

Publication status: Not informed by the submitting author

What Those Responsible for Open Infrastructure in Scholarly Communication Can Do about Possibly Predatory Practices

Saurabh Khanna, John Willinsky

<https://doi.org/10.1590/SciELOPreprints.3474>

Submitted on: 2022-01-09

Posted on: 2022-01-10 (version 1)

(YYYY-MM-DD)

This chapter has been invited to appear in Ismael Fazel and Pejman Habibi, Eds. *Predatory Practices in Scholarly Communication and Publishing: Causes, Forms, Implications, and Solutions*. Routledge.

What Those Responsible for Open Infrastructure in Scholarly Communication Can Do about Possibly Predatory Practices

Saurabh Khanna, Stanford University, <https://orcid.org/0000-0003-4276-3949>

John Willinsky, Stanford University, <https://orcid.org/0000-0001-6192-8687>

Keywords: Scholarly publishing; Predatory journals; Bibliometrics; Publishing platforms

Author contributions: Saurabh Khanna conducted the data science behind this study and contribute to the conception and the writing; John Willinsky led on the writing up of the study and contributed to the conception.

Conflicts of interest: The authors association with the Public Knowledge Project are declared and addressed in the paper.

Abstract

This chapter presents a three-phase analysis of 521 journals that use the open source publishing platform Open Journal Systems (OJS) while appearing on Beall's list of predatory publishers and journals and/or in *Cabells Predatory Reports*, both which purport to identify journals that charge authors article processing fees (APC) to publish in the pretense of a peer-reviewed journal. In 2020, 25,671 journals were actively using OJS, with 81.3 percent in the Global South, representing a great growth in global research activities. As members of the Public Knowledge Project, which develops this freely available publishing platform, the authors feel a responsibility to explore what platform developers can do to address both the real problem of duplicitous journals and the over-ascription of the "predatory" label to publishers and journals. represented by the authors of this chapter, Drawing on data from the beacon is a part of OJS, the chapter represents an assessment and intervention In the first phase, the researchers reached out to 50 publishers and 51 journals that use OJS and appear on Beall's list offering to assist in improving their journal quality. The response from 14 publishers (28.0 percent) among publishers and two journals (3.9 percent) among standalone journals demonstrated a likely misanalysis as "predatory" along multiple dimensions from financial model to peer-review evidence. The second phase, devoted to assessing the degree to which journals using OJS are implicated in this issue, revealed that 2.0 percent of the journals using OJS are on one or both lists. The two phases point to how the identification issue is not that of Beall or Cabells International, but results from a journal tradition of asking readers to take on trust the adherence to

scholarly standards. Amid the increase in research and open access to it, the third phase of this study introduces PKP's new technical strategy for verifying and communicating standards adherence to the public. Work has begun on systems involving trade organizations, such ORCID and Crossref, for authenticating journal practices (including editorial oversight, peer review, research funding, and data management), while communication strategies include adapting and testing with students and professionals the familiar Nutrition Facts label used with packaged foods. The goal is to provide a publicly accessible industry standard for more reliably assessing journal quality. INTRODUCTION

Introduction

We come to this book on “predatory practices in scholarly communication” as members of a project that develops journal publishing platforms and conducts research on open science. In this chapter, we work with a set of 521 journals using that platform that also occupy a place on one or both of the two significant lists of journals said to be “predatory.” One of the lists, representing 30,968 journals from “potential, possible, or probable predatory scholarly open-access publishers,” was maintained until 2017 by University of Colorado Denver librarian Jeffrey Beall (*Beall's list*, n.d.). The other, which has assembled 15,470 titles since 2017 in a “database of journals [which] our specialists have flagged as probable threats,” is *Cabells Predatory Reports* (Cabells, n.d.). The publishers and journals on these lists are presumed to *prey* on researchers, luring them to pay an “article processing charge” (APC) to publish in what is only the pretense of an open access scholarly journal.¹

We write “presumed to prey” because of how difficult it is for Beall, Cabells, or any other observer to know whether a journal is adhering to such scholarly standards as peer review. The challenge stems from how journals arose out of, and often continue to be, the work of scholarly societies and groups consisting of trusted colleagues (Csiszar, 2020). This has meant that editorial transparency has not been an issue, apart from a journal's listing of well-respected names on the masthead. Now that the internet and open access have broadened the global scale on which an expanded array of research is produced and circulated, those given to deception can hide behind this tradition of trust. Without access to a journal's editorial processes, Beall and Cabells rely on proxies for “probable threats” to scholarly integrity, such as unprofessional websites, incomplete mastheads, exaggerated claims, and email spamming.

¹ Note that author payments of APCs are not the problem, as such fees are common for open access publishing among all the major publishers, especially in the sciences, going back to PubMed Central's introduction of the APC in 2000. Shen and Björk (2015) found that journals on Beall's list had an average APC of \$178.

Predatory proxies, however, prove to be problematic. They frequently turn out to apply to well-established journals, including top-tier titles (Olivarez et al., 2018). They are used by some in equating *predatory* with *open access* publishing more broadly, reflecting Beall's own outspoken opposition to open access (Krawczyk & Kulczycki, 2021; Beall, 2013). On the other hand, efforts to directly assess journals' adherence to the peer-review gold standard have proved questionable and mixed. By relying on authors' estimation, for example, Cobey et al. (2019) found that 83.3 percent of those publishing in Beall-listed journals believe their work was peer-reviewed, which is less than reassuring. More cleverly, the journalist John Bohannon submitted a hoax paper to over 304 journals (2013). With Beall's list, Bohannon reports that 18 percent of the journals rejected his fatally flawed paper (compared to 62.4 percent rejection overall), while among the minority that accepted it were journals from the leading publishers, Elsevier, Wolters Kluwer, and SAGE.² Then there are the researchers who appear to exploit predatory journals for the increased compensation and research awards from their institutions that follow from increased publication (Pyne, 2017; Demir, 2018). Despite these reasons for approaching the issue with caution, the growing sense is that "predatory journals are a global threat," as some 35 scholars declared in *Nature* (Grudniewicz et al., 2019), which may be unduly undermining what might otherwise be a welcomed global expansion of research.³

The scholarly publishing industry has responded to the phenomenon with a "Think. Check. Submit." campaign. The campaign website advises authors "to check if [the journal] is trusted" before submitting a paper (*Think*, n.d.). This means relying on journals that "you and your colleagues know," that are indexed, and that belong to a trade organization like those sponsoring this campaign. The website allows that some well-intentioned journals are mislabeled "predatory" for want of resources, but the overall thrust is that as "more research is being published worldwide... many researchers have concerns about predatory publishing." From our perspective, at least, many researchers also have concerns about how to facilitate a more open science through open access, open infrastructure, and related initiatives, which is where this chapter comes into the picture.

