Predatory publishing – what medical communicators need to know

Andrea Bucceri,[1] **Peter Hornung**,[2] and **Thomas M. Schindler**[3]

1 Dove Medical Press Limited, London, United Kingdom
2 Norddeutscher Rundfunk, Ressort Investigation, Hamburg, Germany
3 Boehringer Ingelheim Phama, Medical Writing Europe, Germany

Correspondence to:

Thomas M. Schindler
Boehringer Ingelheim Pharma
Biberach, Germany
Thomas.schindler@boehringer-ingelheim.com

Abstract

The rise of "predatory journals", also known as pseudo-scientific journals, poses a risk to the integrity of science and therefore medical communicators need to know about their practices. Upon receipt of a publication fee, predatory journals publish manuscripts regardless of their scientific merit, very often without any peer review, and without providing editorial services. To maximise profit, such journals disregard all aspects of scientific integrity and foster the dissemination of bad and bogus science, lobby materials, and conspiracy theories. Publishing in predatory journals can have dire consequences for authors, their careers, and the reputation of their institutions. Medical communicators can help authors avoid falling prey to predatory publishers.

The problem of predatory journals

You may already have heard about "predatory journals", also known as pseudo-scientific journals whose sole purpose it is to siphon off money from authors. These journals use the open access (OA) model to publish just about anything as long as the authors pay the required fee. The deal is: you pay the money, we publish without looking at the article too closely (if at all). The author gets a publication to add to the curriculum vitae and the publisher gets the money. Unlike genuine scientific journals, predatory journals shortcut the peer-review process entirely or substitute it for a superficial pseudo-review.

Medical communicators may be aware of predatory journals but may have thought of them as a peripheral phenomenon. This perception needs to change.

The number of predatory journals has risen dramatically in recent years and so has the number of articles published in them. Data from the Northern German Broadcasting Network suggest that, globally, some 400,000 scientists from all fields have published in such journals.[1] One company, OMICS, accused of platforming predatory and low-quality journals, prides itself on publishing over 700 journals generating tens of thousands of articles per year.[2,3] The problem has become so big that the US Federal Trade Commission has recently obtained a ruling of $50 million against OMICS for deceptive business practices.[4,5]

Predatory publishers harm science and society as a whole. By publishing bad science and by making it available, they undermine trust in science and scientific progress. Their activities allow bogus work to be quoted and entered into the literature. Bad science as a starting point may lead other scientific investigations astray. Predatory journals take away money from taxpayers or grant-giving charities that was made available as part of research grants. Even worse, when uninformed patients in desperate situations get hold of unfounded, bogus research, they may turn to ineffective and harmful treatments checklist.

The practices of predatory publishers undermine the credibility of science. This will directly affect medical communicators because they are part of the scientific endeavour. Medical communicators make science accessible. If sources are fouled with bogus science, the texts, documents, and summaries based on them will also be bogus and the work of medical communicators will be devalued.

