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The Tenth Anniversary of the UWM Open Access Publication Fund

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Ten years ago the <u>University Open Access Publication Fund</u> (UOAP) was established in support of a new publishing model based on article processing charges (APC) to make UWM research publications openly accessible worldwide. It was launched with Indirect Funds of \$20,000 made available to the UWM Libraries in the summer of 2012. After a subsequent contribution of \$15,000 in 2014, the fund has been sustained at the \$10,000 annual allocation from the library budget since 2016. Next, there was a one-time matching fund of \$10,000 from the Provost's Office for \$20,000 total in 2019. The \$10,000 amount is enough for supporting 10-12 articles. The fund is usually spent by the first half of a fiscal year. The following table provides a summary of expenses, numbers of articles, and the duration of the activity each year.

Fiscal year	Duration	Amount paid, \$	Number of articles
2013	6/19/12-3/8/13	6,949	8
2014	7/29/13-6/13/14	10,305	16
2015	7/3/14-5/29/15	7,468	11
2016	7/30/15-6/27/16	9,894	14
2017	8/8/16-6/9/17	7,653	11
2018	7/19/17-1/16/18	15,988	16
2019	7/1/18-3/21/19	20,163	18
2020	7/1/19-10/07/19	10,611	10
2021	7/6/20-2/16/21	10,000	12
2022	7/6/21-11/21/21	10.069	11
Total		109,100	127

Table 1. UWM Open Access Publication Fund 2012-2022

Currently, the fund supports 50%, up to \$1,000, of the article processing charge for an author publishing in a fully open access journal. Since its inception, the fund has always provided a partial support at no more than 50% of the article processing charge. Initially, the cap was set at \$1,500, which was then decreased to \$1,000 per article, per author for fiscal year of 2021. Overall, the assessment criteria have been continually revised. For example, at the beginning, the fund provided money to authors after their article submissions to journals, but that stage appeared to be premature in the publication workflow as not all submissions were published in the first-choice open access journals. Consequently, two payments were recalled to the fund causing a discrepancy in the total expenses for 2017-18. After those glitches, the procedures have been adjusted for transferring payments to academic departments only after articles have been accepted for publication. In the fall of 2021, a statement affirming that "the fund supports the articles when the research reported in this publication has not been funded by a granting agency with a public access mandate. (See Implementation of public access programs in U.S. federal agencies)" was added to simplify the application and approval procedures. That addition was made in response to a number of payment requests for articles based on research funded by the National Institutes of Health whereas the UWM Open Access Publication Fund has been always meant to be the "last resort" when no alternative funding sources including research grants were

available. Later this fall, we were considering a potential revision of the eligibility criteria focusing on more support for graduate students and early career researchers. This was prompted by the <u>2030 UWM Action Plan</u> as well as an increasing number of funding requests from graduate students as shown in the following table.

Academic rank	2020	2021	2022	Total
Graduate student	0	2	4	6
Post doc researcher	0	0	1	1
Lecturer	0	1	0	1
Assistant Professor	3	0	1	4
Associate Professor	5	4	2	11
Professor	2	5	3	10

I reviewed eligibility criteria of similar funds at other institutions, finding only four instances. The first example is the Cornell Open Access Publication Fund (COAP) for authors who are non-tenured faculty members, academic staff members, or students. The Cornell allocation per article is based on a formula for dividing the total APC cost by a number of eligible co-authors and then providing the sum for that number. The second example is the University of Massachusetts, Amherst Supporting Open Access Research Fund (SOAR). The SOAR guidelines are complex. They add percentages towards the maximum award (\$1,200 per fiscal year) for applicants who are early career faculty, graduate students, or members of the community without external or grant funding; and for new applicants who have never applied for SOAR funding before. These two examples use more detailed approaches than UWM's simplified application form. The University of Nevada, Las Vegas Libraries manage two funds, one for faculty members and one for graduate students. The latter is sponsored by the Minority-Serving Institution Student Council. The University of California (UC), San Francisco Library modified applicant eligibility for their Open Access Publishing Fund (effective December, 2021) for journal articles: students, postdocs, and staff, and for book chapters and books: students and all personnel including faculty. Their faculty (and all corresponding authors) are encouraged to receive funding support through the UC's transformative agreements with publishers. Generally, the institutional open access funds do not place restrictions on tenured faculty members, but, contrary to this idea, some funds prioritize support for more experienced researchers.

