

*Review*

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# Lists of predatory journals and publishers: a review for future refinement

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## Abstract

Although predatory publishers are increasingly recognized, universally accepted criteria for defining predatory journals are lacking. These journals challenge the scholarly community by blurring the line between legitimate and questionable publishing practices. Several lists and reports of predatory journals have been published, which offer valuable insights; however, they are not devoid of criticism. Beall's list, although criticized for its inclusion criteria, is currently managed anonymously and updated infrequently. Cabells' list uses an extensive array of inclusion criteria, some of which are similar to those used in Beall's list. Several of these criteria are redundant and fail to detect predatory practices, and using all of them in evaluating a journal is seldom practicable. Kscien's list has emerged as a promising alternative for identifying predatory publishers or journals. However, it requires refinement, potentially through creating a distinct list supported by unequivocal evidence, such as accepting a fake manuscript (ascertained through a sting operation). The present review seeks to catalyze research on identifying predatory journals and publishers by comparing existing lists and suggesting new techniques for detecting predatory practices.

## Keywords:

Academic Journal Predatory Checking, Beall's list, Cabells' list, Kscien's list, predatory journals

## Introduction

Predatory journals are a serious concern in scholarly publishing, raising questions about the integrity and quality of academic research. These journals exploit the *publish or perish* culture of academia by offering to publish without proper peer review, editorial oversight, or quality control, often in exchange for substantial fees.<sup>1</sup> Despite the increasing awareness of the term *predatory publishers*, universally accepted criteria to define predatory journals are lacking. Such journals pose a significant challenge to the scholarly community because they blur the lines between legitimate and questionable publishing practices. Jeffrey Beall first used the term *predatory publishers* in 2010 when he listed nine journal publishers that he believed were engaged in questionable practices.<sup>2</sup> Beall wanted to be cautious and used the term *predatory*, but it has caught on and now refers to journals and publishers engaging in unscrupulous practices, cursory peer review or no peer review, and limited editorial supervision, publishing substandard scholarly articles.<sup>2-4</sup> Predatory journals are commonly associated with open-access (OA) publishing models under which articles are freely available online. With the rapid increase in their numbers, predatory journals have the potential to degrade the results of research syntheses and systematic reviews, introduce errors, and compromise the reliability of future research.<sup>3</sup> Scholars and the academic community have recognized the pressing need to develop techniques to distinguish between predatory journals and legitimate ones. However, despite ongoing discussions and efforts, there is no consensus on the criteria to be used for making such a distinction, and this lack of consensus makes the task of identifying predatory journals more difficult, leading to confusion and varied interpretations within the academic

community.<sup>5</sup> Several lists of predatory journals and reports on the topic have been published; however, although valuable, these publications are not devoid of criticism.<sup>2,5,6</sup> The present study reviews such lists and discusses their strengths and weaknesses to gain some insights into their effectiveness and comprehensiveness in identifying predatory journals and to contribute to the ongoing efforts to combat predatory publishing in the academic domain.

## Sting operation

Former *Science* correspondent John Bohannon's article on 13 October 2013, titled 'Who's Afraid of Peer Review?' exposed the predatory practices in OA journals through a sting operation. He prepared a bogus research paper with notable errors that competent peer reviewers can easily identify as faulty and that would make the paper unsuitable for publication. Because submitting the same paper to multiple journals complicates matters, Bohannon tweaked the text to produce several similar papers with identical outcomes. The paper adhered to the following model: 'Molecule X from lichen species Y inhibits the growth of cancer cell Z'. These fabricated papers featured fake authors affiliated with non-existent African institutions.<sup>7</sup>

From January to August 2013, Bohannon submitted about ten papers a week, each tailored to a specific journal from a particular publisher. He targeted journals in pharmaceutical science or cancer biology and later expanded the scope to include those in general medicine, biology, and chemistry. On 4 July 2013, Ocorrafoo Cobange, a biologist affiliated to the Wasee Institute of Medicine in Asmara (a fake author with a fake affiliation), received a positive response through email. The email conveyed acceptance of the manuscript submitted to the