Our three-phase study represents a response to the question of what scholarly publishing platform developers and researchers can do to address the combined problem of fake journals and

² More recently, on this theme of fraudulence not being confined to questionable publishers, at least two Springer Nature journals were found to have published hundreds of "nonsense articles," while "Taylor & Francis retracted a special issue because the guest editor had been 'impersonated by a fraudulent entity'" (Bartlett, 2021).

³ More than a thousand of the over 7,000 papers in Google Scholar on predatory journals, use the term "threat" (as does our paper) but more often in mutually reinforcing ways along these lines: "Predatory journals are a global threat to science (Harvey and Weinstein 2017; Grudniewicz et al. 2019; Strong 2019)" (Oviedo-García, 2021).

“predatory” mislabeling, both of which are undermining scholarly publishing. The study works with 521 journals that are both listed as “predatory” (by Beall and/or Cabells) and employ Open Journal Systems (OJS), a free open source editorial management and publishing platform. OJS is developed by the Public Knowledge Project at Simon Fraser University and Stanford University. As members of PKP and in the service of full disclosure, we acknowledge two conflicts of interest, as well as a sense of responsibility, that underlie our research into these journals.

First of all, our findings bear directly on the reputation of PKP’s software and those who employ it for their journals, as well as on the reason for this open source software project, which is to support open access to research as a human right and provide a means of improving this body of work. The data from the OJS journals used in this analysis have been made available for purposes of reproducibility and further studies, as a check on possible bias (Khanna et al., 2021). A second conflict of interest is rooted in how open source software projects, such as OJS, are generally committed to respecting users’ “freedom to run the program for any purpose,” to cite a common open source software definition (Wheeler, n.d.).⁴ Yet rather than taking the typical open source “hands-off” approach to software’s users, we are prepared to intervene out of a responsibility to assess and affect where OJS fits into the “predatory” picture. Our goal is to better understand the role that open source software and open infrastructure platform developers can play in addressing this issue.

Our intervention is two-fold: (a) We provide OJS-using publications identified as predatory with ways of addressing the seeming reasons for the label with the goal of improving their scholarly publishing quality; and (b) we are about to add verification technologies and communication strategies to publishing platforms by which readers will be in a better position to assess journal integrity. The overall goal here is to reduce the confusion and harm that this phenomenon is causing in scholarly communication, while raising the quality of scholarly publishing. Although providing such help, in the first instance, may equip bad actors with a better means of bluffing more authors and readers, we place this risk against writing off a substantial body of legitimate research and against new efforts to raise the technical bar for practicing deception in scholarly communication. Still, readers are advised to read this chapter with these conflicts of interest and sense of responsibility in mind.

Open Journal Systems

⁴ Note that author payments of APCs are not the problem, as such fees are common for open access publishing among all the major publishers, especially in the sciences, going back to PubMed Central’s introduction of the APC in 2000.

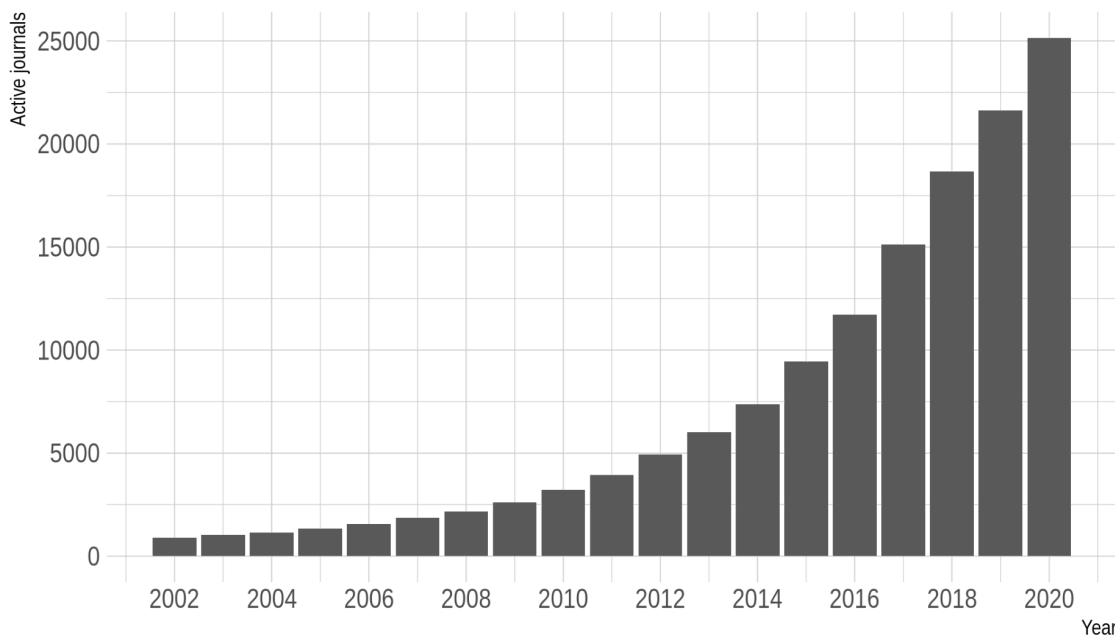
First released in 2002, OJS has seen a rapid growth since 2010, at 22.8 percent annually (Fig. 1). For 2020, we located 25,671 active journals deploying OJS in 155 countries, with 81.7 percent originating in the Global South, led by journals in Indonesia, Brazil, and the USA, and with research published in 56 languages, led by English, Indonesian, and Portuguese.⁵ These journals published an average of 38.8 in 2020, and over 4.7 million articles since 2010. PKP gathers this and other data from these journals through the software's optional beacon feature (which a portion of users turn off, implying these numbers are undercounts). Other studies have found that these journals are largely open access (89 percent), and account for 60 percent of what are termed "diamond open access" journals, neither charging readers subscription fees nor authors APCs (Edgar & Willinsky, 2010; Becerril et al., 2021). While largely indexed by Google Scholar and in more limited ways by the Directory of Open Access Journals, the journals utilizing OJS represent an emerging force in research that includes a mix of century-old journals, new and inexperienced publishers, and a few outright crooks.⁶

Figure 1.

Journals Use OJS to Publish at Least Five Articles Annually Since 2002.