Coincidentally with our considerations of potential criteria revisions, a new UWM <u>Research</u> <u>Assistance Fund</u> (RAF) was launched by the Office of Research in the fall of 2021. Although, this initiative was useful, students and postdoctoral researchers were ineligible to apply for it. Based on our consultations with the Office of Research, we decided to continue relying on the same eligibility criteria for all academic ranks next year. The UOAP simple application for a partial support at 50% of the APC, up to \$1,000, per article regardless of a number of co-authors enables a fast approval for authors. Moreover, the benefits of the fund go beyond its financial contribution towards supporting the open access movement. It includes learning about publishing choices, advising authors about reputable journals, avoiding predatory publishers, making authors aware of the institutional repository as all articles funded by UOAP are now deposited into UWM Digital Commons, and building collaborative networks on and off campus. Another positive aspect of the Open Access Publication Fund is its broad base of support for diverse authorship across multiple colleges, schools, and departments at UWM. For the past three years the fund assisted 32 corresponding authors affiliated with 18 different departments. All authors (except for one) received funding once during that time. The majority of requests comes from the science, engineering, and medical (STEM) fields. This year, there were four funding requests from authors affiliated with the Department of Psychology, which was unusual based on previous 1-2 applications per academic department, per year. Unlike in the past years, there have been no recent applications from authors at the School of Education, Sheldon Lubar School of Business, and the College of General Studies.

College / School	Academic department	Articles funded
Letters and Science		15
	Biological Sciences	4
	Geography	2
	Geosciences	1
	Mathematical Sciences	2
	Physics	1
	Psychology	5
Engineering & Applied Science		5
	Biomedical Engineering	1
	Computer Science	1
	Civil Engineering	1
	Electrical Engineering	1
	Materials Engineering	1
Health Sciences		5
	Communication Sciences & Disorders	1
	Health Informatics & Administration	2
	Kinesiology	2
Public Health		3
Freshwater Sciences		2
Social Welfare		2
Nursing		1
Total		33

Table 3. Authorship by departmental affiliation for fiscal years 2020-2022

Despite the small number of approved recipients, the inquiries from authors greatly exceed the available funds. In that case, we ask publishers for a discount or waiver of APC. Rarely, there are a couple of articles not funded by UOAP because of the subpar reputation of the journals and publishers. At the beginning, the UWM Libraries chose to support publications in hybrid journals at 30% of APC. The intention was to enable the gradual transition to the APC model based on the established credibility of subscription-based journals by the scholarly community. As the open access landscape matured, the fund has updated its eligibility criteria subsidizing

only fully open access journals since 2017. Presently, the UOAP fund covers the cost of article processing charges in fully open access (Gold) journals listed in the <u>Directory of Open Access</u> <u>Journals</u>.

For the most part, the articles funded by UOAP were published in journals with Journal Impact Factors calculated by Clarivate. Among those, seven titles were ranked at the top 25% (Q1 quartile) of journals in their subject category of the 2021 Journal Citation Reports (JCR). There were many titles (13) in the top 25-50% (Q2 quartile) and then 2-3 titles in the subsequent two quartiles and in the Emerging Sources Citation Index (ESCI). Six (out of 31) journals were not included in JCR. There was a wide diversity of the journal titles chosen by UWM authors - all unique venues except for *PLOS One* and *Frontiers in Neuroscience* publishing two articles funded by UOAP each in the last three years. Eight publishers were favored by authors:

- MDPI; Frontiers (4 articles each),
- BMC; Elsevier; Sage; Wiley (3 articles each), and
- The American Society for Microbiology; PLOS (2 articles each).