*Journal of Natural Pharmaceuticals* two months earlier. The paper purportedly described the anticancer properties of a chemical derived from lichen. According to Bohannon, the journal ought to have rejected the manuscript promptly. Any reviewer with more than a high-school-level understanding of chemistry and a basic grasp of data analysis would quickly identify the study's inherent deficiencies. Its experimental methodology was so riddled with errors that the results lacked any meaningful significance. 'I know because I wrote the paper', said Bohannon.<sup>7</sup> Throughout the duration of the sting operation, a total of 304 versions of the paper were submitted to various OA journals. Overall, 157 journals (51.6%) accepted the manuscript, oblivious to its critical flaws, and 98 journals (32.2%) rejected it. Of the remaining 49 journals (16.1%), it seemed that 29 were no longer managed by their creators, and editors of the other 20 journals stated that the manuscript was under review. Among the 255 manuscripts that had been subjected to comprehensive editing, 60% of the final versions lacked any discernible evidence of peer review. In the sting operation, a quarter of the targeted journals were from India, with 64 accepting the fake manuscripts and only 15 rejecting them. The United States was next, with 29 acceptances and 26 rejections.<sup>7</sup>

#### *The predatory lists*

Table 1 summarizes the more important features of five lists of predatory journals or publishers, each of which is discussed separately in this section.

#### *Beall's list*

Beall's list was compiled in 2008 by an American librarian, Jeffrey Beall, who decided to create his list after receiving numerous emails inviting him to join editorial boards of different journals. The list

received little attention until the middle of 2010, when it became widely known among academics. Entries in the list were categorized into four groups or sub-lists: suspicious publishers, predatory stand-alone journals, journals that had *hijacked* other legitimate journals,<sup>8</sup> and journals that had falsified their metrics. Researchers are keen to publish in high-impact journals, and obtaining a high-impact factor for a journal is a challenging process that may take years. Hence, predatory publishers exploit researchers' interests and bypass the obstacle of obtaining impact factors by using false metrics.<sup>9</sup> Jeffery Beall's inclusion criteria,<sup>10</sup> together with those of the other lists, are listed in Table 2. Although Beall's list had served scholars and the scientific community, Jeffery Beall was criticized for his decisions on some publishers, such as *Frontiers*. He has been accused of listing journals and publishers based on intuition without solid parameters.<sup>11</sup> Jeffery Beall took down his list in early 2017 without disclosing the exact reason for his decision.<sup>5</sup> Currently, the list is infrequently updated by anonymous successors of Beall.<sup>5</sup>

#### *Cabells' lists*

Cabell Publishing Co. (Cabells), a US company, emerged after the discontinuation of Jeffrey Beall's lists in 2017, aiming to serve as an alternative to it.<sup>6</sup> Cabells' lists are primarily derived from Beall's list and developed in consultation with Beall. This compilation uses a total of 74 criteria, as outlined in version 1.1 of 13 March 2019.<sup>6,12</sup> Beall compiled his list using subjective criteria and some third-party input, but the validity of these criteria varied.<sup>6</sup> In contrast, Cabells' two lists, namely the safelist and the blacklist, were meticulously assembled by a dedicated team responsible for developing and curating the list. Nevertheless, the identities of the team members have never been disclosed to the

