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Intellectual Phishing, Hidden Conflicts of Interest and Hidden Data: New Risks of Preprints

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Abstract

Preprints were originally destined to put forward a first version of a version of a paper that was prepared, as best and complete as possible, by the authors, but for which they wanted intellectual input from the community prior to submission to a regular peer reviewed journal. Although arXiv has led the way with physics and mathematics, bioRxiv became popular for the biological sciences. Since the beginning of 2016, after a preprint promotional campaign by ASAPbio, the popularity of preprints has been increasing, as has the number of preprint servers. Three fairly recent (March and May of 2017) preprints published in bioRxiv test the limits and uses of preprints, and bring with them a whole set of ethical questions. The three reprints were published primarily by members of the publishing elite, leaders of ethical bodies and think tanks aiming to establish new rules or guidelines, to address several issues in research integrity and ethics. However, in at least two cases, the texts are in a fairly crude state of intellectual development, and the authors are explicitly using bioRxiv to "fish" for ideas from peers and the public. It is unclear how any individual / group who contributes intellectually to such preprints will be acknowledged, if at all, and the risks of ghost authorship exist with this new exploratory model of preprints. In addition, the use of preprints to accommodate the intellectual ideas of others, while taking all the credit, may be a new form of academic scam in publishing, "intellectual phishing." Risks to the integrity of publishing are already high, and if preprints are seen as being abused in any way, then this may reduce trust in this new academic model. The risk is compounded by the discovery of multiple hidden conflicts of interest in these and one other preprint.

Keywords: arXiv; ASAPbio; bioRxiv; DOI; Hidden Conflicts of Interest; Peer Review; Preprint Server; Quality Control; Retraction Watch.

Preprints in a Nut-shell

Preprints, which are a subset of the grey literature (Lawrence, 2015), have existed since 1991 when arXiv (arXiv, 2017), run by Cornell University Library (Ithaca, New York), served primarily the physics and mathematics communities. Representing a pre-submission version of a scientific

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paper, but for which the authors were seeking input regarding possible errors in their methodology, or formulae, arXiv found a comfortable niche among the mathematics and physics communities, expanding more recently to accommodate a wider spectrum of scientific fields, emboldened by three-year funding (US$ 445,000) from the Alfred P. Sloan Foundation (Alfred P. Sloan Foundation, 2017). bioRxiv (bioRxiv, 2017a) emerged as a preprint server for the biological sciences, and by the end of 2016, represented the greatest proportion of preprints among the most well-known preprint servers (Fig. 1), confirmed by Kaiser (2017).

Biologists have more recently begun to warm to the idea of preprints because the publishing process takes so much time, causing them distress and frustration at not having their important results visible to the public for so long (Teixeira da Silva, & Dobránszki, 2017). Consequently, in order to plant an intellectual flag in peer or academic territory, a preprint can serve two purposes for academics: a) it provides documented proof, with an accompanying digital object identifier (DOI), that gives a time stamp on intellectual ideas, preventing them from being plagiarized or scooped, at least in theory; b) it serves to attract feedback and readership even before it reaches a final stage, in some cases, possibly months or even years later, allowing for authors to reap benefits of having their intellectual ideas in the public domain early. Related to preprints, three important trends have started to take place.