The UWM Libraries joined the MDPI Institutional Open Access Program in September, 2020, in response to the expressed interest in the APC discount by an author and our assessment of UWM publications in MDPI journals,¹ which has grown to 225 articles (as of 1/17/2022) since 1999. While on average the UOAP supports 1-2 articles per year, there were close to 50 publications by UWM authors in MDPI journals per year during 2019-2021. Such output in MDPI journals was much higher than the range of 6-14 articles per year of UWM articles in Frontiers - the second publisher with multiple publications supported by UOAP. Unlike the free institutional program with MDPI, Frontiers collect additional membership fees in order to get a discount for the author. Thus, UWM does not have a membership with Frontiers. Another popular open access publisher, PLOS, has made a Community Action Publishing agreement for an APC waiver in its two journals, *PLOS Biology* and *PLOS Medicine*, with the <u>Big Ten Academic Alliance</u> for all authors in the University of Wisconsin system from January1, 2021 until December 31, 2023.

For assessing the impact of the University Open Access Publication Fund, let's examine two common restrictions that could affect it.² The first requirement is that open access institutional funds are meant to be "the last resort" for articles without research grants – here is the limitation of impact "on the assumption that grant-funded projects have a higher likelihood of being high-impact research." The second requirement is that almost all open access institutional funds do not support articles in hybrid journals - here is the limitation for "many of the highest-impact subscription-model journals."

To evaluate the sources funded by UOAP, I ran a search for UWM publications, ranking them by highest citation numbers for the last three years (2019-21) in Web of Science. Remarkably, the top highly cited article with 1,234 citations (as of 1/17/2022) among all UWM records was the 2019 paper on gravitational waves by a large team of co-authors from 182 institutions published in *Physical Review X*. This journal is one of the 31 titles supported by UOAP. It is great to note that the top twenty highest cited UWM publications were all published open access.

		-		•
Journal	Publisher	Journal Impact Factor	JCR Quartile	JCR (Journal Citation Reports) Subject category
Addictive Behaviors Reports	Elsevier	NA		
Biological Psychiatry: Global Open Science	Elsevier	NA		
BMC Evolutionary Biology	BMC	3,260	Q2 Q3	Evolutionary Biology Genetics & Heredity
Climate	MDPI	ESCI	Q3	Meteorology & Atmospheric Sciences
Concussion	Future Science Group	NA		
Diagnostics	MDPI	3,706	Q2	Medicine, General & Internal
Ecology and Evolution	Wiley	2,881	Q2 Q3	Ecology Evolutionary Biology
Ecosphere	Wiley	3,171	Q3 Q2	Ecology
Evolutionary Applications	Wiley	5,183	Q1	Evolutionary Biology
Frontiers in Earth Science	Frontiers	3,498	Q2	Geosciences, Multidisciplinary
Frontiers in Microbiology	Frontiers	5,640	Q1	Microbiology
Frontiers in Neuroscience (2 articles)	Frontiers	4,677	Q2	Neurosciences
Frontiers in Psychology	Frontiers	2,988	Q2	Psychology, Multidisciplinary
Gerontology and Geriatric Medicine	Sage	ESCI	Q4	Geriatrics & Gerontology
Global Pediatric Health	Sage	NA		
INQUIRY: The Journal of Health Care Organization, Provision, and Financing	Sage	1,730	Q4 Q4	Health Policy & Services Health Care Sciences & Services
Insights into Imaging	Springer	5,231	Q1	Radiology, Nuclear Medicine & Medical Imaging
International Journal for Equity in Health	BMC	3,192	Q2	Public, Environmental & Occupational Health
JMIR Medical Informatics	JMIR Publications	2,955	Q3	Medical Informatics
Journal of Behavioral Addictions	Academiai Kiados	6,756	Q1	Psychiatry
Materials	MDPI	3,623	Q2	Chemistry, Physical Materials Science, Multidisc
Materials Research Express	IOP Publishing	1,620	Q2 Q4	Materials Science, Multidisc
Microbiology Spectrum	American Society for	7,171	Q1	Microbiology
Micromachines	Microbiology MDPI	2,891	Q3	Chemistry, Analytic
mSphere	American Society for	4,389	Q2 Q2	Instruments & Instrumentation Microbiology
PeerJ	Microbiology PeerJ	2,984	Q2	Multidisciplinary Sciences
Physical Review X	American Physical	15,762	Q1	Physics, Multidisciplinary
PLOS One (2 articles)	Society PLOS	3,240	Q2	Multidisciplinary Sciences
Preventive Medicine Reports	Elsevier	NA		
RSC Advances	Royal Society of	3,361	Q2	Chemistry, Multidisciplinary
Transgender Health	Chemistry Mary Ann Liebert	NA		
			1	