Table 1. Five lists of predatory journals or publishers compared

Feature	Beall's	Cabells'	Predatory Reports	Kscien's	AJPC <sup>1</sup>
Year of establishment	2008	2017	Unknown	2020	2023
Responsible entity	Jeffrey Beall	Cabell Publishing Co.	Unknown	Kscien Organization	Li-Xian Chen and colleagues
Management	Original version: Jeffrey Beall; currently anonymous	Anonymous	Anonymous	25 researchers with apparent identity belonging to the Kscien Organization	National Yang Ming Chiao Tung University
Accessibility	Public	On subscription	Public	Public	Public
Number of entries	1163 publishers and 1478 journals (original version); 1326 publishers and 1705 journals (current version)	More than 16,834 journals	2657 journals and 1340 publishers	1268 Publishers, 1640 journals, and 499 Conferences	As a web application, it can only predict based on 833 blacklisted journals and 1213 legitimate journals
Updating	Original version shut down; current version last updated in December 2021	The last known update was in December 2022	Last update in February 2023	Daily-based updating	Based on the 2020 updates to Beall's list and Stop Predatory Journals list
Primary source	Beall's idea	Beall's list	Unknown	Beall's list	Beall's list and Stop Predatory Journals list
Content (listing)	<ul style="list-style-type: none"> <li>• Predatory publishers</li> <li>• Stand-alone journals</li> <li>• Hijacked journals</li> <li>• Misleading metrics</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Journalytics</i></li> <li>• Predatory reports</li> </ul>	<ul style="list-style-type: none"> <li>• Predatory publishers</li> <li>• Predatory journals</li> </ul>	<ul style="list-style-type: none"> <li>• Predatory publishers</li> <li>• Stand-alone journals</li> <li>• Hijacked journals</li> <li>• Misleading metrics</li> <li>• Predatory conferences</li> <li>• Cumulative list (in progress)</li> </ul>	Drawn from automated analysis of website content

<sup>1</sup>Academic Journal Predatory Checking.

public, not even to customers.<sup>6</sup> Furthermore, by the middle of 2020, Cabells' list underwent a rebranding and were renamed *Journalytics* and *Predatory Reports*.<sup>13</sup>

#### *Predatory Reports*

*Predatory Reports* is an anonymous organization, and publicly available information on the organization is limited; even the date of its establishment is unknown.

The organization has published two distinct lists, namely the *Predatory Journal List* and the *Predatory Publisher List*. The organization, as claimed by it, includes volunteer researchers who have experienced the negative impact of predatory publishers and aim to help researchers identify trusted journals and publishers. *Predatory Reports* is committed to offering its resources freely to all users, making published information accessible

Table 2. Comparison of inclusion criteria of three lists of predatory journals or publishers

Misleading action	Lack of transparency	Misconduct	Poor website and insufficient information
<b>Beall's</b>			
<ul style="list-style-type: none"> <li>• Repeated or unknown editors</li> <li>• Suspicious publishing process</li> <li>• Journal name mismatch with scope, and country of origin</li> <li>• Indexing in non-indexing service resources</li> <li>• Comprehensive name or imitating name of a legitimate journal</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of editorial staff or editorial staff with improper information</li> <li>• Unknown article-processing charges (APCs)</li> <li>• Unknown office location</li> </ul>	<ul style="list-style-type: none"> <li>• False claim of being indexed or having an impact factor (IF)</li> <li>• Selecting unqualified reviewers</li> <li>• Plagiarism</li> <li>• Zero rejection</li> <li>• Unauthorized use of copyrighted products</li> <li>• Insufficient peer review</li> </ul>	<ul style="list-style-type: none"> <li>• Improper digital documentation</li> <li>• Free emails</li> <li>• Poor design</li> <li>• Improper contact information</li> <li>• No retraction policy</li> <li>• No DOI and ISSN</li> </ul>
<b>Cabells</b>			
<ul style="list-style-type: none"> <li>• Imitating the name of a legitimate journal</li> <li>• Journal name mismatch with scope and country of origin</li> <li>• Claiming to be a non-profit publisher or journal when, in fact, they are not</li> <li>• Linking to predatory conferences</li> <li>• Encouraging authors to prepay for future publications</li> <li>• Large editorial board with few published papers</li> <li>• The publishing company founder is an editor in all journals related to his/her publisher</li> <li>• Continued emails despite requests to stop</li> <li>• Obscuring information about associated publishing imprints</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of editor or editorial board</li> <li>• Lack of editor or editorial affiliation</li> <li>• The journal claims to be international but lacks geographical diversity among board members</li> <li>• Unknown APCs</li> <li>• Undisclosed or fake office location</li> </ul>	<ul style="list-style-type: none"> <li>• Publishes previously published articles</li> <li>• Articles with similar titles by the same authors published in more than one journal</li> <li>• Adding scholars to the editorial team without their permission and knowledge</li> <li>• Insufficient peer review</li> <li>• Zero rejection</li> <li>• False claim of being indexed or having IF</li> <li>• False claims of academic position and qualifications by the journal's editor or owner</li> <li>• Accept machine-generated or <i>sting</i> papers</li> <li>• Requests to pay APCs before submission</li> <li>• Editors publish papers in their journals</li> <li>• Publish controversial articles to collect citations</li> <li>• Authors publish several times in the same journal or issue</li> <li>• Increasing publication by 75% or more in comparison to the previous year</li> <li>• Website tries to spread viruses or malware</li> </ul>	<ul style="list-style-type: none"> <li>• Giving fake ISSN</li> <li>• Improper digital documentation</li> <li>• No copy editing</li> <li>• No information on how the journal is financially supported</li> <li>• Poor copyright policy</li> <li>• Broken links on website</li> <li>• Poor language quality</li> <li>• No contact information</li> <li>• Journal or publisher not listed in standard periodical directories or in library databases</li> <li>• Lacks subscribers or no one uses the journal</li> <li>• Website prevents web crawlers</li> </ul>

