensed and purchased** resources, 2) connecting to **open access** repositories and discoverable non-subscription e-resources, 3) streamlining **resource sharing** arrangements, and 4) guiding identification of **authoritative alternate content**. **We invite feedback from faculty and other Drexel research stakeholders to understand the effectiveness of this multi-service access model to meet specific types of research needs to access disseminated scholarship.**

This initiative's final report will incorporate perspectives of ADRs and staffs from ORI and DUL. Its recommendations to the Provost and other executive leadership will aim to inform implementation of a new RCM model to implement for FY22 with transparent alignment of fund allocations and expenditures for ensuring cost-effective access to publications and research data critical to meet institutionally prioritized research dependencies on scholarship.

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Introduction

In the aftermath of significantly reducing FY20 expenditures with three major vendors, approximately 1900 titles were not renewed effective January 2020, and some faculty voiced concerns about dropped licensed, any-time access to titles especially needed to support research. The Dean of Libraries sought added strategic funding for support of information resources needed for research, a newly specified allocation never made in alignment with a growing campus priority to expand research, or with any expectation to lower support for expanding curriculum. Discussions with the Provost, deans, and other academic administrators led the Drexel University Libraries [DUL] to seek a better understanding of the needs for access to e-journal titles needed primarily for support of research and to estimate projected costs of ensuring that adequate access would be available to meet Drexel's expectations as an R1 institution.

Historically, DUL prioritized its obligations to ensure access to authoritative information and scholarly resources by allocating at least half of its entire budget to this core mission objective. Operationally, it allocates these funds to license or purchase access to resources that support curriculum, and provides reliable and cost-effective resource sharing services to offer researchers access to additional titles not primarily used for student education. Procedurally, with reduced staff capacity and funding to meet its budget cut, the DUL identified non-renewed titles, using a simplistic set of criteria:

Librarians based decisions first on available data to calculate cost per historic use, and second, on subject librarians' understanding of relative importance of titles [below the \$10/use threshold] for curricular support, and likely alternate cost-effective availability through resource sharing for support of known research activities.

Staff have monitored unsolicited requests from researchers to license titles for their work that librarians determined were too expensive to obtain within existing allocations without reducing support of curriculum. During the past two years, the estimate costs of these unfilled licensed requests totaled approximately \$250K [FY 19] and \$400K [FY 20]. The DUL has an inadequate system for gathering and analyzing evidence around essential researchers' need for convenient any-time access to licensed e-journals or the University's capacity to fund it centrally.

To address this inadequacy, two explorations were undertaken this past half year. One has begun to identify distribution of research administrative overhead through discussions in Executive Group about the RCM model and funding the DUL to support research. The other exploration is to engage researchers with librarians to pilot a way to estimate costs to fund such support. This report summarized the approach and findings of this second exploration.

Data Gathering Approach.

A short questionnaire [Appendix A] was drafted to solicit information about e-journal titles researchers identify as most needed, experiences on how researchers access them, ideas for prioritizing which to fund centrally, and demographic information. The Dean of Libraries and SVP Research & Innovation drafted the instrument as a Qualtrix questionnaire, with input from some team members. The target audience to provide information during this pilot consisted of PIs of currently funded sponsored research. The ORI identified approximately 500 Drexel faculty to receive a questionnaire; challenges in having a comprehensive file of emails arose when some invited PIs forwarded their invitation to participate to additional faculty members.

Libraries staff exported responses to Questions 1 and 2 into Excel files and a team of librarians¹ analyzed them to prepare lists of PI-identified titles and estimated costs for licensing groupings of these titles, as well as demographic information and experiences sought in Questions 4-9. Administrators reviewed and summarized comments extracted from the open text responses to Question 3.

Findings:

Respondents Demographics [Appendix B]. Of the total 175 responses received [35% of c.500 invitations], 108 identified college affiliation, but only **95 questionnaires [19%] were completed** beyond that and thus used in the analyses summarized in this report. Approximately half [50.5%] of the respondents represent the Colleges of **Arts & Sciences** [n=27] or **Medicine** [n=21]; adding the **Colleges of Engineering** [n=15] represents two-thirds [66%] of respondents [Table B1]. Self-identified areas of research among respondents primarily represent **life sciences & medicine** [32%], engineering & technologies [22%], natural sciences [18%], and social sciences & management [14%]. [Table B2]

Identified Titles As Most Needed for Research [Appendix C]. Respondents identified 1,528 titles as critical either for their current research projects [n=1,004] or to maintain awareness in their fields of research [n=524]. Multiple mentions of titles were removed, leaving, **883 unique titles identified in this study as critical to Drexel research.**

Drexel Researcher Experiences [Appendix D]. Most respondents [n=76, 72%] noted that they had not “been able to access all e-journals or articles...needed for ...research through Drexel Libraries” since January 2020 [Table D1]. Most selected strategies to access the resource included submitting an ILL request [n=31] and asking a colleague for a copy [n=15] [Table D2]. The majority of respondents indicated they have deposited research output to digital repositories [56%, n=52] and/or submitted research output to Open Access publications [60%, n=55]. By far, those engaged with these opportunities to freely disseminate research output are respondents affiliated with CoAS [n=20, 38%] for use of digital repositories [Table D3] and affiliated with CoMed [n=16, 29%] and CoAs [n=16, 29%] for submitting to Open Access publications [Table D4].

Ideas for Prioritizing Central Funding. [Appendix E] Fifty-five respondents suggested over 60 ideas for how to prioritize which titles to license when insufficient funds are allocated to contract access to all expected titles. The following eight approaches to make decisions about licensing titles summarize these responses [in rough rank order, with first two above others]:

1. **Faculty choice of specific titles:** individually identified as needed, or collectively ranked through creation of a ranked “master list” with top 1-5 titles licensed in each field
2. **Research generated revenue:** prioritizes titles with greatest dependencies for current research projects and high impact factors, followed by titles for awareness
3. **ILL access:** either to prioritize titles not available or difficult to obtain and/or those titles frequently requested
4. **Publisher characteristics:** prioritizing the major publishers, or society, university, and nonprofit presses over profit publishers
5. **Journal characteristics:** prioritizing those most cited [by DU authors or in field], most accessed, most used to publish DU research output, with highest impact factor, cross disciplinary coverage, include

¹ Special thanks to the Libraries’ Online Resources and Acquisition Librarian, Jay Kibby, and Senior Data Analyst, Haemin Kim for their assistance in analyzing the data and cost estimates.

conference proceedings, including methods series and reviews, or provide unique coverage of key topics relevant to DU research.