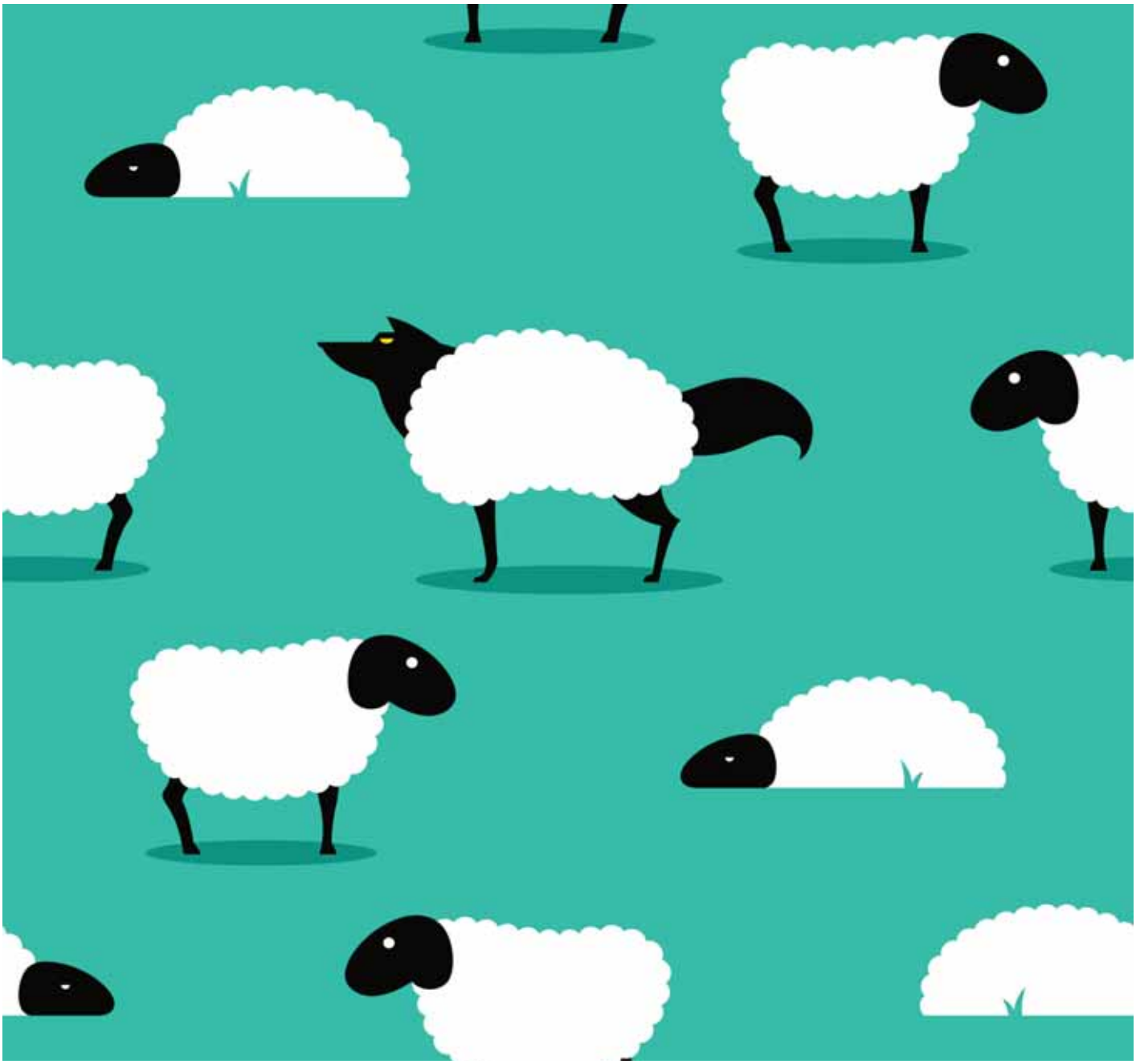
Open access publishing and how the problem came about

OA publishing makes articles freely accessible online upon publication. Contrary to subscription-based publishers, whose published articles are only accessible after payment of a fee or via a subscription, OA publishers cover their publishing costs by charging authors a publication fee upon acceptance of a manuscript.[6] Since it began in the early 2000s, OA publishing has grown to become a well-established publication model, and currently, many funding agencies and international organisations require that the data derived from the research they fund be published in an OA journal.[7-10]

The success of OA publishing in science and medicine has opened the door for a new type of fraud that exploits the need of authors to publish their results for career advancement and to obtain funding. These fraudulent publishers are now widely known as "predatory publishers" because of their aggressive and damaging tactics.[11] To maximise profit, they want to attract and publish as many manuscripts as possible. Articles are published without the usual standards and processes that genuine publishers adhere to.[10-12] Predatory publishing is therefore best defined as the exploitation of the OA-publishing system for the sole purpose of making a profit, while neglecting key aspects of scientific rigour and publication ethics.