(Continued)

**Table 2. Comparison of inclusion criteria of three lists of predatory journals or publishers (Continued)**

Misleading action	Lack of transparency	Misconduct	Poor website and insufficient information
<b>Kscien's</b>			
Data on journals or publishers is collected by sending <i>sting</i> or fake papers to the journal or the journal is included directly if it meets the stipulated criteria			
<ul style="list-style-type: none"> <li>• Assign editors previously listed in editorial members of predatory journals</li> <li>• Unknown editors</li> <li>• Imitating the name of another legitimate journal</li> <li>• Journal name mismatch with scope</li> <li>• Indexing in non-indexing service resources</li> <li>• Links or associates with other predatory parties</li> <li>• Request to prepay for future publications</li> <li>• Continued spam emails</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of editorial staff or editorial staff with improper information</li> <li>• Undisclosed or fake office location</li> <li>• Unknown APCs</li> </ul>	<ul style="list-style-type: none"> <li>• Accept every piece of writing or <i>sting</i> papers</li> <li>• False claim of being indexed or having IF</li> <li>• Plagiarism</li> <li>• Unauthorized use of copyrighted products</li> <li>• Improper peer review</li> <li>• Publish previously published articles</li> <li>• Adding scholars to the editorial team without their permission and knowledge</li> <li>• False claims of academic position and qualifications by the journal's editor or owner</li> </ul>	<ul style="list-style-type: none"> <li>• Improper digital documentation</li> <li>• Using free emails and associating with several other predatory indicators</li> <li>• Poor design</li> <li>• Improper contact information</li> <li>• No retraction policy</li> <li>• No ISSN or DOI</li> <li>• Broken links on the website and associated with several other predatory indicators</li> <li>• Poor language quality</li> </ul>

*Predatory Reports* gives no information on inclusion criteria, and Academic Journal Predatory Checking uses an automated process based on features and words extracted from 833 blacklisted journals and 1213 legitimate journals to predict whether a journal is likely to be predatory.

and usable by a broad audience. The organization's website, free of any advertisements, is self-funded without external corporate support. The organization asserts that choosing to remain anonymous is driven by concerns about potential legal actions from companies with aggressive practices and clarifies that its intent is not to assert claims based on authoritative positions but to compile and disseminate publicly available information. *Predatory Reports* emphasizes that its website includes referenced reports, enabling individuals to independently assess and form judgments on the published information.<sup>14</sup>