6. **Discipline:** prioritize major research areas at Drexel [e.g. Health Sciences, cancer, infectious diseases, neurobiology], or “flagship” titles selected from each field
7. **Best cost negotiated subscriptions:** prioritizing those in “big packages,” with better collaborative deals with other institutions, or those committed to open access over high profits
8. **Publication date:** prioritize most recent and those before 2008 [when fewer archived sets are thought to be available online]

A few comments challenge the question’s premise of prioritizing titles by suggesting a greater institutional priority be made for funding [DUL] licensed access to “all titles” or “as many as possible” needed for research to avoid Drexel being a “trade school.”

Analyses

DUL staff exported into Excel titles identified by PIs as critical both to current research projects and to maintain awareness in their research fields. They listed once titles mentioned multiple times. Acquisition staff identified costs to license access by contacting vendors and consulting online price lists, and summarized totals for those DUL does not currently license. As noted below, to close the gap in what DU researchers identify as needed to meet both their needs requires over \$875K.

Category	Costs for titles the Libraries does not license
1. Journals critical to your current research projects	\$728,089
2. Journals to maintain awareness in your research fields	\$413,764
3. Journal titles identified for both categories	(\$267,313)
Total	\$874,540

These cost estimates – not designed in this preliminary exploration to be representative of all Drexel researchers – are well within self-reported research uses of library resources reported in an earlier, yearlong study,² which concludes that 7.68% [\$1,160,619] of research administrative overhead [\$15,103,456] reflects the proportion of its allocation that should cover the Libraries’ contribution.

Discussion

To understand what it takes to ensure access to scholarly publications and data resources essential to Drexel researchers, two questions remain difficult to answer:

- What information resources do Drexel researchers need to conduct their work?
- What strategies are most cost effective for the University to ensure that the Drexel academic community has access to these resources?

Traditionally, librarians knowledgeable in the literature of specific disciplines identify information needs through relationships with faculty, students and staff developed through delivery and customization of services in support of instruction and research provided to departments organized by academic

² Franklin, Brinley [2017] Drexel University Library Cost Analysis Study Final Report; commissioned by Office of Research.

disciplines. The survey findings support the effectiveness of this access management strategy when staffing capacity is adequate. Librarian decisions to prioritize licensed and purchased e-resources for curriculum support result in providing convenient access to 74% of the respondents identified e-titles that are critical to sponsored research. Established high-speed resource sharing services augment access to some portion of the remaining 26% of titles critical to research, and evolving discovery and retrieval services to access and retrieve research outputs in Open Access repositories begins to reduce this access gap even further.

Drexel University has evolved dispersed strategies to connect its academic community to scholarly publications and research data. Institutional expenditures reflect strategies to connect researchers to disseminated scholarly resources through **central [DUL] library services** designed primarily to provide convenient licensed and purchased access to publications and databases in support of its curriculum; through **college and affiliated library and archival collections** managed for researchers and practitioners in specialized disciplines; and through **administrative unit subscriptions and acquisitions** for individual research. There is no holistic review or coordination of efforts to cost effectively manage Drexel access to scholarly resources needed for research. It is difficult to gauge if one or another of these approaches meet research needs for information. Our survey of funded PIs suggests not.

This report confirms that present practices among researchers and service staff will continue to require investment of funds [likely over \$1M annually] to improve Drexel's connection to scholarship needed for quality research. Achieving greater efficiencies can come with improved investment in innovation and integration of systems, consulting guidance as well as better application of technologies and emerging AI tools.

Drexel's expansion to become a comprehensive and highly active research university has resulted in the growth of subject and interdisciplinary fields [beyond Drexel legacy STEM] for which access to scholarly information resources are expected. The DUL has not grown in its staffing or collection budget capacity to meet these expectations. At the same time, researchers and their academic units have little incentive to consider priorities for funding their research team needs for information access in collaboration with others across the University. The disconnect between the allocation of funds to ensure access to scholarly resources and expected availability of convenient access requires greater awareness and involvement of how to prioritize decisions for most effectively investing in this critical support for research.

The dynamic and changing nature of the accessibility of scholarly resources further compounds these managerial challenges. Traditional economic models of scholarly communication provided by commercial publishers are unsustainable. Reliance on traditional resource sharing services, designed to leverage buying power among cooperating libraries and to extend convenient access to known publications is insufficient to support researchers' habits of browsing and serendipity discovery to stay abreast of research disseminated across their disciplines and its intersection with others. Importance of sharing research across geopolitical boundaries – demonstrated in response to COVID19 and climate sustainability – elevates a fundamental mission of research in higher education as well as federal funding requirements and global initiatives in support of open science, for which evolving infrastructures will support researchers to disseminate their research output through open access repositories and alternate publishing platforms. Drexel librarians stay abreast of trends and in several areas are leaders in exploring innovative solutions to improve services and infrastructures. However, to adequately expand professional knowledge and extend collaborative network connections, we are

facing decisions of prioritizing support and innovation across curriculum or research, funded or supportive disciplines, and basic automated access or customized personal guidance.

No R1 institution of higher education connects its entire population of highly active researchers through a singular strategy to purchase or license all resources reflecting comprehensive disciplines. Survey respondents suggest several ways to prioritize information resource support for research that reflect strategies undertaken here and at other research universities. Toward ensuring access to disseminated scholarship [research publications and data output], the DUL shifted its investment decisions from building collections to managing four tiers of access services:

1. Procurement of **licensed and purchased** resources
2. Connecting to **open access** repositories and discoverable non-subscription e-resources
3. Streamlining **resource sharing** arrangements
4. Guiding identification of **authoritative alternate content**

In planning for the DUL's next five-year strategic directions, the University can improve its institutional efficiencies, enable quality of academic success increasingly dependent on effective connections to scholarship both for education and research, mitigate institutional risks related to management of its research output assets, as well as advance its mission to create and disseminate knowledge through open science efforts.

Proposed strategic actions:

As the University is embarking on implementing a new strategic plan and the DUL is concluding its current 5-year strategic priorities, we urge they integrate campus level attention to improving access to scholarly information resources in support of research. The DUL suggests consideration be given during the next 18 months to at least the following actions and welcomes reactions from academic stakeholders and administrative leadership.

- Identify service quality each access venue offers and the degree to which its conveniences [required effort and resulting speed of access] impacts critical work among researchers to conduct research projects and stay abreast of their fields to obtain grants and publish results. Venues include license or purchase procurements [nearly immediate access any time, but at increasing, unsustainable costs], open access repositories and publications connections [more cost efficient, with growing pool of content], resource sharing services [cost effective, but with slower access time], and consultations to identify alternate content available through the Web.
- Implementation of RCM for FY22: Prioritize allocation of a percentage of research administrative overhead to the DUL budget for licensing of e-resources most critical for research. Centralize review of contracts/system integration/vendor and procurement expenditures for access to informational resources to maximize institutional return of investment for findable, accessible, interoperable, reusable scholarly publications and research data.
- Align expenditures of these funds for convenient access to e-journals, split between those fields with notable grant revenues and/or those with little or no funding.