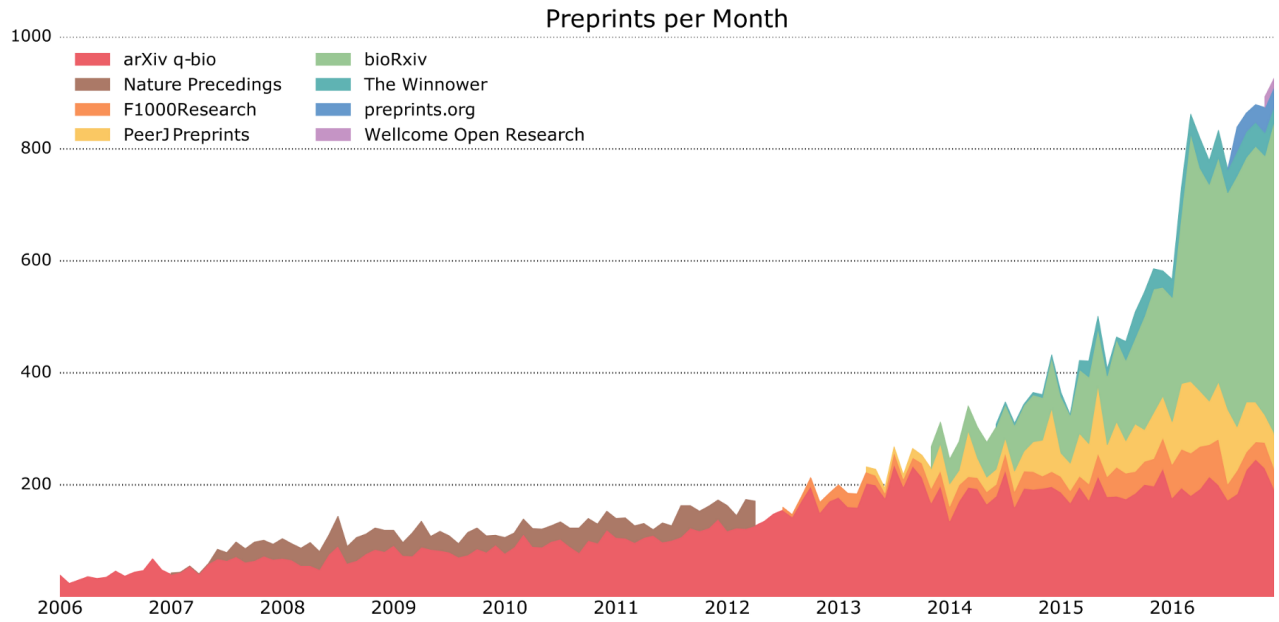

Fig. 1. Preprints per Month *Graph*

(Fig. 1) *biorXiv, by the end of 2016, represented the largest proportion of preprints, overtaking arXiv, which has been in existence since 1991. Graph courtesy of Jordan Anaya and PrePubMed (PrePubMed, 2017).*

Firstly, the number of preprint servers has started to increase, in essence triggering a "preprint war" (Teixeira da Silva, 2017a). Secondly, preprint servers like bioRxiv have started to received funding from philanthropic groups such as the Chan Zuckerberg Initiative (Cold Spring Harbor Laboratory, 2017). Thirdly, funding groups are creating their own preprint servers, such as the Wellcome Trust's Wellcome Open Research (Wellcome Trust, 2017), and also the UK Medical Research Council, HHMI and NIH (Kaiser, 2017), which serve as exclusive platforms to show-case early research results by research groups that they fund. So, there is clearly an increasing trend towards preprints, at least in the biomedical sciences, and some positive aspects that complement traditional peer review. However, like all scams that exist in scholarly publishing, new portals of intellectual ideas represent new unchartered risks for academics. This paper highlights how four fairly recent preprints published at bioRxiv may represent a new unsettling trend in the world of preprints, and evidence is provided to support these claims. In general, preprints should not be

cited, except where to critique them, as has been done in this paper, because they represent crude forms of unscrutinized scholarly information (Teixeira da Silva, 2017b).

bioRxiv Suddenly Changes Policy, Without Warning

bioRxiv, until about May 20, 2017, accepted only three types of articles: new, confirmatory or contradictory (bioRxiv, 2017b), stating "Articles in bioRxiv are categorized as *New Results*, *Confirmatory Results*, or *Contradictory Results*. *New Results* describe an advance in a field. *Confirmatory Results* largely replicate and confirm previously published work, whereas *Contradictory Results* largely replicate experimental approaches used in previously published work but the results contradict and/or do not support it." The latter two categories most likely exist as a way to improve reproducibility in science. Regarding the content of preprints that were permissible at bioRxiv, the FAQ page (bioRxiv, 2017c) stated, also until about May 20, 2017, that "bioRxiv does not permit the posting of news, product advertisements, teaching materials, policy statements, theses, dissertations, student projects, recipes, and simple protocols." However, at or near this date (the precise date is unclear because bioRxiv does not date its changes to policies, there exists no public version of record, and because bioRxiv consistently fails to offer public clarification), the scope of submissions suddenly changed, without warning to the public or public notice (see B in Fig. 2).