⁵ An OJS journal is identified as "active" for a given calendar year if it publishes 5 or more articles in that year, which is the standard used by DOAJ.

⁶ The fraudulent use of OJS is most readily determined with its use to create duplicates of existing journals (right down to the editors names), which then accepts submissions intended for the original (Jalalian & Dadkhah, 2015). The one U.S. criminal conviction for predatory publishing resulted in OMICS International publishing group (which does not use OJS) being ordered in 2019 "to pay \$50.1 million in damages for deceiving thousands of authors who published in its journals and attended its conferences" (Brainard, 2019).



Note.

Journals using OJS can upload back issues, which will date the first appearance of the journal in this bar graph ahead of their OJS deployment.

Findings

This study took place in three phases from 2018 to 2021. The initial phase involved reaching out to a small sample of publishers and journals using OJS that appear on Beall’s list and in *Cabells Predatory Reports* to see if they would be receptive to suggestions on improving their journals’ quality. The second phase sought to establish how many journals using OJS are to be found on Beall’s list and in *Cabells Predatory Reports*. The final phase represents a technical response to the first two phases. It proposes ways for the scholarly publishing industry to both verify and communicate to the public a journal’s adherence to scholarly standards, as the long-standing lack of transparency makes predatory practices possible while leading to the uncertainty surrounding, and likely misuse of, the “predatory” label.

Phase One: Sample Study of Journal Elements

In this initial phase, conducted from July to December of 2018, we worked through Beall’s 2017 list until we had identified 50 publishers and 51 standalone journals using OJS. We then emailed

the publishers and editors and publishers, noting their appearance on Beall's list and offering to provide guidance on their journal websites. Of those contacted, 14 publishers (representing 113 journals) and two of the standalone journals responded with interest. We then reviewed example journals for each publisher. We were guided, in part, by Beall's Criteria for Determining Predatory Open-Access Publishers (2015), for which the 54 bullet points range from "no single individual is identified as any specific journal's editor" to "the publisher has an optional 'fast-track' fee-based service for expedited peer review which appears to provide assured publication with little or no vetting" (2015). Two of the publishers, Scholar Science Journals and Khalsa Publisher upgraded several features within a month of our emails, while COES&RJ responded that it was acting on our advice.⁷ Three of the fourteen publishers stated that they had unsuccessfully petitioned Beall to take them off the list, while a fourth convinced Beall to note their inclusion in the Directory of Open Access Journals (DOAJ).

In our analysis of the 14 publishers and two standalone journals, we discovered that seven of the publishers (or 14 percent of the publishers randomly chosen at the outset) did not charge authors for publication, which basically disqualifies them from the Beall and Cabells characterization of "predatory." Two of the seven sold subscriptions to their journals, and five had neither subscriptions nor author charges. In addition, we checked the entire set for compliance with what we judged to be eight key criteria from among Beall's set (2015), to which we added DOAJ and Google Scholar listings (Table 1). For those that charged authors, only one publisher (Fundamental Journals) did not comply with seven or more of the 10 scholarly standards.

On the peer-review question, we asked the 14 publishers who responded to our original inquiry, if they would allow us limited use of password access to their peer review process (based on our knowledge of OJS). Five publishers granted us access to a journal (Table 1). In spot-checking an average of 12 recent articles per journal, we found four of the five publishers' journals had complete sets of reviews, while the fifth was missing reviews for three articles out of 20. There were 1.6 reviews per article on average, although 24 percent of the reviews contained only a recommendation to publish without comment, suggesting that there is much work to be done on improving peer review

⁷ The publisher Scholar Science Journals, for example: (a) added names and addresses of editors; (b) publish an annual reviewers list; (c) switched to continuous publication cycle; (d) sent special letters to users to encourage use of ORCIDs; (e) included copyright info and applied for DOAJ approval; and (f) added publisher's name and address in footer. In addition to doing (a)-(e), Khalsa Publisher also (g) identified each of its journal's editors-in-chief; and (h) added a note on the responsibility of reviewers to authors in its section on peer review. The publisher COES&RJ indicated that it was increasing efforts to obtain reviewers and implement technical fixes.

Table 1.

The Compliance with Beall's Criteria of Publishers and Journals Participating in Phase One (2018).

	Journals	APC	ISSN	Address listed	Editor named	Editor/journal	Board/journal	Review policy	DOI applied	Proper metrics	Google Scholar	DOAJ	Total /10
PUBLISHER													
AABL (Australian)	2	None ^a	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	8
ASD Publisher	12	\$100	✓ ^b	✓	✓	✓	✓	✓	✗	✓	✓	✗	8
Atlas Publications	9	None	✓	✓	✓	✓	✓	✓ ^c	✓	✓	✓	✓ ^b	10
CESER	11	None	✓	✓	✓	✓	✓	✓	✗	✓	✓	N/A ^d	8/9
COES&RJ ^e	1	\$170	✓	✗	✓	✗	✓	✓ ^c	✓	✓	✓	✗	7
EconJournals	3	\$300	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	9
Engineering Pub. House	9	\$80	✓	✓	✓	✗	✓	✓	✗	✗	✓	✓	8
Fundamental Journals	3	\$300	✓	✗	✗	✗	✓	✗	✗	✓	✗	✗	3
GRDS Publishing	4	None	✓	✓	✗	✗	✓	✓	✓	✓	✓	✗	7
ID Design Press	11	?	✓	✓	✓	✗	✓	✓ ^c	✓	✓	✓	✗	8
Khalsa Publications	12	\$100	✓	✓	✓	✓	✓	✓ ^c	✓	✓	✓	✓	10
Scholar Science Journals	9	\$50	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓ ^b	9
Speak Foundation	4	None	✓	✓	✓	✗	✓	✓	✗	✓	✓	N/A	7/9
TathQeef Sci. Publishing	22	None	✓	✗	✓	✓	✓	✓	✓	✓	✓	✗	8
STANDALONE JOURNAL													
<i>ATScience</i>	1	None	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	9
<i>Journal of Human Sciences</i>	1	\$35	✓	✗	✓	✓	✓	✓ ^c	✓	✓	✓	✗	8
Total or Average	115	\$142	16	12	14	9	16	15	9	15	14	6	7.8 ^f

Note.

^a No Article Processing Charge (APC) thought to motivate predatory publishing.^b Not all the publisher's journals possess this element or quality.^c Journal's peer review checked for 12 articles on average.^d Not open access and thus not qualified for indexing in DOAJ.^e COES&RJ: Center of Excellence for Scientific & Research Journalism.^f Average for the nine publishers and journals that levy an APC.

quality. In sum, of the original randomly selected 50 publishers using OJS on Beall's list, 14.0 percent (7 publishers) are not even contenders for this classification; another 12.0 percent, who qualify, are largely compliant with Beall's basic criteria, with five of the seven providing direct evidence of peer review.