We seek discussion of these and/or additional proposed next steps to improve Drexel's connections to scholarship.

Appendices

Appendix A. Data Gathering Survey

A1 Cover Letter

A2. Data Gathering Questionnaire

Appendix B. Respondents

Table B1: Summary of respondents by affiliated College

Table B2. Summary of respondents by self-identified research fields

Appendix C: Summary of Titles Identified as Most Needed for Research and Costs to Access Table C1.

Costs of identified titles beyond those currently licensed via the DUL

Table C2. Unique journal titles (Not currently licensed) for support of current research projects

Table C3. Unique journal titles (Not currently licensed) to stay abreast of research fields

Table C4. Respondent identified titles that DUL staff could not verify

Appendix D. Researchers' Reported Experiences

Table D1. Ability to access through DUL all e-journals or articles needed for research

Table D2. Actions when not able to access e-journals or articles needed for research

Table D3. Research output submission to digital repository by College affiliation

Table D4. Research output submission to Open Access publication by College affiliation

Appendix E. Respondents' Ideas for Prioritizing Titles to License

Appendix A. Data Gathering Survey [via Qualtrics system]

I. Cover letter [email sent October 6, 2020 from Senior Vice President, Office of Research & Innovation]:

Sponsored Project Principal Investigators,

Access to scholarly journals is critical to our mission as a comprehensive research university. Today we are reaching out to get your input on the electronic journal titles that Drexel researchers need to support current scholarly activities. This is part of a comprehensive effort to assess the resources needed to determine the Drexel University Libraries' budgetary needs to support the University's R1 status.

This email invites sponsored projects PIs to identify specific e-journals that are critical to their currently funded research projects, and separately those titles critical for your general awareness of work in the field in which you obtain research funding. Please provide your feedback **by Wednesday, October 14** using this simple Qualtrics survey: https://drexel.qualtrics.com/jfe/form/SV_6Rme0YbGYFcvuEB

This survey should take no more than 10 minutes of your time.

The Drexel University Libraries will explore with Office of Research & Innovation staff and ADRs how to prioritize requests for titles that Drexel should license for 24/7 access and ideas for funding them.

Please do not hesitate to contact either of us if you have questions.

Thank you for taking time to begin the process of improving access to e-journals for research.

Aleister Saunders, *Executive Vice-Provost for Research & Innovation*
Danuta A. Nitecki, *Dean of Libraries*.

Aleister J. Saunders, Ph.D.
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Learn more about Drexel's research enterprise: <http://drexel.edu/thinkingforward>

II. Data Gathering Questionnaire [via Qualtrics link]

Identifying E-titles for Research

This survey invites you to identify specific e-journals that are critical to your current research projects, and separately those titles critical for your general awareness of work in your research field.

Please complete the survey by Wednesday, October 14 – it should not take more than 10 minutes.

Your responses will be shared with ADRs and staff from Drexel University Libraries and the Office of Research and Innovation.

For the following questions, please enter one title per line.

1. Identify specific e-journals that are critical to your **current research projects**. [8 entries]
 - 1a. Please list any other titles, separated by semicolons [open text box]
2. Identify critical titles you need to access to **maintain awareness of work in your field of research**. [8 entries]
 - 2a. Please list any other titles, separated by semicolons. [open text box]
3. Please add any comments or suggestions about how we might **prioritize which titles to license** if we do not have enough funds for all identified titles. [text box]

Please take a moment to answer a few demographic questions, identifying the following:

4. Your name and email contact [if we wish to clarify a title you submit] [2 entries]
 - 5a. Your College or School [drop down 14 multiple choices]
 - 5b. Your Department [open text box]
6. 6a. Do you currently submit any of your research output [data or publications] to a digital repository? No Yes
 - 6b. If Yes, please indicate which repositories: [text box]
7. 7a. Do you currently submit any of your research output [data or publications] to an open access publication? No Yes
 - 7b. If Yes, please indicate which open access publication/s:[text box] Please select your primary research field[s]
8. Please select your primary research fields[s]
 - 8a. Arts & Humanities

8b. Engineering & Technologies

8c. Life Sciences & Medicine

8d. Natural Sciences

8e. Social Sciences & Management

8f. Other [open text]

9. 9a. Since January 2020, have you been able to access all e-journals or articles you needed for your research through Drexel Libraries? No Yes

9b. If No, what did you do? [multiple choice]

9b 1. Submitted an ILL request

9b2. Obtained access through another institution with which I have affiliation

9b3. Asked a colleague for a copy

9b4. Requested a copy from the author/s

9b5. Relied on other resources

9b6. Other [open text box]

Appendix B. Respondents

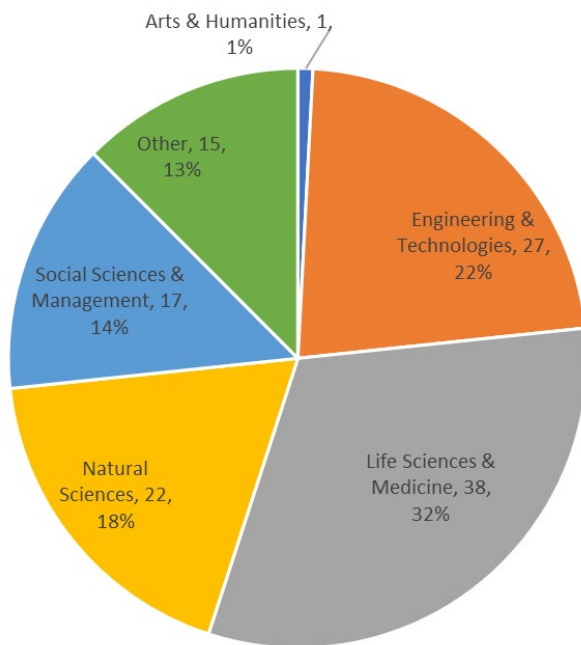
Table B1: Summary of respondents by affiliated College

- a. The number of valid responses is 95.
- b. CoAS, Medicine, and Engineering are 66% of the total responses.