***Academic Journal Predatory Checking, 2023***

The Academic Journal Predatory Checking (AJPC) is a machine-learning-based web application created by a team of researchers

from Fuzhou University of International Studies and Trade and National Yang Ming Chiao Tung University. The system was built using Flask, which is a Python-based web application framework and operates by taking a website's URL supplied by a user and subsequently carrying out a series of steps. These steps include data preprocessing, conversion of website content into word vectors, and the application of a classification model to predict the category of the journal. The results are then sent to the back end of the application and displayed to the user. In essence, AJPC comprises three primary modules: data collection, feature extraction, and model prediction. During the data collection phase, the application focuses on the content of the website or webpages, the URLs for which are supplied by users, and uses the *bag of words* method for extracting

its features as part of natural language preprocessing. This process allows AJPC to make informed predictions on whether the journal is predatory or legitimate.<sup>15</sup> This effort resulted in a unified list of predatory journals compiled by aggregating data from the updated Beall's list and the *Stop Predatory Journals* list. Journals listed in these sources are thoroughly vetted to assess their credibility based on established standards from the Committee on Publication Ethics, long-term observations, and input from a community of anonymous users.<sup>15</sup> Data for legitimate journals are collected from the Berlin Institute of Health's Quest Center website, the Directory of OA Journals (DOAJ), and PubMed Central (PMC) lists.<sup>16</sup>

#### *Kscien's list*

The Kscien Organization is a non-profit organization established by a cohort of young researchers hailing from the Kurdistan region of Iraq. Its primary mission centres on fostering and enhancing research culture in the developing countries and combating predatory journals. After Beall's list was discontinued, Kscien initiated its own list of predatory journals in 2020, overseen by a *predatory list committee* comprising 25 young researchers. This committee is dedicated to keeping the list updated and exposing the evolving tactics and strategies employed by predatory publishers. Similar to Beall's list, Kscien's list initially consisted of the same four distinct lists, namely predatory publishers, predatory stand-alone journals, journals that had hijacked other legitimate journals, and misleading metrics.<sup>4</sup> Identifying predatory journals once relied on Beall's criteria, but recent developments have made it challenging to distinguish them from legitimate ones.<sup>5</sup> Modern predatory journals have recognized that employing the same conventional techniques makes it

increasingly difficult for them to avoid being detected as predatory journals, potentially jeopardizing their business. Consequently, these journals have revised their strategies, eluding detection by creating professional websites, securing coverage by reputable indexing services, gaining sponsorship from legitimate organizations, offering free publication for ulterior motives, fabricating archives, and implementing strict checks on plagiarism.<sup>5</sup> For this reason, Kscien is expanding its scope by introducing two new independent lists, namely the *Conference List* and the *Cumulative List*, alongside the existing four. The Conference List includes predatory conferences, whether operated independently or sponsored by specific organizations. A limitation of Kscien's list was its primary focus on predatory publishers, lacking specific information about the journals they publish, leading to occasional confusion among researchers. The *Cumulative List* aims to separately catalogue journals affiliated to predatory publishers to tackle that issue.<sup>5</sup>

#### *Perspectives on predatory lists*

Open-access journals allow readers easy access to research and authors to share their work with a wider audience than is possible with journals behind paywalls, thus garnering more citations. However, some dishonest publishers exploit open access by creating deceptive websites, tricking inexperienced researchers into paying for quick publication. These publishers use spam emails to solicit submissions and conduct minimal or fraudulent peer reviews, aiming to maximize profits by accepting as many manuscripts as possible.<sup>4,17</sup> Predatory OA publishers have multiplied significantly with the growth of OA publications in recent decades. In 2015, there was extensive editorial discussion on this issue.<sup>18</sup> Given such



concerns about OA publishing, researchers actively study and craft definitions to distinguish predatory OA publishers from non-predatory ones.<sup>2,4,7,13,14</sup> Researchers may encounter predatory journals through email invitations, requiring caution and thorough scrutiny of such requests.<sup>18</sup>