While Beall did not specify the reasons that individual publishers or journals were added to his list, *Cabells Predatory Reports* (2021) identifies the "violations" for each title, listing the violations from "severe" to "minor." The "60+ behavioral indicators" for journals are taken to indicate "misconduct," "fraudulent operations," and "probable threats" (Cabells, n.d.). To take an example from the *Reports* – which is available only by subscription for which, at our request, Stanford paid \$3,500 in 2021 – Cabells lists ten titles from Indonesia from among its more than 15,000 titles. Among these ten, the three titles from the International Journal of College and University have inactive links. The remaining seven Indonesian journals listed in Cabells are published by USN Scientific Journal, owned by Sembilanbelas November University (USN), a public institution in Kolaka, Indonesia, from which many of the editors and board members are drawn.

We prepared an email for the publisher and editors of the USN Scientific Journal's *Agribusiness Journal* listing the five "violations" Cabells identified, along with advice on how to address them (Appendix A; with no response back from the journal at the time of writing). One point to note is that while *Agribusiness Journal* is indexed in Google Scholar, its articles across the three published issues have gained only four citations thus far, largely from other Indonesian publications. While this has led some to conclude that journals on such lists "have little scientific impact," it can also be seen that the seeds for such impact need to be broadly sown (Björk et al., 2020).

Cabells method of identifying "violations" for each title listed is a step up from Beall's method of simply adding publishers and journals to its list. Yet there remains a reliance on relatively weak proxies for what may or may not reflect a lack of experience and professional support. As well, the trade-off for this gain in detail is that the journals' identities, as well as their "violations," are unlikely to be available to those listed. This is of concern because Cabells' list of violations does helpfully identify ways to improve *Agribusiness Journal*, and with little indication of fraudulent behavior. We have suggested to Cabells the basic fairness of sharing its assessments with the journals designated a "probable threat." While Cabells is not prepared to undertake such a step at this point, we plan to continue reaching out to the publishers with journals in *Predatory Reports* with advice for addressing the "violations" attributed to their publications and for seeking reconsideration. We will update Cabells on the results of this strategy in the hope that there may yet be reason for this company to reconsider

its contributions to scholarly publishing. This approach might also lead to an increased accuracy of their predatory reports by excluding false positives.

Nonetheless, our experiment of reaching out to publishers and journals has had limited success. What we found adds to the literature on predatory list overreach. However, a response rate of 28.0 percent among publishers and 3.9 percent among standalone journals, with only two publishers acting on our suggestions, suggests that while this may be the right thing to do, it is not an effective strategy for rectifying this issue, which calls for increasing certainties around identifying fraudulent journals.

Phase Two: Journals Using OJS in Beall's List and *Cabells Predatory Reports*

In this phase, we set out to determine the extent to which journals using OJS are identified as “predatory” in Beall's and Cabells' lists. In the first instance, we compared the PKP list of journals using OJS with Beall's final list of predatory publishers and journals, which he suspended in 2017 after several publishers and organizations fought back against such listings (Silver 2017). By matching URLs, we were able to identify journals that belonged to Beall's list of publishers or matched the standalone journals on the list, while also discovering that 32.8 percent of Beall's listings no longer had websites.⁸

To establish how many journals Beall's list ultimately represented, we counted the number of journals from a random sample of 231 publishers (19.9 percent of 1,163 publishers on Beall's final list) without regard to the use of OJS in 2018 (Table 2). This sample suggests that Beall's list represents 30,968 journals as “predatory,” including 1,395 standalone journals. We also found that while 32.1 percent of the journals published articles, 61.7 percent had not yet published anything and 6.3 percent (rising to 32% in 2021) did not have a website.⁹ Despite this, in considering the proportion of journals using OJS on Beall's list, we worked with the total of 30,968 titles, as the size of this list has come to represent the full weight of the predatory-journal issue. In comparing URLs, which allow journals to be identified in association with publishers, we found that 366 journals using OJS were associated with Beall's list (Table 3). These journals amount to 1.2 percent of the journal total for Beall's List and 1.4 percent of the 25,671 active journals known to be using OJS.

⁸ A publisher or journal was considered to have a website if we received a successful HTTP 200 OK response on pinging the URL with a wait time of 30 seconds.

⁹ Shen and Bjork (2015) provide some support for this claim of a third, by estimating that in 2014 approximately 8,000 active predatory journals published 420,000 articles, with an average of 52.5 articles per journal, where we found an average of 62.8 articles for 2016.

Table 2.

Journals Listed by Sample of Publishers ($n=231$) from Beall's Publisher List ($N=1,163$).

Journal status	Journals	Percent
With published articles	1,800	32.1%
Without articles	3,462	61.7%
Without a website	353	6.3%
Journals listed by publishers	5,615	100%
Average journals/publisher	24.3	

Table 3.

Journals Using OJS on Beall's List (2017) and in *Cabells Predatory Reports* (2021).

	Beall's List	Cabells PR
Total journals	30,968	7,490
Using OJS	366 ^a	237 ^b
Of the predatory total	1.2%	3.2%
Of the OJS total	1.4%	1.0%

Note.

^a Journals using OJS ($N=25,671$) that share URLs with publishers and journals on Beall's List.

^b Journals using OJS ($n=22,802$) with an ISSN matching those on journals in *Cabells Predatory Reports*.

For its part, Cabells International was generous enough to undertake a comparison of PKP's list of journals with those in *Predatory Reports* by matching the journal's ISSNs (International Standard Serial Number) across the two lists. This limited Cabells' list to the 7,490 journals with ISSNs from a total of 15,470 titles and the PKP list to 22,802 journals. The matches amounted to 237 journals, which represents 3.2 percent of Cabells list, and 1.0 percent of the journals using OJS.

We examined the overlap among journals using OJS that appear on both the Beall's and Cabell's lists (Figure 2). We found that 82 journals (0.3 percent of the OJS total) appear on both lists, led by journals published in India and the United States.¹⁰ Taken together, a total of 521 journals using

¹⁰ The 82 journals using OJS that appear on both lists represents an overlap of 15.7 percent compared to the 31.8 percent overlap that Xiotian Chen (2019) found for journals generally (based on a modest sample), while Chen's determination that 28.5 percent of publisher and journal websites no longer exist on Beall's list is comparable to our study's results (32.1 percent).