College	Count	%
Arts & Sciences	27	28%
Medicine	21	22%
Engineering	15	16%
Public Health	8	8%
Biomed. Eng., Sci. & Health	7	7%
Nursing & Health Professions	6	6%
Drexel Autism	4	4%
Computing & Informatics	3	3%
n/a	2	2%
Nyheim Plasma	1	1%

Education	1	1%
Total	95	100%

Table B2. Summary of Respondents by Self-identified Research Fields Q



Appendix C: Summary of Titles Identified as Most Needed for Research and Costs to Access

Table C1. Costs of identified titles beyond those currently licensed via the DUL

Category	Not Held	No Current Subscription	Total not licensed
1. For Current Research Projects	58 Titles \$273,659.75	114 Titles \$454,429.72	172 Titles \$728,089.47
2. To stay in the Research Fields	38 Titles \$200,555.52	60 Titles \$213,208.72	98 Titles \$413,764.24
Overlapped	(13 Titles)	(25 Titles)	(38 Titles)
Total	83 Titles \$321,581.27	149 Titles \$552,959.24	232 Titles \$874,540.51

Table C2. Unique journal titles (Not currently licensed) for support of current research projects

C2. Unique Journal Titles for Support of Current Research Projects	Costs for Not Held	Costs for No Current Subscription
Acta Numerica		\$237
Advanced Drug Delivery Reviews		
American Journal of Physiology (*)		\$1,200
American Political Science Review		\$1,864
Analysis & Partial Differential Equations		
Annales de l'Institut Henri Poincaré C, Analyse Non Linéaire		\$694
Annals of Applied Statistics		\$525
ANNALS OF BEHAVIORAL MEDICINE (*)		\$1,190
Annals of Probability		\$525
Annals of Statistics		\$525
Annals of the Association of American Geographers		
Astronomy & Astrophysics (*)	\$4,129	
Astroparticle Physics (*)		\$1,811
Atmospheric Environment (*)		\$14,334
biochemical journal		\$6,737
British journal of sports medicine (*)		\$2,003
Cambridge Crystallographic Database	\$4,410	
Canadian Journal of Botany		\$6,737
Carbohydrate polymers		\$8,492
Cerebral cortex (*)	\$3,190	
Chemical Geology (*)	\$9,605	
Chemosphere		\$12,959
Clinical Journal of the American Society of Nephrology (CJASN)		\$1,012
Cognition		\$4,096
Colloids and surface science A		\$15,920

Communications in Mathematical Sciences	\$534
Communications in Partial Differential Equations	\$5,952
Comptes Rendus Mathématique	
Computer Aided Geometric Design	
Computer-Aided Design	\$4,177
Computers & Graphics	\$3,827
Connective Tissue Research	\$7,339
CRISPR Journal	\$2,772
Current HIV research	\$1,060
Current opinion in insect science	\$3,436
Disability and Rehabilitation	\$8,667
Early Child Development and Care	\$7,869
Early Education & Development	\$1,275
Earth and Planetary Science Letters	\$10,038
Eating and Weight Disorders: Studies on Anorexia, Bulimia, and Obesity	\$920
Electoral Studies	\$2,109
Elsevier Materials portfolio journals	
Energy Research and Social Science	\$514
Environmental Engineering Science	\$3,339
Environmental Justice	\$1,181
Environmental Pollution	\$10,914
European Early Childhood Education Research Journal	\$1,208
European Journal of Applied Mathematics	\$1,322
European Journal of Mechanics B Fluids	\$1,711
European Symposium on Programming	
Experimental Neurology	\$7,236
Feminist Media Studies (*)	\$1,672
Ferroelectrics (*)	\$28,172
Food, Culture, and Society	\$1,299
Freshwater Science	\$435
Functional Brain Imaging (*)	
Global Food History	\$149
Global Governance	\$191
HAPI database	\$4,251
Harmful Algae	\$1,082
Heterocycles	\$6,452
Hydrologic Sciences	
Hypatia	\$383
Immunity (*)	\$2,008
Indiana University Mathematics Journal	\$470
International Journal of Electric Power & Energy Systems	\$4,759

International Journal of Mechanical Sciences	\$6,929
International Journal of Neuroscience	\$13,509
International Journal of Plasticity	\$5,855
International Journal of Science Education	
International Journal of Solids and Structures	\$13,833
International Studies Quarterly (*)	\$2,730
International Theory (*)	\$374
JCAP [Journal of Child and Adolescent Psychopharmacology] (*)	\$2,135
Journal of Applied Physiology	\$2,020
Journal of Behavioral Medicine	\$1,553
Journal of Clinical Child & Adolescent Psychology	\$2,135
Journal of Contaminant Hydrology	\$4,327
Journal of Culinary Science and Technology	\$508
Journal of Differential Equations	
Journal of Elections, Public Opinion, and Parties	\$724
Journal of Experimental Therapeutics	
Journal of Fluid Mechanics (*)	\$7,950
Journal of Functional Programming	\$830
Journal of Homosexuality	
Journal of Hunger and Environmental Nutrition	\$546
Journal of Mathematical Analysis and Applications	\$11,588
Journal of Neurophysiology (*)	\$2,300
Journal of Neuroscience Methods	\$6,099
Journal of Pain	\$1,374
Journal of Plasma Physics	\$2,982
Journal of Politics (*)	\$692
Journal of Proteomics	\$5,792
Journal of Race, Ethnicity, and Politics	\$492
Journal of Spinal Cord Medicine (*)	\$794
journal of sports science	\$7,983
journal of structural biology	\$2,987
Journal of the American Society of Nephrology (JASN)	\$2,135
Journal of Volcanology and Geothermal Research	\$7,011
Journal of Water and Health	\$2,728
JOVE (*)	\$97,500
Lancet Child & Adolescent Health	\$2,546
Library Quarterly	\$361
Logical Methods in Computer Science (which is all open access)	\$15
Matrix Biology	\$665
Medical Care (*)	\$2,619
Medical Image Analysis (*)	\$2,223

Molecular and Cellular Proteomics		\$15
Molecular Cell (*)	\$2,132	
Monthly Notices of the Royal Astronomical Society (*)		\$11,300
Multiscale, Modeling & Simulation		\$699
Nephrology Dialysis Transplantation (NDT)		\$2,197
Network: Computation in Neural Systems	\$1,646	
Neural Computation (*)		\$1,249
Neural Networks (*)		\$4,122
Neurocomputing (*)		\$5,907
Neuropharmacology		\$9,151
Neuroscience (*)		\$14,267
Neurotoxicology and Teratology		\$2,970
New Political Economy		\$2,001
Peptides		\$8,208
Perspectives on Politics		
Philosophical Transactions of the Royal Society of London B		\$2,157
Phycologia		\$1,091
Physical and Occupational Therapy in Pediatrics		\$2,271
physical medicine and rehabilitation (*)		\$1,540
Physiological Reviews		\$795
Physiology and Behavior (*)		\$10,705
Phytotaxa	\$2,100	
Political Analysis		\$626
Politics, Groups and Identities	\$783	
Polymer		\$17,448
Polymer Reviews	\$4,179	
Powder Technology		\$9,365
Proceedings of the Royal Society (of London OR Edinburgh) B: Biological Sciences		\$3,071
Proceedings of the Royal Society of Edinburgh Section A		\$1,137
Progress in Neurobiology (*)		\$5,986
Progress in Polymer Science		\$5,404
Protist		\$1,737
Quarterly of Applied Mathematics		\$190
Representation	\$644	
Review of International Political Economy (*)		\$1,431
Science as Culture	\$734	
Science Immunology		
Security Studies (*)	\$1,072	
SIAM Journal on Applied Dynamical Systems		\$373
SIAM Journal on Mathematical Analysis		\$1,340
SIAM Journal on Numerical Analysis		\$1,058