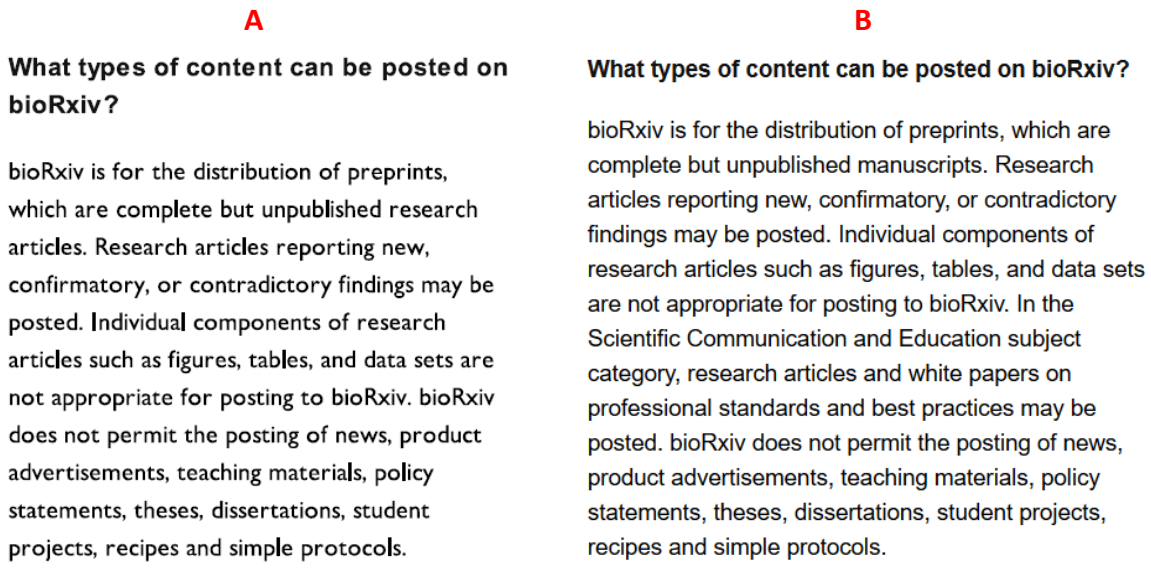

Fig. 2. Version of record for the bioRxiv FAQ page

(A) April 23, 2017; (B) at or near May 20, 2017. (A) is courtesy of Klaas Van Dijk, who provided the screen-shot in PDF format.

In that new policy, bioRxiv suddenly allowed, in "the Scientific Communication and Education subject category, research articles and white papers on professional standards and best practices." Although clearly announced and explained changes in policies are positive academic aspects, this sudden and unannounced change in policies at and by bioRxiv sets a dangerous precedent for several reasons. Firstly, it indicates that bioRxiv, which is now the likely leading preprint server for the biomedical sciences, at least in terms of volume, can manipulate any aspect of its policies at any time, without prior warning to academics, thus potentially affecting them negatively. In essence, being a privately owned preprint server, its management can make any changes they wish, but drastic and radical changes without community input or approval diminishes the positive image of this preprint server and trust in its leadership and management. This is because such decisions are made opaquely. It also indicates that those authors who may have submitted, until about May 20, 2017, preprints related to policy or "professional standards and best practices" may have been disadvantaged, and thus victimized by bioRxiv, deepening the notion that at the end of the day, these new experimental publishing models may be serving simply

to further erode authors' rights or victimize them because the wider academic public is increasingly excluded from basic academic decisions that affect them (Al-Khatib, & Teixeira da Silva, 2017).

In an age of academic publishing where many fake aspects are threatening the basic fabric of scholarly communication and information integrity (Teixeira da Silva, 2017c), openness and transparency should be the most important aspects required from bioRxiv regarding their policies, including dating and documenting different versions of record, as equally as any new preprint version that is published is assigned a new version number, and sometimes a new DOI. In this case, as is argued next, the policies regarding permissible preprint content may have been manipulated to accommodate for powerful vested interests in the world of publishing and research ethics. This potentially dishonest change in policy, including its highly suspicious timing, achieves the inverse of what preprints are meant to achieve in publishing, i.e., increasing honesty, openness and transparency, to increase trust.