OJS appear on one or both predatory lists, amounting to 2.0 percent of the journals known to be using OJS. Between the two lists for those journals using OJS, Cabells appears to have a somewhat greater focus on the Global South, while the country differences between the two lists are likely the result of publishers' journal sets.

Figure 2.

Top Ten Countries by Journals Using OJS on One or Both of Beall's List and Cabells Predatory Reports Alone.

Beall's list alone (n=284)		Both lists (n=82)		Cabells' list alone (n=155)	
Indonesia	47 (16.6%)	India	27 (32.9%)	Singapore	62 (40.0%)
United States	47 (16.6%)	United States	26 (31.7%)	India	60 (38.7%)
India	35 (12.3%)	Australia	7 (8.5%)	Bangladesh	5 (3.2%)
Pakistan	22 (7.8%)	Indonesia	6 (7.3%)	Turkey	4 (2.6%)
Canada	20 (7.0%)	Bangladesh	5 (6.1%)	Ukraine	4 (2.6%)
Romania	19 (6.7%)	Turkey	3 (3.7%)	United States	4 (2.6%)
Kenya	16 (5.6%)	Jordan	2 (2.4%)	Australia	3 (1.9%)
Malaysia	12 (4.2%)	China	1 (1.2%)	Belgium	3 (1.9%)
Singapore	11 (3.9%)	Iran	1 (1.2%)	United Arab Emirates	2 (1.3%)
United Arab Emirates	11 (3.9%)	Italy	1 (1.2%)	Canada	1 (0.7%)
Total	240 (84.5%)		79 (96.4%)		148 (95.5%)

We take little comfort from the proportion of journals using OJS on these two lists. An open source publishing platform that is free to download and documents setting up and operating journals might have been expected to be more widely used by fake journals. It may be that OJS' design, dedicated to providing editorial oversight of peer review, is off-putting to those with no such intent, or that the platform's design and support enable journals to rise above the subjective judgments behind the "predatory" label. Still, some journals are almost certainly using OJS to illegitimately charge authors for publishing their submissions without peer review to the detriment of science. While there is evidence of overcounting on both lists, the proportion of journals using OJS is higher in the more recent list maintained by *Cabells Predatory Reports* (3.2 percent) than in Beall's list (1.2 percent), just as Cabells appears to be providing greater coverage of journals in the Global South than Beall. This increase may reflect OJS' growth rate, which only adds to our responsibilities as platform developers to address this issue.

Also troubling is the scale of the uncertainty and innuendo to Beall's list and *Cabells Predatory Reports*. Yet rather than blame Beall and Cabells International, it may be time to redirect the scholarly publishing technologies that have made this global knowledge exchange possible. New systems are

needed that can verify and demonstrate to the public the extent to which these journals adhere to scholarly standards, which bring us to the third phase of this study.

Phase Three: A Journal Integrity Plan for OJS

To support the public value of open access and the global expansion of scholarly publishing, PKP is developing new tools for assessing and communicating scholarly trustworthiness. This will involve journals turning to third-party trade organizations to verify and register who is doing what in the publishing process, with an example involving ORCID presented below. Initially, the goal is to work with five basic scholarly standards, before considering more granular and specialized standards around, for example, clinical trials (Table 4). These systems will depend on the exchange of information between journals and these organizations, with an openness to a level of scrutiny not possible today, whether in seeing the background of a journal's reviewers or how many reviews a paper is typically subject to. While involving automated connections and controls, the outcomes will be subject to human review and challenge. Through open source licensing of the connecting technologies, such developments will also be made available to commercial and other platforms.

Table 4.

Scholarly Publishing Standards for Which Third-Party Verification Systems Are to Be Developed for Journal Publishing Platforms.

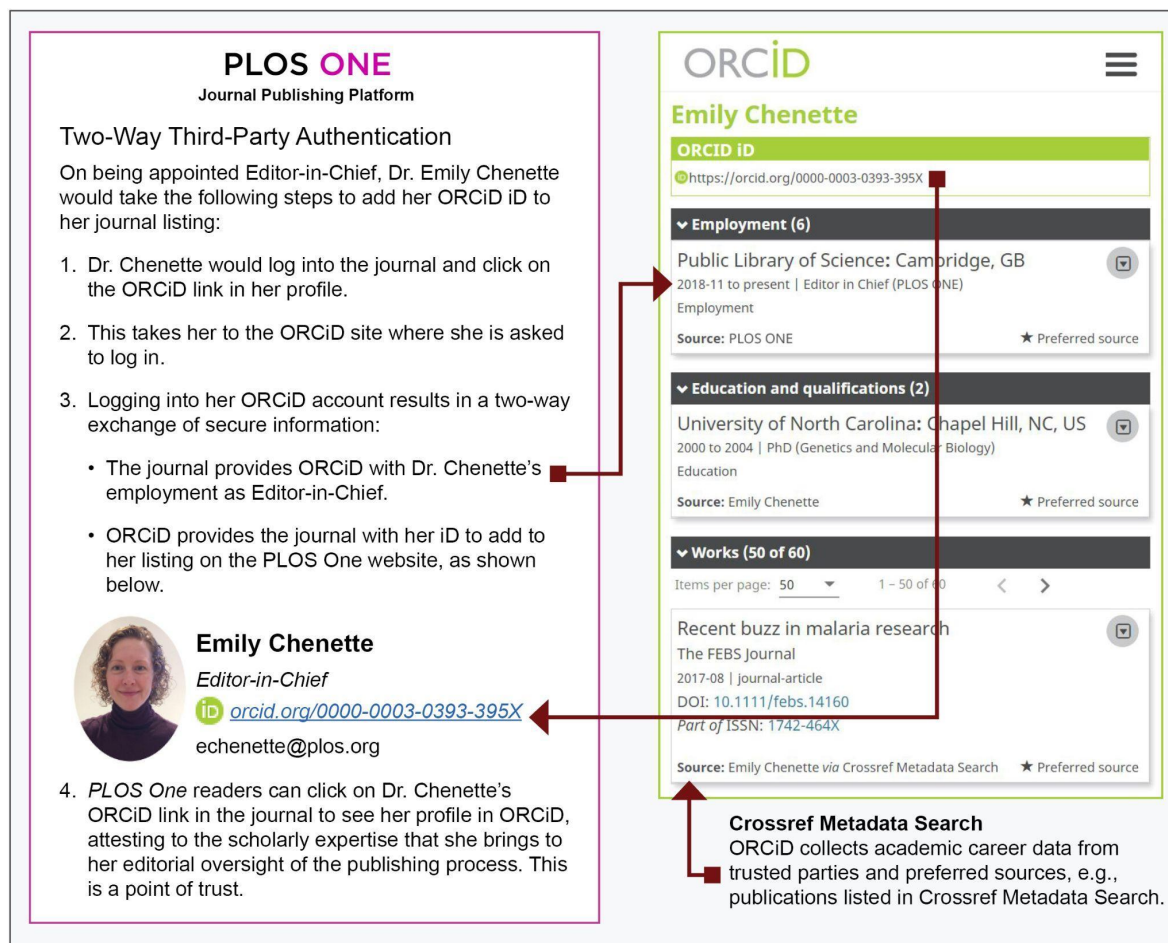
Standard	Level	Trade org. ^a	Metrics	Additional information
Research status	Article	Crossref, Publons, Retraction Watch	Versions, downloads	Whether the research is (a) peer-reviewed research, moderated preprint; final draft; or working paper; (b) the latest or an earlier version; (c) a research article, letter, editorial, opinion piece, systematic review, etc.; (d) corrected, withdrawn or retracted; and (e) open access or paywalled.
Editorial oversight	Journal	ORCID	Percent of editorial team displaying ORCIDs	ORCID is a trusted source of academic identities and profiles icons, which provides editors, board members, and reviewers of the journal with an iD that links to their profiles.
Peer review	Journal	ORCID, Publons	Reviewers, period, and rounds	Availability of open reviews, and article types subject to peer review.
Data deposit	Article	Dryad, Dataverse, Figshare	Data set size; presence of tools	Data availability policies and statements for journals, as well as existence of a dataset for replicability and other analytical tools (e.g., Jupyter Notebooks) for articles.
Sponsorship	Article	Crossref	No. of funders; average funded	Utilizes Crossref Funder Registry, and author conflict-of-interest declarations.