Table 4. Journals supported by UOAP for fiscal years 2020-2022

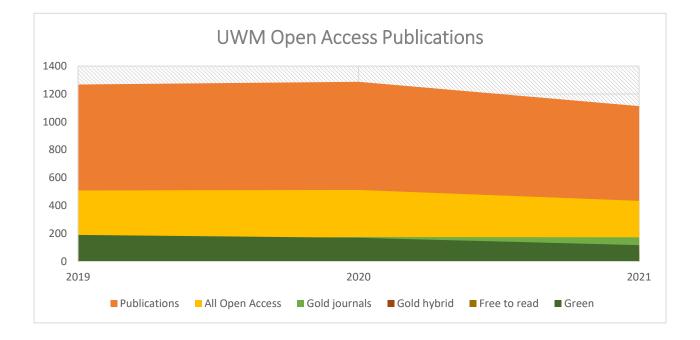
Next, I looked at the citation counts for a list of articles funded by UOAP in 2019 in Web of Science and Google Scholar listed below (searches were done on 1/22/22):

- Ye, Y., Klimchuk, S., Shang, M., & Niu, J. (2019). Improved antibacterial performance using hydrogelimmobilized lysozyme as a catalyst in water. *RSC Advances*, 9 (35), 20169-20173. <u>http://dx.doi.org/10.1039/C9RA02464F</u> Citations: 7 Web of Science, 8 Google Scholar
- Pan, F., & Choi, W. (2019). Impacts of Climate Change and Urban Expansion on Hydrologic Ecosystem Services in the Milwaukee River Basin. *Climate*, 7, 59. <u>https://doi.org/10.3390/cli7040059</u> Citations: 2 Web of Science, 3 Google Scholar
- Brydon, P. M. R., Abergel, D. S. L., Agterberg, D. F., & Yakovenko, V. M. (2019). Loop Currents and Anomalous Hall Effect from Time-Reversal Symmetry-Breaking Superconductivity on the Honeycomb Lattice. *Physical Review X*, 9(3), 031025. <u>https://link.aps.org/doi/10.1103/PhysRevX.9.031025</u> Citations: 14 Web of Science, 28 Google Scholar
- 4. Bartelme, R. P., Smith, M. C., Sepulveda-Villet, O. J., & Newton, R. J. (2019). Component Microenvironments and System Biogeography Structure Microorganism Distributions in Recirculating Aquaculture and Aquaponic Systems. *mSphere*, 4(4), e00143-19. <u>https://doi-org.ezproxy.lib.uwm.edu/10.1128/mSphere.00143-19</u> Citations: 15 Web of Science, 18 Google Scholar
- Fueger, C. S., L. E., Heuer, S., Petrovska, L., & Huddleston, W. E. (2019). Remote concussion history does not affect visually-guided reaching in young adult females. *Concussion*, 4(3). <u>https://doi.org/10.2217/cnc-2019-0007</u> Not indexed in Web of Science, no score in Google Scholar, downloaded 474 times from the publisher
- Haines, M. L., Luikart, G., Amish, S. J., Smith, S., & Latch, E. K. (2019). Evidence for adaptive introgression of exons across a hybrid swarm in deer. *BMC Evolutionary Biology*, 19(1), 199. <u>https://doi.org/10.1186/s12862-019-1497-x</u> Citations: 5 Web of Science, 8 Google Scholar
- Trinh, H. Q., & Begun, J. W. (2019). Strategic Differentiation of High-Tech Services in Local Hospital Markets. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*. <u>https://doi.org/10.1177/0046958019882591</u> Citations: 1 Web of Science, 4 Google Scholar
- Taani, M. H., Siglinsky, E., Libber, J., Krueger, D., Binkley, N., Kovach, C.R., & Buehring, B. (2019). Semi-Recumbent Vibration Exercise in Older Adults: A Pilot Study of Methodology, Feasibility, and Safety. *Gerontology and Geriatric Medicine*. <u>https://doi-org.ezproxy.lib.uwm.edu/10.1177/2333721419881552</u> Citations: 0 Web of Science, 1 Google Scholar
- Wesp, L. M., Malcoe, L.H., Elliot, A., & Poteat, T. (2019). Intersectionality Research for Transgender Health Justice: A Theory-Driven Conceptual Framework for Structural Analysis of Transgender Health Inequities. *Transgender Health*. <u>https://doi-org.ezproxy.lib.uwm.edu/10.1089/trgh.2019.0039</u> Citations: 25 Web of Science, 39 Google Scholar
- Wang, J.S., Bao, S.C., & Tays, G.D. (2019). Lack of generalization between explicit and implicit visuomotor learning. *PLOS One*, 14(10), e0224099. <u>https://doi.org/10.1371/journal.pone.0224099</u> Citations: 4 Web of Science, 6 Google Scholar