SIAM Journal on Scientific Computing		\$1,178
SIAM Journal on Uncertainty Quantification	\$338	
Small GTPases	\$1,137	
Social Epistemology	\$1,478	
Social Networks	\$1,305	
Solid State Communications		\$4,974
Spatial and Spatio-Temporal Epidemiology (*)	\$612	
sports biomechanics		\$1,309
Statistics & Probability Letters	\$3,976	
Structure		\$1,217
Synlett	\$3,514	
Tetrahedron		\$14,807
Tetrahedron Letters		\$21,621
The Sociological Quarterly		\$840
Thin Solid Films		\$14,425
Translational Behavioral Medicine (*)		\$1,068
Trends in ecology & evolution		\$4,620
Ultrasonics (*)		\$3,410
Urban Affairs		
Urban Water Journal (*)	\$1,533	
Virus Research		\$8,200
Water International	\$1,334	
Water Research		\$11,983
Water Science and Technology (*)		\$12,348
Total	\$273,660	\$454,430

(*) Titles identified on both Tables C2 and C3 as critical for research

Table C3. Unique journal titles (Not currently licensed) to stay abreast of research fields

C3. Unique Journal Titles (Not currently licensed) to stay abreast of research fields	Costs for Not Held	Costs for No Current Subscription
Acta Mathematica		\$15
All Cell family		
American Journal of Physiology (*)		\$1,200
ANNALS OF BEHAVIORAL MEDICINE (*)		\$1,190
Applied Geochemistry		\$3,021
Applied Mathematics and Computation		\$10,390
Applied Mathematics Letters		\$3,334
Aquatic Botany		\$3,273
Astronomy & Astrophysics (*)	\$4,129	
Astronomy and Astrophysics	\$4,129	
Astroparticle Physics (*)		\$1,811
Asymptotic Analysis	\$2,296	
Atmospheric Environment (*)		\$14,334
Autism in Adulthood	\$2,089	
BioSystems	\$3,465	
Blood		
British journal of sports medicine (*)		\$2,003
Cell (all)		
Cerebral cortex (*)	\$3,190	
Chemical Geology (*)	\$9,605	
Child Neuropsychology	\$1,844	
Cities and Health		
Clinical Journal of American Society of Nephrology		\$1,012
Computational Materials Science		
Current opinion in structural biology		\$4,496
Development and Psychopathology		\$877
Developmental Neurorehabilitation	\$1,478	
Elementary School Journal		\$341
Environmental Geology		\$9,054
Feminist Media Studies (*)	\$1,672	
Ferroelectrics (*)	\$28,172	
Food and Foodways	\$1,492	
Functional Brain Imaging (*)		
Gastronomica		\$352
Geomorphology	\$5,687	
Human and autonomy		
Human Performance		\$1,394

Immunity (*)	\$2,008
Infection Control and Hospital Epidemiology	\$1,042
International journal of pharmaceuticals	\$14,764
International Studies Quarterly (*)	\$2,730
International Theory (*)	\$374
JCAP [Journal of Child and Adolescent Psychopharmacology] (*)	\$2,135
Journal of Alzheimer's disease	\$3,280
Journal of Behavioral Medicine	\$1,553
Journal of Fluid Mechanics (*)	\$7,950
Journal of Functional Analysis	\$3,030
Journal of Magnetism and Magnetic Materials	\$12,043
Journal of Neurophysiology (*)	\$2,300
Journal of Petrology	\$2,522
Journal of Physical Therapy	
Journal of Politics (*)	\$692
Journal of Positive Psychology	\$1,198
Journal of Public Health	\$638
Journal of Spinal Cord Medicine (*)	\$794
Journal of the European Mathematical Society	\$1,158
Journal of the Textile Institute	\$2,427
JOVE (*)	\$97,500
Lithos	\$3,873
Mathematical Structures in Computer Science	\$1,527
Mechanics of Materials	\$4,442
Medical Care (*)	\$2,619
Medical Image Analysis (*)	\$2,223
Molecular Cell (*)	\$2,132
Monthly Notices of the Royal Astronomical Society (*)	\$11,300
Multiscale Modeling and Simulation	\$699
Nephrology Dialysis Transplantation	\$2,197
Neural Computation (*)	\$1,249
Neural Networks (*)	\$4,122
Neurocomputing (*)	\$5,907
Neuroscience (*)	\$14,267
Optics Letters	\$2,964
Particuology	\$496
Physica C	\$5,240
physical medicine and rehabilitation (*)	\$1,540
Physiological Reviews	\$795
Physiology	\$665
Physiology and Behavior (*)	\$10,705

Proceedings of the American Mathematical Society		\$1,606
Proceedings of the Royal Society (of London OR Edinburgh)		
A		\$1,137
Progress in Neurobiology (*)		\$5,986
Quaternary International		
Review of International Political Economy (*)		\$1,431
Security Studies (*)	\$1,072	
SIAM Journal on Applied Mathematics		\$962
SIAM Review		\$584
Spatial and Spatio-Temporal Epidemiology (*)	\$612	
Superconductivity Science and Technology	\$2,425	
Transactions of the American Mathematical Society		\$2,632
Translational Behavioral Medicine (*)		\$1,068
Traumatic Brain Injury		
Trends in biochemistry		
Trends in microbiology		\$4,131
Ultrasonics (*)		\$3,410
Urban Water Journal (*)	\$1,533	
Water Science and Technology (*)		\$12,348
Water Supply	\$5,099	
Wave Motion		\$1,284
Total	\$200,556	\$213,209

(*) Titles identified on both Tables C2 and C3 as critical for research

Table C4. Respondent identified titles that DUL staff could not verify

Titles not matched to verified bibliographic entries
Urban Affairs (we have Urban Affairs Review)
European Symposium on Programming
Trends in biochemistry
Human and autonomy
Hydrologic Sciences
Journal of Experimental Therapeutics
Journal of Nutrition and Hunger (Journal of Hunger and Environmental Nutrition? Taylor & Francis if so.)
Journal of Nutrition and Hunger
Logic in Computer Science
Traumatic Brain Injury
Astrophysical Journal Supplements
Science Immunology
Not Found/Publisher Unclear
ACM Foundations of Software Engineering https://dl.acm.org/conference/fse
ACM International Conference on Software Engineering https://dl.acm.org/conference/icse
ACM Programming Language Design and Implementation https://dl.acm.org/conference/pldi
ACM TECS
ACM TODAES
ACM Trans. on Graphics
ACM Transactions on Computer Systems (TOCS) https://dl.acm.org/journal/tocs
ACM Transactions on Programming Languages and Systems (TOPLAS) https://dl.acm.org/journal/toplas