Note.

^aTrusted trade organizations to be used as a check on journal adherence to scholarly standards.

For example, when editors, editorial board members, reviewers, and authors initially register with a journal's publishing platform, they will be required to log into ORCID, a researcher identity and profile management organization (Fig. 2). To be listed as the editor of a journal would involve a further log in with ORCID in which this new position would be added to one's ORCID profile, while ORCID will provide the journal with a hyperlinked ORCID icon, enabling readers and authors to explore the editor's background and qualifications knowing that the identities have been authenticated and that appeals can be made to ORCID if anything seems amiss. Such systems may be susceptible to circumvention, as no technology is foolproof, of course, but the effort required to do so without detection will have been greatly increased and in ways that can be further improved in the face of violations.

Figure 2.
A Hypothetical Example of Two-Way Third-Party Authentication for the Editorial Oversight Standard Using PLOS ONE.



Then there is the question of how the results of this and other verification systems, whether for peer reviews, indexing, and other elements, will be communicated to readers and authors. Here we have begun to develop a “Publication Facts” label, based on the common FDA Nutrition Facts label (Fig. 3). This approach will be not only be open to public scrutiny, following open science principles, but also assessed and refined with various audiences, from high school students to journalists, to ensure the label’s clarity and comprehensibility with researchers and members of the public who should be able to use the label to assess the trustworthiness of research articles.¹¹ The label, which will be linked to individual studies, will provide metrics on their compliance with standards, along with detailed explanations of each standard and metric. Such labelling is intended to inform and educate the public and the professions on research standards, while providing a basis for readers to briefly consider or explore in more detail the trustworthiness of research publications.

Figure 3.

The Publication Facts Label to Convey Verification Results to Readers and Authors.

¹¹ See *Biology Now with Physiology* for an example of a high school textbook that grapples with journal scholarly standards and research quality (Houtman et al., 2018).

This peer-reviewed research article's verified compliance with scholarly publication standards are [available here](#).

Publication Facts i

Journal of Asian Health

Discipline average

Discipline: Biomedical		i
Editor ORCID iD: 85%	65%	i
Open access: Yes	40%	i

“Cultural Factors Influencing the...”

Status: Published 12/23/2020		i
Type: Research article	75%	i
Version: 2	32%	i
Standing: Correction Notice	4%	i
Downloads/views: 345	878	i

Peer Review i

Reviewers: 2	2.4	i
Period: 3.4 months	4.2	i
Rounds: 1	2	i
Open review: Yes	23%	i

Data Deposit i

Size: 12 GB	30%	i
Tools: Yes	12%	i

Sponsorship i

Grant: NSF & NIH	68%	i
Conflicts of interest: 1 declared	10%	i

Editor ORCID iD

The Research Publishing Standard: Scholarly editorial oversight of the journal is a research standard. The journal's editors, who oversee the publishing process, as well as its editorial board members, who advise those editors, should be accomplished researchers in the journal's discipline.

How to Interpret: Readers are able to use the ORCID iDs listed for editors by the journal to view their academic profile and verify this expertise. Having a high percentage of the editorial team, if not everyone, listing their ORCID iD adds to readers' ability to assess, in combination with the other standards listed here, the level of trust to place in the journal's publications.

The Trust Factor: ORCID is widely respected as a non-profit organization that carefully gathers relevant and accurate academic information on scholars around the world. Both the journal and ORCID use a two-way authentication system to prevent tampering with this important information on the scholarly editorial oversight provided to this journal's publishing process.

Note. “Discipline average,” would draw data from multiple uses of this project within a discipline. A Preprint Facts label would be similar, except that “Editor ORCID iD” would be “Moderator ORCID iD” and “Peer Review” would be “Moderation,” with a measure of whether the moderator approves the initial posting and subsequent versions.

Although the lack of transparency and clarity in the degree to which journals adhere to scholarly standards applies to the larger world of scholarly publishing, these verification and communication systems will also, of course, help reduce the number of journals mislabeled as “predatory.” To make journals adherence to scholarly standards explicit in publicly accessible ways may well encourage wider use of this work. Journalists and other professionals would get into the habit of checking the label before using research, while reading such labels could well form part of what high school and college students would learn about science. Such an industry standard for scholarly publishing seems to go hand in hand with universal open access and public support for research.

Conclusion

No one doubts that unscrupulous website operators are present in scholarly publishing, much as they are in other fields. Without denying this reality, this study joins others in demonstrating how the lack of transparency at important points in the scholarly publishing process can lead to an over-application of the predatory label to journals and publishers. While this may increase awareness of a real problem, it threatens the progress that open access is making in the emergence of a greater global research effort. Nowhere is this more apparent than the industry's current response with "Think. Check. Submit." While it is aimed at assisting authors considering where best to submit their work, it cannot help but foster a broader distrust of the research literature beyond familiar and recognized publications.