Medical communicators may be aware of predatory journals but may have thought of them as a peripheral phenomenon. This perception needs to change.

The number of predatory journals is rising.[13]



Those who publish their good research in predatory journals are unintentionally upgrading the bad and false science also published there.

Their fraudulent activities are fuelled by the need of researchers to publish results to advance their careers and increase their chances to obtain funding.[11,14] In some countries, professional advancement in science and medicine is directly linked to the publication record through a point system.[15] Many universities and research institutions require that PhD students publish their work in a journal – regardless of its quality – before awarding a degree.

To mislead authors, some predatory journals carry names that are similar or even identical to well-known established journals. This is a form of hijacking because these journals aim to divert submissions intended for genuine scientific journals. By misleading authors, they seek to get hold of scientifically sound content that they can then use to obscure the nature of their business.[16,17]

The increasing number of predatory journals has led to an increase in the number of articles published in these journals and, in turn, possibly even the citation of their articles in policy documents and medical guidelines. Because most predatory journals do not perform a proper peer review, they serve as a venue for badly conducted science. It is therefore not surprising that conspiracy theorists, such as anti-vaxxers and climate change deniers, use these outlets to publish.[18,19] Some predatory publishers do

perform a pseudo peer-review process, after which they accept manuscripts regardless of the recommendations of the peer reviewers.[20,21]

Although the traditional peer-review system has its flaws, it remains the best way to evaluate scientific content. It has served its purpose quite well since its systematic implementation in the 1970s. One possible way forward is implementing "open peer review". This ensures full transparency to the reader as both the names and affiliations of the reviewers and their comments are available online.[22]

The dangers of using predatory journals for authors and their institutions

The opportunity to publish anything in predatory journals is tempting for some researchers who want to publish irrelevant or inconclusive results for the sake of career advancement.[13] However, this carries some long-term risks and authors should be aware of them.

Publications in predatory journals harm science and medicine. Without the scrutiny of a proper peer review, it is not possible to distinguish between good, mediocre, and bad science. Good science published in a predatory journal becomes contaminated and devalued. It loses its credibility because of the context in which it is placed. Question arise: Was the article published in a predatory journal because it did not meet the standards of a genuine journal? Was the authors' priority not scientific integrity but speed of publication?

Researchers who have submitted their work accidentally to a predatory journal may want to withdraw it upon realisation. This, however, is often not possible or only permitted after paying an additional fee. Scholars who publish their research in a predatory journal waste the time, effort, and money spent conducting it. Public money or third-party funds are wasted and are no longer available for genuine research. If scientists are aware of the predatory nature of a journal and nevertheless publish their work there, they may even be liable to prosecution. They are liable for using funds on dubious journals and by incurring expenses for travelling to scientifically worthless conferences offered by some predatory publishers. Research appearing in journals without scientific value ultimately becomes worthless to the authors and to the scientific community.

> Most predatory journals do not perform a proper peer review.

Authors cannot rely in any way on predatory publishers. Predatory journals are dishonest in regard to peer review, they hide the true costs, and they do not abide by rules and agreements. Authors who have submitted a manuscript to a predatory journal but want to withdraw it later will often not succeed because the journal may want to upgrade its reputation by keeping it. Authors who are denied withdrawing their work have essentially lost the opportunity to publish in a genuine journal because this would constitute a second publication of the same content.

It is important for authors that their research is permanently available to the scientific community. With predatory publishers, however, permanent archiving and accessibility are not ensured. Should a dubious publisher go out of business, the articles published by them may no longer be available. In addition, there have been cases where articles were simply republished under different author names and with slightly different titles without consent of the initial authors. Predatory publishers do this to enlarge their article database.