Appendix D. Researchers' Reported Experiences

Table D1. Ability to Access through DUL All E-journals or Articles Needed for Research
 Q9. Since January 2020, have you been able to access all e-journals or articles you needed for your research through Drexel Libraries? Responses: Yes= 29 [28%] No=76 [72%] Total n=105 [100%]

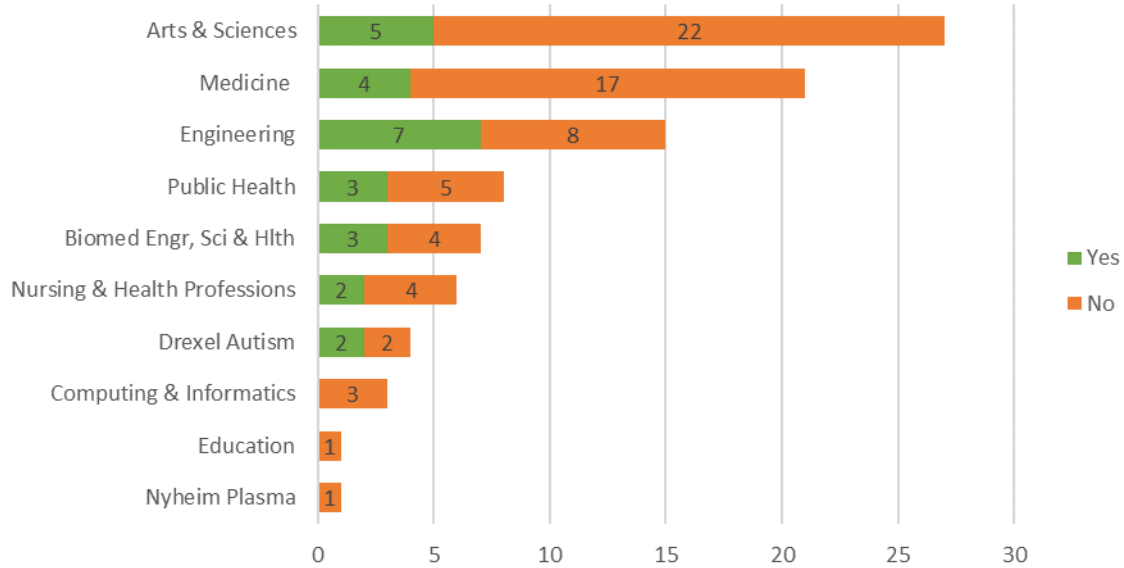


Table D2. Actions When Not Able to Access E-journals or Articles Needed for Research
 Q9: If no, what did you do?

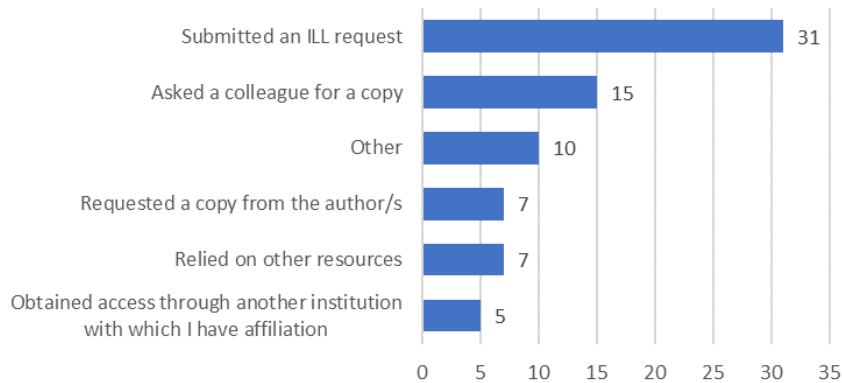


Table D3. Research Output Submission to Digital Repository by College Affiliation
 Q6. Do you currently submit any of your research output [data or publications] to a digital repository?
 Responses: Yes= 52 [56%] No=41 [44%]; n=93 [100%]

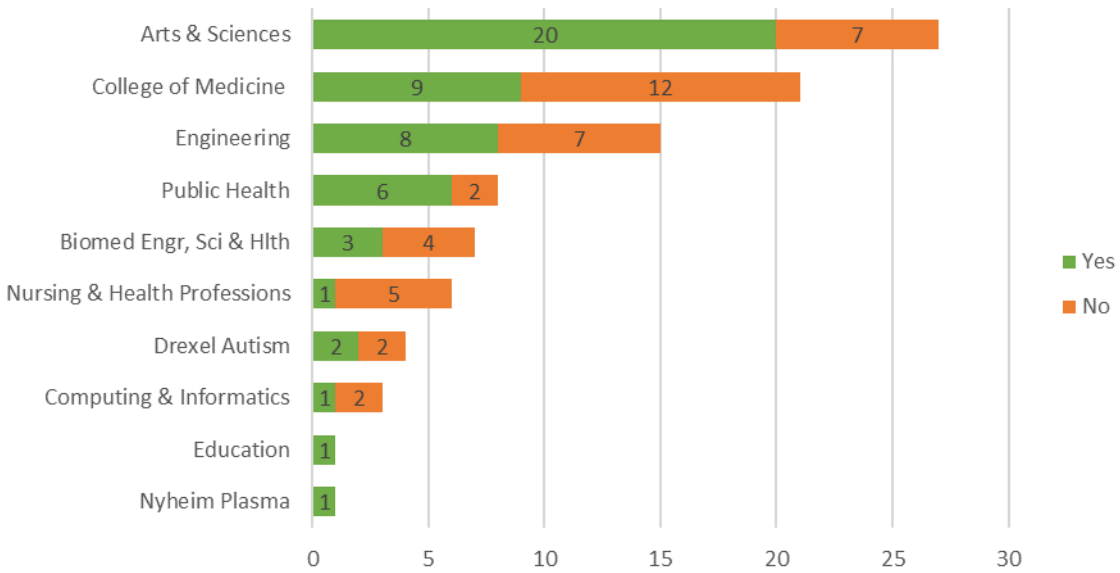
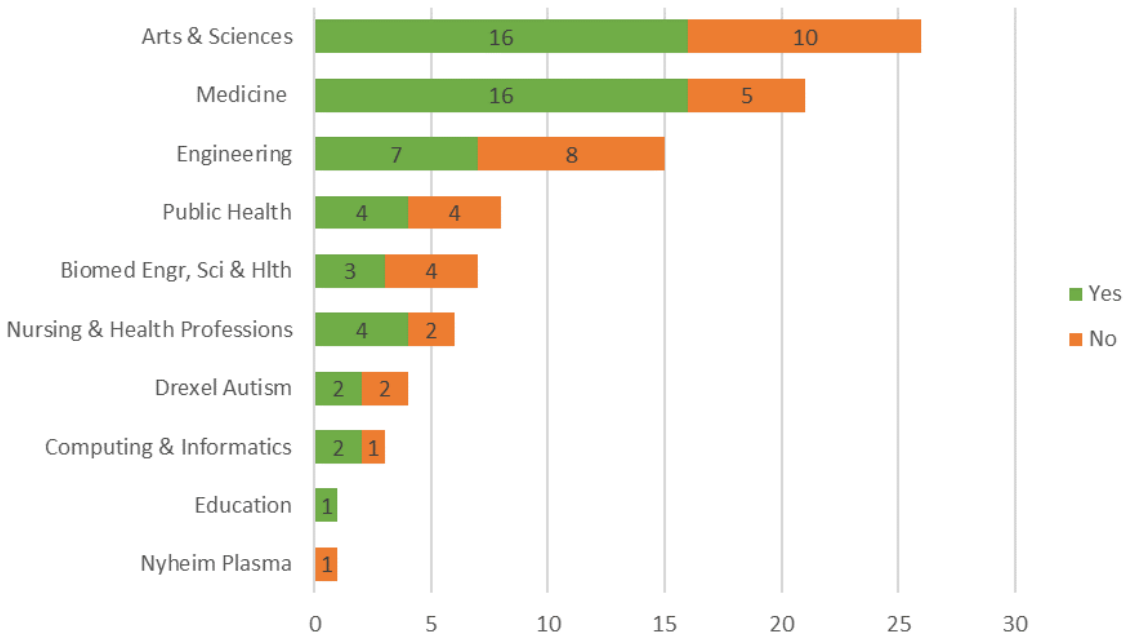