Fortunately, the scientific community has not turned a blind eye to these journals.<sup>18</sup> Many researchers have investigated the problem, conducted sting operations, and created lists to identify predatory OA publishers.<sup>2,4,6,7</sup> According to some scholars, if a journal is considered predatory, its publisher and affiliated journals are also seen as predatory.<sup>2,4</sup> In the literature, researchers often refer to Jeffrey Beall's list to safeguard themselves from predatory journals despite instances of substantial criticism and backlash. Beall's selection criteria have been accused of being subjective and lacking clear parameters. Critics argue that this approach penalizes publications from developing countries for language imperfections and heavily relies on Beall's intuition.<sup>4,19,20</sup>

Richtig and co-workers conducted a thorough analysis of bibliometric data sourced from the ISSN database, PubMed, PMC, Scopus, Crossref, and Web of Science. They also performed a citation analysis by extracting data from Crossref. At the time of their analysis, Beall's list comprised 1289 stand-alone journals and 1162 publishers, covering a total of 21,735 individual journals. Among these, 3206 (38.8%) were based in the United States, 2484 in India (30.0%), and 585 in the United Kingdom (7.1%). Most of these journals were included in the ISSN database (8266), Crossref (5155), PubMed (1139), Scopus (570), DOAJ (224), PMC (135), or Web of Science (50). The results indicated a consistent growth in the number of articles published by journals on Beall's list and the DOAJ from 2011 to 2017. However, in 2018,

there was a decline in that number. The journals in Beall's list recorded higher citation rates when they were indexed in Web of Science or in PMC. The authors argued that the impact of Beall's list in terms of lowering the number of predatory publications is overstated because it did not have a substantial role in such a result.<sup>19</sup> After it was taken down, Beall's list is managed anonymously with irregular updates, the latest being at the end of 2021.<sup>4,20</sup>

Cabells' list emerged as an alternative to Beall's list with a few modifications. Cabells' list encompasses a total of 74 criteria and is acknowledged as the most extensive watchlist. It has received acclaim from scholars.<sup>6,21</sup> However, it has also faced substantial criticism.<sup>6,22,23</sup> Trejo-Pech and co-workers assessed economics journals that had been blacklisted based on Cabells' criteria for minor, moderate, or severe infractions. In their sample, the journals exhibited a mean of 1.9 minor, 3.3 moderate, and 1.9 severe infractions.<sup>24</sup> In another piece of research, Cabells' *Predatory Reports* served as a criterion for labelling a journal as *predatory*, alongside additional considerations such as the volume of spam emails, inclusion in Web of Science, and membership of the Committee on Publication Ethics. The study found that 10 of the 37 publishers examined fell into a grey area: they could neither be classified as *predatory* nor as *validated*.<sup>25</sup> These studies highlight the potential risks of unquestioningly relying on watchlists and their associated criteria. Murphy also observed that some criteria employed by Cabells to identify predatory journals may be more indicative of journal quality than of predatory intention.<sup>23</sup> Da Silva and co-workers carried out a comprehensive study to evaluate the 74 criteria employed by Cabells to identify predatory practices; made many substantial recommendations; and proposed modifications