Those who publish their good research in predatory journals are unintentionally upgrading the bad and false science also published there. Predatory publishers use the names of well-known scientists for their marketing purposes. By doing this, they appear genuine, which allows them to obscure their business model. When using predatory journals, serious scientists bring

Table 1: Potential consequences of publishing in predatory journals for individual researchers

Researchers' work appears in questionable environment. Their work is made available next to mediocre, bad, or even fake science articles.
The researcher's name and affiliations may be used for advertising by the predatory publisher without their knowledge or consent.
The researcher's name is permanently linked with the predatory publisher and its website, which may have negative consequences for their academic career. There is no assurance of permanent archiving, traceability, or accessibility of the article.
Papers are not included in reputable databases because some databases actively remove references to articles published in predatory journals.
Researchers cannot prevent their articles from being re-used by predatory publishers to enhance their database or for advertising.
Researchers may have to pay additional fees, particularly if they request withdrawal of the manuscript.
Public and third-party funds are wasted, resulting in potential liability.
Enforcing rights may be difficult because predatory publishers hide their location to avoid legal action. Even when their location is known, most predatory publishers fall under other jurisdictions than the authors', complicating legal action.

Table 2. Checklist for identifying predatory journals

Item	Details
Overall	Look at the totality of the evidence; failure in complying with one item does not necessarily indicate a predatory journal.
Membership in a reputable publishing association	Absence of membership in reputable open access association such as the Open Access Scholarly Publishers Association (https://oaspa.org/), World Association of Medical Editors (http://www.wame.org), Committee on Publication Ethics (https://publicationethics.org/), and Directory of Open Access Journals (https://doaj.org/) is a sign of likely being a predatory journal.
Website design and use of English language	Spelling and grammar mistakes or poor web design are indicative of predatory journals.
Transparency about fees	Not clearly showing fees on the journal website is a sign of a likely predatory journal.
Editorial Board Members	Not being able to verify the identity the Editorial Board members with the information provided by the journal is a sign of a likely predatory journal.
Editorial office contact details	Not being able to verify a publisher's location, phone numbers, or email address is a sign of a predatory journal.
Scientific quality of articles	If the articles published by the journal are not well written, if you have not heard about the other authors that publish in the journal, and if you have never heard of the institutions mentioned, this could indicate a predatory journal.
Submission process	Providing only an email address as a method of submitting manuscripts is a sign of a likely predatory journal, as opposed to using a recognised submission system such as ScholarOne.
Digital Archiving	Not participating in a recognised digital archiving system, such as CLOCKSS (https://clockss.org/), is a sign of likely being a predatory journal.
Indexing	Not being included in a recognised index, such as PubMed Central is a sign of likely being a predatory journal (http://www.ncbi.nlm.nih.gov/nlmcatalog?term=journalspmc).
Journal Impact Factor	Not being able to verify that a claimed Impact Factor can be found in the Journal Citation Report website (https://clarivate.com/products/journal-citation-reports/)[26] is a sign of likely being a predatory journal.
Adherence to ethical standards	Absence of policies dealing with the disclosure of conflicts of interest and absence of statements on copyright, intellectual property, or publishing licences are indicative of a predatory journal

themselves down to the level of researchers of dubious reputation, wannabe scientists, conspiracy theorists, and lobbyists. For example, climate change sceptics are publishing papers rejected by serious journals in predatory journals.[19] Unethical companies publish pseudo-studies in predatory journals to use the apparently genuine scientific reference to market their ineffective and potentially dangerous treatments. Anti-vaxxers spread their theses ("Vaccinations cause autism!") in predatory journals.

Researchers risk their reputations and careers, as well as the reputation of their institutes when they publish in predatory journals, even when they do not realise what they were doing. Researchers who did not know about the predatory nature of a journal, expose their ignorance and naivety. If they consciously use predatory journals, they might be accused of deliberate deception. Researchers should not count on the possibility that their publications in predatory journals will disappear from the internet at some point. Throughout their career, they will have the stigma of having used such an outlet; even years later, references to articles published in predatory journals can be found by commonly used search engines.