What this study adds to the considerable literature on predatory journals is both evidence and reason for addressing the underlying issues of transparency. By developing verification systems for publishing platforms involving trusted trade organizations, the bar is raised for both those operating predatory journals and those (mis)applying the label. While PKP is taking the lead with these systems, we recognize that their effectiveness will depend on their adoption as an industry standard for journal accountability across publishers and publishing platforms. This will involve a wide range of journal platforms and scholarly publishers that share a common goal of assisting the public in assessing the trustworthiness of research publications, given their growing open access to research. These standards for verification and authentication, especially as they are attuned to communicating to the public, as well as professionals, the publishing practices that distinguish scholarly publishing, will raise the bar for both legitimate and deceptive journals.

If we can provide a publicly accessible, trustworthy basis for having greater confidence in a journal's legitimacy, then services such as Cabells might be willing to shift their efforts from assembling lists of potential offenders to more directly protecting the public interest by working with those journals in need of corrections and other improvements, while still seeking to expose deliberate acts of deception and fraudulence. What Jeffrey Beall and Cabells International have exposed, above all, is the need for means of verifying and communicating journal adherence to scholarly standards in an age of open access and global participation in research.

Acknowledgements

Gary Schwartz is to be thanked for undertaking the data collection in phase one; Jon Ball for data work and editing, as well as Kyla Chasalow for thoughtful comments; Doug Dworkin for preparing the graphics in Fig. 2 and Fig. 3; Kathy Kerns, Shani Braier Marcovitz, Matt Marostica, Sarah Forsetting, Jennifer Uchiyama and Greta deGroat for assistance in obtaining access to *Cabells Predatory*

Reports through Stanford University Libraries, and Simon Linacre of Cabells International for assistance in identifying journals using OJS in *Cabells Predatory Reports*.

References

- Bartlett, John (2021, September 28). The mysterious case of the nonsense papers. *Chronicle of Higher Education*.
- Beall, J. (2015, January 1) *Criteria for determining predatory open-access publishers, 3rd edition*. Unpublished document. <https://beallist.net/wp-content/uploads/2019/12/criteria-2015.pdf>.
- Beall, J. (2013). The open-access movement is not really about open access. *tripleC: Communication, Capitalism & Critique*, 11(2), 589-597.
- Beall's list of predatory journals and publishers* (n.d.). Retrieved December 25, 2021, from <https://beallist.weebly.com/>.
- Becerril, A., Bjørnshauge, L., Bosman, J. Frantsvåg, J.E., Kramer, B., Langlais, P.-C., Mounier, P. Proudman, V. Redhead, C., & Torny, D. (2021). *The OA diamond journals study*. https://scienceeurope.org/media/vejfasey/20210309_coalitions_diamond_study_final.pdf
- Björk, B. C., Kanto-Karvonen, S., & Harviainen, J. T. (2020). How frequently are articles in predatory open access journals cited. *Publications*, 8(2), <https://doi.org/10.3390/publications8020017>
- Brainard, J. (2019, April 3). U.S. judge rules deceptive publisher should pay \$50 million in damages. *Science*.
- Bohannon, J. (2013, October 4). Who's afraid of peer review? *Science Magazine* 342(6154), 60-65.
- Cabells Predatory Reports* (n.d.). Cabells International. Retrieved December 25, 2021, from <https://www2.cabells.com/predatory>
- Chen, X. (2019). Beall's list and Cabell's blacklist: A comparison of two lists of predatory OA journals. *Serials Review*, 45(4), 219-226.
- Cobey, K. D., Grudniewicz, A., Lalu, M. M., Rice, D. B., Raffoul, H., & Moher, D. (2019). Knowledge and motivations of researchers publishing in presumed predatory journals: A survey. *BMJ Open*, 9(3), e026516. <https://bmjopen-bmj-com.stanford.idm.oclc.org/content/9/3/e026516.abstract>
- Csiszar, A. (2020). *The Scientific Journal: Authorship and the Politics of Knowledge in the Nineteenth Century*. University of Chicago Press.
- Demir, S. B. (2018). Predatory journals: Who publishes in them and why? *Journal of Informetrics*, 12(4), 1296-1311.

- Edgar, B. D., & Willinsky, J. (2010). A survey of scholarly journals using Open Journal Systems. *Scholarly and Research Communication*, 1(2).
<https://src-online.ca/index.php/src/article/view/24>
- Grudniewicz A., Moher D., Cobey K. D., Bryson, G. L., Cukier, S., Allen, K., Arden, C., Balcom, L., Barros, T., Berger, M., Buitrago-Ciro, J., Cugusi, L., Donaldson, M. R., Matthias, E., Graham, I. D., Hodgkinson, M., Khan, K. M., Mabizela, M., Manca, A., Milzow, K., Mouton, J., Muchenje, M., Olijhoek, T., Ommaya, A., Patwardhan, B., Poff, D., Proulx, L., Rodger, M., Severin, A., Strinzel, M., Sylos-Labini, M., Tamblyn, R., van Niekerk, M., Wicherts, J.M., & Lalu, G. M. (2019, December 11). Predatory journals: No definition, no defence. *Nature*, 576: 210–2.
Nature, <https://www.nature.com/articles/d41586-019-03759-y>
- Harvey H. B., & Weinstein D. F. (2017) Predatory publishing: An emerging threat to the medical literature. *Academic Medicine*, 92: 150–1.
- Houtman, A., Scudellari, M., & Malone, C. (2018). *Biology now with physiology*, Norton.
- Jalalian, M., & Dadkhah, M. (2015). The full story of 90 hijacked journals from August 2011 to June 2015. *Geographica Pannonica*, 19(2), 73-87.
http://www.dgt.uns.ac.rs/pannonica/papers/volume19_2_6.pdf.
- Khanna, S., Raoni, J., Smecher, A., Alperin, J., & Ball, J. (2021). *Details of publications using software by the Public Knowledge Project*. ScholCommLab's Dataverse.
<https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/OCZNVY>
- Krawczyk, F., & Kulczycki, E. (2021). How is open access accused of being predatory? The impact of Beall's lists of predatory journals on academic publishing. *Journal of Academic Librarianship*, 47(2), 102271.
- Open Source Initiative (2007). *Open source definition*. <https://opensource.org/osd.html>
- Olivarez, J. D., Bales, S., & Sare, L. (2018). Format aside: Applying Beall's criteria to assess the predatory nature of both OA and non-OA library and information science journals. *College and Research Libraries*, 79(1). <https://crl.acrl.org/index.php/crl/article/view/16614/18461>
- Oviedo-García, M. Á. (2021). Journal citation reports and the definition of a predatory journal: The case of the Multidisciplinary Digital Publishing Institute (MDPI). *Research Evaluation*, 30(3), 405-419.
- Pyne, D. (2017). The rewards of predatory publications at a small business school. *Journal of Scholarly Publishing*, 48(3), 137-160.