to the criteria to make the list more effective: they advocated for retaining 7 criteria (9%), discarding 39 (53%), and amending or revising 28 (38%).<sup>6</sup> One key point raised by Da Silva and co-workers was the need for clarity on journals that publish the same paper; the authors argued that this aspect is more closely related to ethical infractions by authors than to those done intentionally by the journal itself. Furthermore, the criteria for peer review, machine-generated or *sting* papers, article-processing charges (APCs), plagiarism, and the criterion related to 'no articles published or missing issues and/or articles' were criticized for being overly non-specific. In addition, the criterion *no policies for digital preservation* faced substantial criticism, as many authentic and legitimate journals, particularly from smaller publishers, may not have explicit policies on digital preservation. Da Silva and co-workers also contended that the criterion about continued emails from journals to solicit manuscripts, despite requests to stop, requires further clarification. Moreover, the use of business addresses from Western countries by journals with a substantial number of articles authored by individuals from developing countries should not be used as an indicator because some legitimate publishers may also have offices in developing countries.<sup>6</sup> Dony and co-workers conducted a comprehensive analysis of Cabells' list, revealing discrepancies in content and criteria.<sup>22</sup> The frequent inclusion of *empty* journals (journals without archives or a single published paper) in Cabells' blacklist raises questions about their selection criteria and commitment to maintaining an updated and valuable list. Empty fraudulent journals, as the name implies, have not caused harm to researchers or the scholarly community yet because their predatory activities have been ineffective so far, although some empty journals may have collected APCs without publishing the articles.<sup>22</sup>

Dony and co-workers observed that among the 822 journals reviewed by Cabells in 2019, a significant number (687, or 83.6%) of them were empty.<sup>22</sup> A deeper understanding of Cabells' methodology can be obtained by taking a holistic view of the number of journals categorized in the blacklist in relation to the number of violations committed by them. Assessing this in the context of Cabells' 74 criteria raises questions about the consistent and meticulous examination of the criteria for each reviewed journal. Dony et al. found that 51.3% of journals on the blacklist had committed seven violations, constituting only 10.9% and 9.46% of Cabells' overall violations described in versions 1.0 and 1.1 of the criteria, respectively.<sup>22</sup> They observed instances of repeated documentation of violations within individual journal entries, where the same violations are recorded more than once for the same journal. They also noted the inclusion of identical journals twice but with different numbers of violations. For example, the journal *Biomedical Engineering Review*, published by KEI Journals, was initially listed on 21 August 2017, with three violations. It was then re-indexed a second time, on 8 February 2018, with seven violations. Similarly, the journal *Advances in Materials Science and Applications*, published by World Academic Publishing, was first indexed on 26 October 2016, with three violations, and subsequently, on 26 June 2017, with four violations.<sup>22</sup> Furthermore, Cabells' list is managed anonymously, and according to Da Silva and co-workers, websites curated anonymously carry some inherent risks associated with potential misclassification, dependence on undisclosed criteria, and placing unwavering trust in individuals whose objectives or biases remain undisclosed.<sup>6</sup>

Beall's list and blog were openly accessible, but access to Cabells' *Predatory Reports*,

covering 16,834 journals, is not free, and pricing details are conspicuously absent from Cabells website.<sup>6</sup> Da Silva and co-workers highlighted that individual researchers, apart from institutions, cannot directly subscribe to Cabells' *Predatory Reports*. This restricts accessibility to those with financial resources or institutional authorization. Additionally, no information is given about any discounts to institutions in low- and middle-income countries. The absence of disclosure about new or updated criteria on the company's website suggests that no revisions, enhancements, or modifications have been made since 2019.<sup>6</sup>

Predatory Reports, as an organization, despite releasing two lists (the Predatory Publisher List and the Predatory Journal List) to target predatory practices, has posted diverse reports on its website, including allegations of questionable practices by several widely recognized publishers. Nonetheless, the organization's lack of transparency in operations invites criticism and scepticism about the validity of its products. Insufficient details about organizers, founding date, or location contribute to these concerns. Additionally, there is a lack of clear criteria for including journals and publishers in their lists, and the frequency of updates to these lists is not indicated. Publicly available email contacts for consultations or discussions are not provided, despite the organization's claim of being open to collaboration.<sup>14</sup>