Should the growth of predatory journals continue unabated, science may become viewed with suspicion. If the public, politicians, and the media can no longer tell good from bad science, its impact on society will be lost. This loss of trust in science may negatively influence funding decisions and the availability of an adequate research infrastructure.

How to avoid predatory journals

Although there is no golden rule for identifying a predatory journal, there are certain common characteristics.[10-12] One can avoid falling prey to predatory publishers by checking some free online checklists such as the Think.Check.

Submit checklist[23] and the Centre for Journalology at The Ottawa Hospital checklist.[24]

Critical items are summarised in Table 2. Taken individually, the items listed do not necessarily prove that a journal is predatory. However, if several items do not apply, the likelihood of dealing with a predatory journal is high.

Because fraudulent publishers tend not to invest in website design or English language proofreading, their websites and emails often contain spelling mistakes, poor grammar, and poor design elements, such as low-resolution logos or images or overlapping text.

Names of editorial board members of predatory journals are sometimes entirely made up. They may also use names of genuine healthcare professionals without their knowledge or consent. Therefore, if the identity of the editorial board members cannot be verified, this may indicate the predatory nature of a journal.

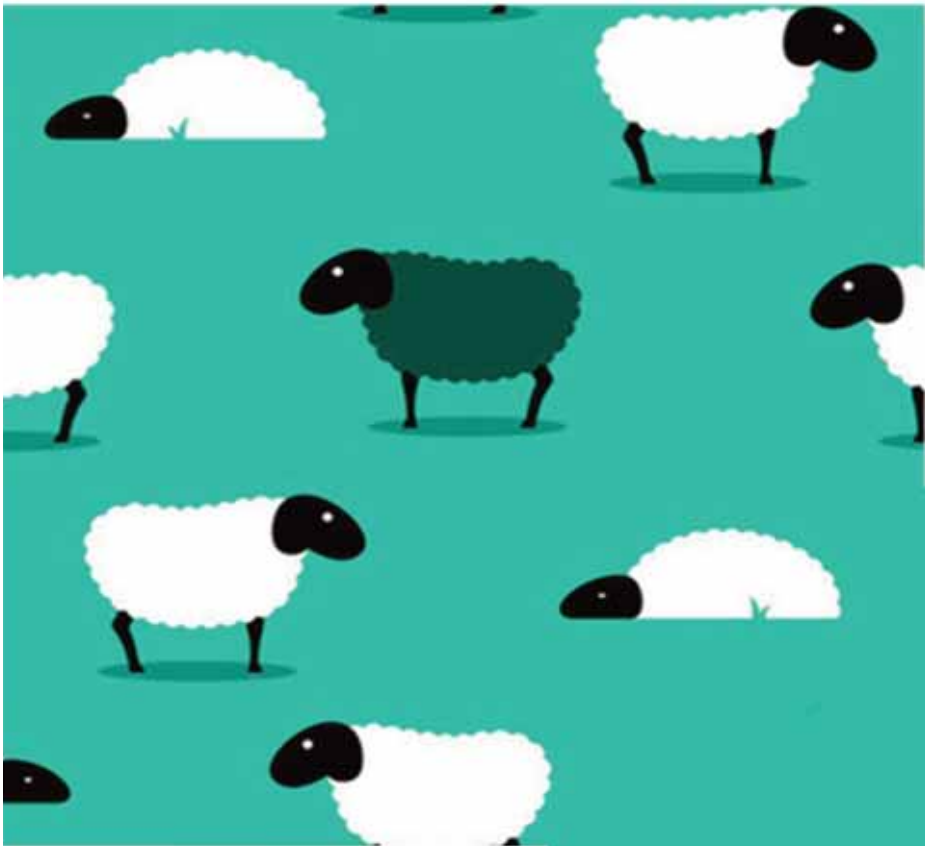
Few genuine science publishers do not yet use a recognised submission system such as ScholarOne. Therefore, if a journal asks authors to send their manuscript simply to an email address, the alarm bells should start ringing.