- Shen, C., & Björk, B. C. (2015). "Predatory" open access: A longitudinal study of article volumes and market characteristics. *BMC Medicine*, 13(1), 1-15.
<https://bmcmmedicine.biomedcentral.com/articles/10.1186/s12916-015-0469-2>
- Silver, (2017, January 18). Controversial website that lists "predatory" publishers shuts down, *Nature*.
<https://www-nature-com.stanford.idm.oclc.org/articles/nature.2017.21328>
- STM Report: STM Global Brief 2021 – Economics and market size (2021)*. International Association of Scientific, Technical and Medical Publishers. Retrieved December 25, 2021, from
https://www.stm-assoc.org/2021_10_19_STM_Global_Brief_2021_Economics_and_Market_Size.pdf
- Strong G. (2019) Understanding quality in research: Avoiding predatory journals. *Journal of Human Lactation*, 35: 661–4.
- Think. Check. Submit.* (n.d.). Retrieved December 25, 2021, from <https://thinkchecksubmit.org/>
- Vainio, N. & Vadén, T. (2007). Free software philosophy and open source. In Kirk St. Amant and Brian Still (Eds.), *Handbook of research on open source software: Technological, economic, and social perspectives*. Information Science Reference.
- Wheeler, D. (n. d.). Open Source Software / Free Software (OSS/FS or FLOSS) references. Unpublished paper. Retrieved December 25, 2021, from https://dwheeler.com/oss_fs_refs.html

Appendix A. Advisory Letter to Publisher Listed in *Cabells Predatory Reports*

October 30, 2021

Dear USN Scientific Journals:

We regret to inform you that seven of your journals are currently listed by *Cabells Predatory Reports* as possibly fraudulent. We are writing to you as members of the Public Knowledge Project that developed your publishing platform Open Journal Systems (OJS), which is dedicated to helping open access journals meet scholarly standards as a service to their authors and readers everywhere.

To assist you in this regard, we are providing you with a means of addressing the five “violations” and their severity [in square brackets] that Cabells lists for *Agribusiness Journal* (see bullets below), as these points roughly apply to your other six journals in Cabells’ Predatory Reports (*Agrotech*, *Animal Husbandry*, *English Education*, *Indonesian Language Education and Literacy*, *Math Education*, *Math Sciences*). Most can be readily fixed (see “Our comments”), after which Cabells can be notified, as also suggested below.

- “No articles are published or the archives are missing issues and/or articles.” [Severe]
Our comments: The journal has published three issues to date: 2016 (vol 1, no 2), 2017 (vol 2, no 2), 2020 (vol 3, no 2), each of which is available and complete. Although the publication is not as periodical as would be ideal, there are no missing issues. However, the use of “no 2” is confusing, as it indicates a second issue for that year and volume, when there is no second issue. If each could be changed to “no 1” it would be more accurate.
- “The journal states there is an APC or another fee but does not give information on the amount or gives conflicting information.” [Severe]
Our comments: The “Author Fee” link on the homepage leads to the journal’s “Editorial Policies” where neither “fee” nor “APC” appear. This is a confusing and conflicting message and could be cleared up by removing the “Author Fee” link on the homepage, or if there is a fee, then stating how much and how it works on the Editorial Policies page.
- “The journal’s website does not have a clearly stated peer review policy.” [Moderate]

Our comments: The journal's "Peer Review Policy," listed under "Editorial Policies" is 75 words in length and includes that it "takes at least four weeks to conduct the reviews from the invitation to the review report." The "Reviewer" link on the homepage leads to a list of four names, with their institutional affiliations. If more reviewers could be added to the "Reviewer" page, and if the more extensive "Peer Review Process" statement of USN Scientific Journal's *Journal of English Education* (410 words) could be applied to all the USN journals, this issue should be fixed.

- "Poor grammar and/or spelling on the journal or publisher's website." [Minor]
Our comments: The "Peer Review Policy" contains two instances of nonstandard usage, although there may be others. See suggestion above.
- "The publisher or its journals are not listed in standard periodical directories or are not widely catalogued in library databases." [Minor]
Our comments: The journal's issues are indexed in Google Scholar which may well be sufficient, as many open access journals are not "widely catalogued in library databases."

Cabells' policy is that "journals wishing to appeal inclusion in *Predatory Reports* must demonstrate an honest revision of their behaviors with proof of corrective and preventative actions for each violation." We suggest that you make the above changes and present the changes to Cabells at journals@cabells.com

Sincerely,
Saurabh Khanna, Doctoral Student
John Willinsky, Khosla Family Professor
Public Knowledge Project, Stanford University

This preprint was submitted under the following conditions:

- The authors declare that they are aware that they are solely responsible for the content of the preprint and that the deposit in SciELO Preprints does not mean any commitment on the part of SciELO, except its preservation and dissemination.
- The authors declare that the necessary Terms of Free and Informed Consent of participants or patients in the research were obtained and are described in the manuscript, when applicable.
- The authors declare that the preparation of the manuscript followed the ethical norms of scientific communication.
- The submitting author declares that the contributions of all authors and conflict of interest statement are included explicitly and in specific sections of the manuscript.
- The authors agree that the approved manuscript will be made available under a [Creative Commons CC-BY](#) license.
- The deposited manuscript is in PDF format.
- The authors declare that the data, applications, and other content underlying the manuscript are referenced.
- The authors declare that the manuscript was not deposited and/or previously made available on another preprint server or published by a journal.
- If the manuscript is being reviewed or being prepared for publishing but not yet published by a journal, the authors declare that they have received authorization from the journal to make this deposit.
- The submitting author declares that all authors of the manuscript agree with the submission to SciELO Preprints.
- The authors declare that the research that originated the manuscript followed good ethical practices and that the necessary approvals from research ethics committees, when applicable, are described in the manuscript.
- The authors agree that if the manuscript is accepted and posted on the SciELO Preprints server, it will be withdrawn upon retraction.