Table D4. Research Output Submission to Open Access Publication by College Affiliation.
 Q7. Do you currently submit any of your research output [data or publications] to an open access publication? Responses: Yes=55 [60%] No= 37 [40%] Total n=92 [100%]



Appendix E. Respondents ideas for prioritizing titles to license

<p>Q3. Please add any comments or suggestions about how we might prioritize which titles to license if we do not have enough funds for all identified titles.</p>
<p>I think you do not have enough titles.</p>
<p>Sorry, there are too many journals to to be able to complete this poll in a timely manner.</p>
<p>I am answering for completeness, but I support other researchers. I am not a PI myself.</p>
<p>Prioritizing review journal access can be critical for general knowledge upkeep.</p>
<p>titles not available through ILL</p>
<p>I really have no answer to this question, the CCDC the three families of journals that I described and Reaxys are all resources that are essential to for conducting my research and writing grants. Loss of any would be quite frustrating.</p>
<p>We need the full series of journals from the following professional societies: SIAM, AMS (American Math Society), APS (American Physical Society), AGU (American Geophysical Union), and ASA (American Statistical Association). We should also have the Institute of Physics (IoP) series of journals.</p>
<p>The first 4 journals that I listed, at the top, are the best journals in my field and for my work.</p>
<p>Access to the the Oxford Handbooks (digital versions) would be extremely helpful.</p>
<p>I wonder if asking people to provide one title that the library doesn't have that they wish they did could help. For example, the library does not have access to the American Journal on Intellectual and Developmental Disabilities (at least earlier years - perhaps they have more recent publication years). That is the journal I cite the most. Because the library doesn't have it, I paid for the highest level of membership to the American Association on Intellectual and Developmental Disabilities (out of personal funds) so that I can access this journal.</p>
<p>Pick top 5-10 journals in major research areas;</p> <ol style="list-style-type: none"> 1. Cancer 2, HIV/infectious disease 3. Neurobiology <p>etc.</p>
<p>Please prioritize Bulletin of Volcanology and Journal of the Journal of Volcanology and Geothermal Research. I've appreciated access to AGU journals through the Wiley Collection, and GSA publications via GeoScience World. Current lack of access to Nature Geoscience (and Elsevier titles) has been challenging to navigate for my research.</p>
<p>This must be a very challenging decision process - I don't have specific suggestions unless we have the ability to collect data on how often people at Drexel access journals through the library to get a sense of how frequently journals are used.</p>
<p>level of sponsored research activity journal impact factor frequency of use/access</p>
<p>I realize that you do not have control over the financial pressures that led to this survey, but the fact that this has to be done is VERY concerning. Research has become so inter-disciplinary that I could have listed at least 50 more journals to the list above. I search for articles every day and the list above covers less than half of all the articles I download and use to write grants and papers, to supervise my doctoral students and to teach. I have already been hurt by the reduction in access to Elsevier journals. Further reductions will definitely slow down the productivity of research-active faculty and greatly increase our frustration.</p>

Please prioritize society, university, and nonprofit presses (SIAM, American Mathematical Society, European Mathematical Society, Indiana University, Mathematical Sciences Publishers, Institute of Physics, etc...). You could also investigate which journals Drexel faculty publish in and prioritize those.
Many journals are big packaged together. This is probably a good approach depending on cost.
Use information from Iliad to identify journals that are frequently requested. Look at the number of view hits for the journals.
More recent issues are most crucial, as well as articles before 2008 when funder archives such as pubmed central were less utilized.
impact factor considerations;availability/lack of availability of similar journals or those covering the same topic(s)
Prioritize journals from societies over Elsevier and the like
There are vastly more journals than this that are critical to our day-to-day research, especially in the Elsevier titles. I hope this is not going to be used to drastically reduce our subscriptions.
Need access to UpToDate!!!!
As an R1, it is imperative to maintain a license to all titles. Reducing the licensed titles does not bode well for maintaining R1 status.
I don't have time to list them all here, but current engineering level access seems sufficient (although Elsevier journals hit or miss - could be I didn't search correctly.) Thank you very much.
Consider which may be harder to access quickly though ILL
Maybe aligned with student needs/academic programs that relate to these journals?
Health sciences
Researchers need access to as many journals as possible. When writing a grant or paper, you need to read and cite articles from journals that may not be top-tier journals, so this exercise of writing/prioritizing journals will not capture all relevant journals.
Impact factor
If you're considering deleting anything, ask the faculty first. Give us choices.
"Physics of Plasma" and "Journal of Geophysical Research (Space Physics)" are the most crucial
I'd prefer allocating funds for publishing costs in open access journals rather than maximizing subscriptions from big publishers. Further, I'd prioritize subscriptions from society-run journals.
The ACM titles are the most critical for me. More generally Drexel currently has an ACM Digital Library subscription for the whole campus, and discontinuing that would harm most computing-related research at the university.
Note that some titles listed above are conference proceedings, as Computer Science is unusual in that our conference reviewing is as rigorous as most fields' journals, so conferences are the primary publication mechanism.
Beyond that, we currently do not subscribe to some relevant Elsevier, Cambridge University Press, and Springer journals. Of the ones listed above, the journal that I have the most trouble accessing papers from without a university subscription is Mathematical Structures in Computer Science, though frankly I am likely one of only a few people at Drexel who want to read that journal.