Faking impact factors and indexing features is very common among predatory journals. Because of this, it is advisable to check their claims in the Journal Citation Report[26] and PubMed Central.

Lack of commitment to digitally archiving the published articles in a safe repository is also common among predatory publishers. A reputable journal will likely participate in a recognised digital archiving system, such as CLOCKSS (https://clockss.org/).

Finally, being a member of an international OA organisation such as the Open Access Scholarly Publishers Association (https://oaspa.org/) or the Committee on Publication Ethics (https://publicationethics.org/) is a good sign that the journal is not predatory because the associations carefully scrutinise journals before admitting them as members.[25]

Few genuine science publishers do not yet use a recognised submission system such as ScholarOne. Therefore, if a journal asks authors to send their manuscript simply to an email address, the alarm bells should start ringing.



Conclusion

Medical communicators need to know about all aspects of predatory publishing because it not only undermines the credibility of science but may also have serious consequences for authors, their careers, and their institutions. Medical communicators are often asked to support selecting an appropriate journal, therefore they are in a key position to help authors avoid falling prey to predatory publishers.

Disclaimers

The opinions expressed in this article are the author's own and not necessarily shared by their employers or EMWA.

Conflicts of interest

The authors declare no conflicts of interest.

References

1. Dossier: Das Geschäft mit der Wissenschaft, Norddeutscher Rundfunk, NDR. 2019 [cited 2019 Jun 14]. Available from: https://www.ndr.de/nachrichten/investigation/Dossier-Das-Geschaeft-mit-der-Wissenschaft,fakesciencedossier100.html.
2. Gastroenterology & Endoscopy News, Wysong P. Beware predatory journals – more than 40 target gastroenterology. 15 April 2019 [cited 2019 Apr 15]. Available from: https://www.gastroendonews.com/In-the-News/Article/04-19/Beware-Predatory-Journals%E2%80%94-More-Than-40-Target-Gastroenterology/54558.
3. Bauer P, Krause T, Kropshofer K, Langhans K, Wagner L. Das Scheingeschäft. Süddeutsche Zeitung Magazin. 11 July 2018 [cited 2019 Jun 1]. Available from: https://projekte.sueddeutsche.de/artikel/wissen/angriff-auf-die-wissenschaft-e398250/?reduced=true.