Kscien's list, like Cabells' list, initially replicated Beall's list. A noteworthy aspect is that Kscien's list, in contrast to its predecessor, originates from a developing country. Given that authors from the developing nations are often targeted by predatory journals and publishers, the organization leveraged this fact to develop its list.<sup>4,5</sup> The primary goal was to offer guidance to authors, particularly

those from the developing countries, on identifying and avoiding the pitfalls of predatory publishing. At its inception, this list closely mirrored Beall's. However, the organization later endeavoured to make it a viable substitute for Beall's list by implementing several modifications. What distinguishes this list from Beall's and Cabells' list is its heavy reliance on the acceptance of *sting* papers or intentionally flawed submissions by journals as a key criterion for inclusion in addition to some traditional indicators used in other lists (Table 1).<sup>5</sup> The list is updated daily and is accessible to scholars, making it a credible alternative to other lists. It is worth noting that Kscien's list is not immune to criticism. The journals or publishers that were replicated from Beall's list did not go through a filtering process based on their acceptance of sting papers; rather, they were included primarily based on traditional indicators. Additionally, the list has not categorized or clearly distinguished the number of journals and publishers that have been included based on the *sting* criterion.<sup>26</sup>

The latest effort to recognize academic predators is AJPC; however, it does suffer from several noteworthy limitations. For example, AJPC relies on sources such as Beall's list, which is no longer being updated and is currently managed by anonymous personnel. The *Stop Predatory Journals* list is currently inaccessible, because its link is broken. Other limitations include lacking comprehensive information on the legitimate and deceptive academic journals and publishers after January 2021. Furthermore, the system may, at times, generate inaccurate assessments relying on inputs extracted from distinct sections within the same journal. The system's evaluations serve as a starting point rather than as infallible conclusions.<sup>27</sup>

The Open Scholarship Initiative (OSI), a global organization, proposed setting up *red light/yellow light* awareness guidelines to supplement current educational resources addressing predatory practices. The list provided by the OSI delineates red-light practices, which are overtly deceptive, and yellow-light practices, which are less evidently deceptive but still raise concerns. Nonetheless, according to the OSI, the responsibility for ensuring the legitimacy of journals in which they choose to publish rests with authors, even if they employ the criteria developed by the OSI. The yellow-light criteria include non-transparent APCs, a deceptive journal title, rapid publication, and a fake or false office address; the common red-light criteria include making false claims, plagiarism, and misconduct.<sup>28</sup> Furthermore, the *Think. Check. Submit.* campaign helps researchers identify reputable journals for their work with a simple checklist supported by scientific organizations and publishers. However, its primary focus is defining trusted journals rather than identifying predatory publishers.<sup>29</sup>

### Conclusion and future perspectives

Each of the several widely used lists for identifying predatory publishing practices and their perpetrators has its shortcomings. Beall's list is currently managed anonymously, with infrequent updates. Cabells' list claims to deploy extensive inclusion criteria, but some of those have come under heavy scrutiny for redundancy and lack of alignment with predatory practices, and it is doubtful whether it is indeed feasible to include all those criteria in assessing a journal for inclusion. Kscien's list has emerged as a promising alternative but requires further enhancement and will benefit from compiling a separate list supported by irrefutable evidence such as

acceptance emails or statistics on journals that have accepted sting papers. As for AJPC, it requires substantial refinement to establish itself as a strong presence in the ongoing battle against predatory publishing, given its inherent limitations in predicting the journals or publishers engaged in predatory practices. Regular updates of such watchlists are crucial to accurately reflect changes in publishing practices. Enhancing the transparency and accessibility of watchlists by providing clear information about organizations that publish such lists and validating inclusion criteria through empirical studies are necessary steps. Holistic assessments of violations by individual journals, along with public consultation and collaboration, can foster trust in the information provided by the watchlists. Quality assurance mechanisms, such as independent audits or peer review, should be instituted to verify the accuracy and reliability of entries in the watchlists. If a journal is considered predatory, its publisher and all other journals published by the publisher should also be considered predatory. These efforts will contribute to the development of more robust mechanisms for safeguarding against predatory journals and publishers. The limitations of such lists should also be openly acknowledged to improve them, make them more effective against predatory journals and publishers, and strengthen the efforts of scholars to maintain the integrity of science and scholarly publishing.

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