It is essentially impossible to list all the journals needed for my current project or to stay up to date in my field, as my field (like many peoples) is a combination of 4 or 5 areas - neuroimmunology, pharmacology, HIV research, dopamine biology, molecular mechanisms of substance abuse - and various articles get published in all sorts of journals all the time. As the number of journals available on Pubmed has grown a great deal, I am constantly finding new citations and information in journals I had not previously heard of but that may become important because of a series of articles. Everything I listed above, and probably dozens of other journals are resources that I use regularly to build up my reference library to more effectively participate in scientific discussion, guide my research, write grants and papers and generally do what I need to do as a scientist.

You're joking right?

The paranoid among us assumed already that this is the whole purpose of this survey- to serve as an instrument for starting to do this and strip the library. This suggestion box suggests the paranoia is not unfounded.

If the adequate library support of research is not a priority of the University then we are a trade school with no right whatsoever to R1 status.

Worst Case - Strategy to prioritize:

1. Collate this survey and its results into a master list.
2. Provide this Master List of Journals in a second survey for faculty, and solicit any further additions.
3. Take the final list with additions, and create a survey in which research intensive faculty provide a rank for each journal from 1 to 5 in terms of importance to them. (Do not disclose how rankings will be used.)
4. Take anything with a 1 or 2 ranking and license it.
5. If there are funds remaining after this rank 1&2 list is created and budgeted: License the rank 3 journals. If need be you rank the level 3 journals based on the number of 3s given, and then take as many of the level 3 for licensing as possible, based on this ranking.

If you cannot take all rank 1 and 2 journals on the list, ask the Provost or for more money.

If refused, Librarian should threaten to resign. If no-one budges:

Let younger faculty know that the Institutional Priorities do not include an R1 level library, so that they can start to look at moving to an R1 institution elsewhere!

Explain to NIH and NSF how you are not going to be allowed to adequately support the library, despite us getting awards and IDCs.

Sorry for being flippant at end. You're either R1 or your not... its all about Institution priorities despite the fiscal crisis.

JAMA journals, the Lancet journals, Nature journals

Hard to say. The journals that we need and should be able to afford (published by the American Astronomical Society [AJ, ApJ, ApJS, ApJL]) are a must. If we can't afford those, we should basically just close up shop as a university. MNRAS is tricky. It is expensive to the library because it is cheap to the scientists. That makes it both hugely important, but also quite expensive. All I can ask is that you realize that ILL isn't a good option. Unless I am very clear in the request (and even that isn't always good enough), then I get the arXiv version of the paper

(which I can get for free, but isn't the refereed version) or I get a scan of the actual journal article (which I can't mark up and highlight).

Priority should be given to the journals that

1. Current research project depend on
2. Have highest impact factor

Drexel should be active in business negotiating with the publishers to get discounts.

ORI should be active in pooling with other universities in the area to negotiate better prices with publishers and get blanket subscriptions from publishers that would covers multiple institutions in the area and multiple journals from the publisher).

Well - hard - need all 6 listed above

I would truly appreciate if we can license "Matrix Biology". This is a flagship journal in the field of matrix biology and mechanobiology (IF: 8.572).

Astrophysical Journal and Monthly Notices of the Royal Astronomical Society are critical, highest priority. The vast majority of papers in my field are published there.

All these journals and many more are essential to my research program. The idea of having to obtain even more journal articles through interlibrary loan would certainly slow progress - especially with tight deadlines for grant submissions and the hypercompetitive environment that we have been in for several years now.

AI, Machine Learning, Deep Learning related Conference proceedings: Annual Meeting of the Association for Computational Linguistics, AAAI, Empirical Methods in Natural Language Processing

These are all top outlets in political science/international relations and Drexel does not subscribe (especially for recent years) to many of them. It is incredibly frustrating. I have really only listed the top journals outside of Global Policy and Global Governance which are somewhat less important -- otherwise it is difficult to rank them in terms of necessity of access.

Drexel should enter in negotiations with Elsevier like other universities have done (e.g., Iowa State, UC Berkeley) in order to get a bundle license. Same can be done for Springer Nature. Most journal are owned by a handful publishers and striking deals with the publishers will guarantee access to the majority of journals that researchers use/require. Please, do not underestimated the value of journals that publish reviews. Journal series such as Trends, Current Opinion and Nature Reviews in Molecular Cell Biology are critical for our TEACHING as much as they are for research. I run courses that are not based on textbooks but use latest review articles, and it is frustrating not to be able to access these. They are critical for keeping up with the progress of entire fields of research. Additionally, the Methods series journals are useful.

I would recommend prioritizing the needs of those of us with extramural sponsored research, to facilitate our ability to maintain funding. I would also prioritize the needs of junior faculty, to minimize the risk that they become frustrated with the lack of research support at Drexel and decide to leave.

Some of journals will be oped after one year, but some of them won't, so it is important to include the later ones.

I have only the obvious suggestions -- prioritize units with active research faculty and graduate programs where students are doing academic research.

When writing a paper or grant an R1 institution, we should be able to access almost anything that can be found on Pubmed. To produce scholarly product, we must have access to

information. This is not a place to cut costs. (I know that this is not the type of answer you are looking for.)

Licensing all the critical titles would be very helpful. If licensing all the titles is not possible, please license at least Water Research; Journal of Water and Health; and Chemosphere.

The list above is long but essential to support current research in my group. For prioritization, Please use the ones in cells and then the ones with semicolons (first the list for current and then for awareness).

Thank you in advance.

Ensure you have the quartile 1 journals and ideally quartile 2 journals in most major fields according to JCR. Sports Sciences, Orthopaedics, and Rehabilitation are the most important categories for me. Biomedical Engineering, Geriatrics & Gerontology, and Clinical Neurology are also important.

I would also get collections from major publishers like Springer, Elsevier, Wolters-Kluwer, Wiley, Sage, etc.

Keep the Interlibrary Loan option to get articles that we don't have subscriptions for. Not ideal since this can take a while but at least we could eventually get those articles.

Drexel should join the pushback that others are giving publishing companies about the amount of profit they make from universities. Today's The Pulse (10/16) discusses the high profits publishing companies make, double earning from libraries as well as authors.

Journal access has made our work go much more smoothly. I hope you can maintain most major journals, as losing them slows down, complicates, and degrades our work quality.

Journals that are essential for accreditation of training programs. For example, for the MA program in Music Therapy and Counseling to remain accredited, it is essential that students have access to the leading journals in music therapy. In addition, students in PhD programs need access to the leading journals in their field of research in order to properly examine the extant literature and determine research gaps that need to be addressed. I cannot understand how an R1 level university could even consider cutting budget for journal access. Journal access is a foundational necessity for all research!