4. Kolata G. The price for 'predatory' publishing? $50 million. New York Times. 3 April 2019 [cited 2019 Jun 1]. Available from: https://www.nytimes.com/2019/04/03/science/predatory-journals-ftc-omics.html.
5. Dyer O. US consumer agency wins $50m order against predatory publisher OMICS. BMJ. 2019;365:l1639.
6. Laakso M, Welling P, Bukvova H, Nyman L, Björk B-C, Hedlund T. The development of open access journal publishing from 1993 to 2009. PLoS ONE. 2011;6(6): e20961.
7. Rabesandratana T. European funders detail their open-access plan. Science 2018;362(6418):983.
8. Schiltz M. Science without publication paywalls: cOAlition S for the realisation of full and immediate Open Access. PLoS Biol. 2018 Sep 4;16(9):e3000031.
9. Hunter P. A DEAL for open access. EMBO Rep. 2018;19, e46317.
10. Baker EF, Iserson KV, Aswegan AL, Larkin GL, Derse AR, Kraus CK and the American College of Emergency Physicians Ethics Committee. Open access medical journals: promise, perils, and pitfalls. Acad Med. 2019;94(5):634–9.
11. Shamseer L, Moher D, Maduekwe O, et al. Potential predatory and legitimate biomedical journals: can you tell the difference? A cross-sectional comparison. BMC Med. 2017;15:28.
12. Clark J, Smith R. Firm action needed on predatory journals. BMJ 2015;350:h210.
13. Shen C, Bjork B-C. "Predatory" open access: A longitudinal study of article volumes and market characteristics. BMC Med. 2015;13:230.
14. Manca A, Martinez G, Cugusi L, Dragone D, Dvir Z, Deriu F. The surge of predatory open-access in neurosciences and neurology. Neuroscience. 2017 Jun 14; 353:166–73.
15. Bolshete P. Analysis of thirteen predatory publishers: a trap for eager-to-publish researchers, Current Med Res Opin. 2018;34(1):157–62.
16. Butler D. Sham journals scam authors. Nature. 2013;495(7442):421–2.
17. Dadkhah M, Borchardt G. Hijacked journals: an emerging challenge for scholarly publishing. Aesth Surg J. 2016;36(6):739–41.
18. Skeptical Raptor. Another anti-vaccine article – bad journal, bad data. 1 Feb 2017 [cited 2019 June 20]. Available from: https://www.skepticalraptor.com/skepticalraptorblog.php/another-anti-vaccine-article-bad-journal-bad-data/.
19. Readfearn G. Murky world of 'science' journals a new frontier for climate deniers. The Guardian. 28 Jan 2018 [cited 2019 Jun 20]. Available from: https://www.theguardian.com/environment/planet-oz/2018/jan/24/murky-world-of-science-journals-a-new-frontier-for-climate-deniers.
20. Edie AH, Conklin JL. Avoiding predatory journals: quick peer review processes too good to be true. Nurs Forum. 2019 Jul;54(3):336–9.
21. Fernandez-Llimos F. Open access, predatory publishing and peer-review. Pharm Pract (Granada). 2014;12(1):427.
22. Johnson R, Watkinson A, Mabe M. The STM Report - An overview of scientific and scholarly publishing 2018. Oxford (UK): International Association of Scientific, Technical and Medical Publishers. Available from https://www.stm-assoc.org/2018_10v04_STM_Report_2018.pdf.
23. Think.Check.Submit Checklist, choose the right journal for your research. 2019 [cited 2019 Jun 20] Available from: https://thinkchecksubmit.org/.
24. The Ottawa Hospital Research Institute, Centre for Journalology. How to detect a potential predatory/deceptive journal. [cited 18 August 2019]. Available from: http://www.ohri.ca/journalology/docs/How%20to%20detect%20a%20predatory%20checklist.pdf.
25. Laine C, Winker MA. Identifying predatory or pseudo-journals. Biochem Med (Zagreb). 2017;27(2):285-291.
26. Clarivate Analytics. Journal Citation Reports 2018. 2019 [cited 2019 Jun 20]. Available from: https://clarivate.com/blog/science-research-connect/the-2018-jcr-release-is-here/.

Author information

Andrea Bucceri, PhD, has spent over 10 years in scientific research in Italy, The Netherlands, and Switzerland, where he earned a PhD in Molecular Genetics at the ETH Zurich. After a postdoc, he moved to Open Access Scientific Publishing. For a few years, he worked in medical communications for pharmaceutical companies before becoming Publication Development Manager at Dove Medical Press (now part of Taylor & Francis Group, an Informa Business).

Peter Hornung, MA, studied political science and history in Vienna and Regensburg, as well as journalism in Mainz. He worked as an editor, presenter and reporter at the Hessischer Rundfunk (radio), before becoming a correspondent and bureau chief of ARD German Broadcasting in Prague, Czech Republic. He is currently an editor and investigative reporter at Norddeutscher Rundfunk and a research lecturer at the Academy for Journalism in Hamburg.

Thomas. M. Schindler, PhD, studied biology and linguistics in Germany and the UK, then obtained a PhD in molecular physiology and continued with postdoctoral training in the UK. Thereafter he went into publishing and became a popular science editor. He turned to medical writing and has now gained some 22 years of experience in both medical affairs and regulatory medical writing. He is currently the head of the European Medical Writing Group at Boehringer Ingelheim Pharma.