Eight out of the ten articles have been cited by other researchers. If we place the article funded by UOAP with the highest number of 25 citations, on the scale of all 2019 UWM publications (1,268 records), then that article was ranked 71st among highly cited papers. It is the one of two papers in the research area of "Public, environmental occupational health" and it is the one without external funding by the national government agencies. Within the list of 79 highly cited papers, only nine, including this article, did not have external funding sources. Those observations correlate with the first requirement of institutional open access funds in contrast to grant-funded research discussed by Click and Borchard,² but also shows the impact of UOAP on that article. Regarding the second requirement of institutional funds for Gold journals versus hybrid journals, our analysis of 79 highly cited UWM publications showed that they are almost evenly split between open access venues with 13 in Gold and 15 in Hybrid journals. That may be specific for UWM research strength in astrophysics with many international collaborators who use open access. The following table and chart show the growth of Gold open access publications affiliated with UWM for the past three years.

	2019 2020		2021
Publications	1,268	1,287	1,113
All Open Access publications	509	513	435
Percent of all OA	40	40	39
Articles in Gold journals	155	176	173
Percent of Gold articles	12	14	16
Articles in Gold hybrid journals	67	43	54
Free to read (Bronze) articles	96	124	91

Table 5. UWM Open Access Publications



As a general trend, the UWM output declined during 2021, but the portion of all open access publications remained steady at 40%. The "All Open Access" category included articles published in Gold journals with a Creative Commons license (included in the Directory of Open Access Journals), hybrid journals (subscription-based with individual open access articles), free to read on publisher's websites (without a Creative Commons license), and Green venues (published, accepted, or submitted manuscripts in repositories). In the same time, the UWM publications in Gold journals have grown steadily from 12% to 16% since 2019. The latter trend supports the correctness of the alignment of the University Open Access Publication Fund with the direction of UWM publications. Further considerations of financial stability of the fund are necessary for its long-term continuation. The UWM Libraries have committed to sustaining it on a small scale for a decade, but this effort has fallen short, with interest from authors swiftly surpassing the available allotment each year. What cost-saving measures may be examined next? Maybe additional price capping below \$1,000 or eligibility restriction for first time awardees. Based on the current trends depicting the growth of open access use at UWM, campus-wide discussions about support of the "author pays" methods (e.g., research grant, department, start-up funding, library/UOAP, paid by co-authors, or author out-of-pocket) should provide insight for a good strategy. Partnerships for mutual cost-sharing or fund-raising are critical for growing the UWM Open Access Publication Fund for the next year, three years, or a decade.

Acknowledgement

Thanks to Kizer S. Walker, Director of Collections, Cornell University Library for sharing information about their fund.

Appendix

As of January, 2022, I identified 69 institutional open access publication funds for USA based on the SPARC "<u>Open Access Funds in Action</u>" list, Springer Nature "<u>Funders and Institutions A-Z</u> <u>Index</u>", and via Google search. Sixty of those funds were administered by libraries. Similarly to UOAP, 13 funds (of 69) were on pause after reaching maximum payout for this fiscal year. Also, there were a few funds launched recently. For fiscal year 2022, the University of Denver Libraries piloted the <u>Open Access Publication Equity Fund</u>.

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