Three Policy-related bioRxiv Preprints

Three preprints were published at bioRxiv that caught the attention of social media and those who take interest in issues related to preprints: Barbour et al. (2017a), McNutt et al. (2017), Wager et al. (2017). In the Barbour et al. (2017a) preprint, the authors, who stem from the Committee on Publication Ethics (COPE), BMJ (British Medical Journal), Crossref and BioMed Central (BMC), proposed that retractions and corrections should be replaced by versioning of manuscripts, like preprints, in which each version of an academic paper receives an updated version, with an independent DOI, as occurs during open peer review at f1000Research (f1000Research, 2017). Although the authors correctly conclude, mainly as a result of weak and short-sighted COPE guidelines to date and poor implementation by COPE members (Teixeira da Silva, 2017d, 2017e), that "[o]ur current system of correcting research post publication is failing both ideologically and practically", the ideas put forward by Barbour et al. (2017a) are crude, and the authors are clearly seeking input from the public and academics to build their paper and fortify their ideas.

Many statements are unsupported by literature, most of the text serves as crude advertising for COPE and Crossref, even though, quite misleadingly, versions 1 to 4 of the preprint (published between March 20, 2017 and March 24, 2017) claim that "this document does not necessarily represent the views of the organizations listed here", while stating, after the author list "on behalf of COPE working group", an indistinct group that could not be clearly identified on any COPE page, even though COPE claims to have multiple "working groups", noting that "Several subcommittees and working groups have also been established" (COPE, 2017a). Even though funding and competing interests and/or conflicts of interest (COIs) were visibly missing from version 1, they were incorporated into version 4 following a public outcry on social media. The Barbour et al. (2017a) preprint thus represents the first case of where policy makers and powerful publishing industry leaders are seeking preprint servers, in this case, bioRxiv, to launch "crude" ideas, hoping to trawl public input and feedback, i.e., intellectual phishing. How each and every contributor will be acknowledged, if at all, will be a new ethical challenge for preprints to test whether preprints are stimulating ghost or guest authorship, especially the former, where intellectual input from known or anonymous public sources are not suitably acknowledged or rewarded for their input. The risk already exists as the Twitter feed and comments section related to this set of four versions of this preprint already include many suggestions that have not yet been publicly acknowledged, although, admittedly, their ideas appear to not have yet been fused into the next version of the preprint. Evidence exits that not all contributors were duly acknowledged (Barbour et al., 2017b), validating the concerns about potential intellectual phishing and thus ethical concerns in an as-yet untested field of publishing ethics.

The Wager et al. (2017) preprint tackles the important issue of what would be the best practices to follow, in cases of potential misconduct, between universities and journal editors. This preprint, which includes several executives of important publishing organizations, including EMBO, The Lancet, Wiley and COPE, among others, is much clearer and well written relative to the Barbour et al. (2017a) preprint. However, as one example, one of the authors, Ksenija Baždarić, is the Chief Editor of *European Science Editing* (ESE, 2017), the official journal of the European Association of Science Editors, a hidden COI not mentioned in the COI statement of this preprint. Also related to Baždarić and the first author Wager, a very serious COI is missing: Elizabeth Wager is one of the editors-in-chief of a BMC-published journal, *Research Integrity and Peer Review*,

where Ksenija Baždarić serves as an editor (RIPR, 2017) (Fig. 3A). At least three other co-authors of the Wager et al. (2017) preprint have failed to declare COIs. Sabine Kleinert, who is a Senior Executive Editor at *The Lancet* (Lancet, 2017), is also an editor of *RIPR*. Chris Graf, who works for Wiley Blackwell (where Wager was also previously employed), is a COPE Trustee and the COPE co-Vice Chair (COPE, 2017b). Incidentally, Elizabeth Moylan, who works for BMC, and who is an editor at *RIPR*, is a co-author of the Barbour et al. (2017a) preprint. Finally, Bernd Pulverer, the *EMBO Journal* EIC (EMBO Journal, 2017), also serves on the Advisory Board of bioRxiv (bioRxiv, 2017b) (Fig. 3B), a direct academic COI, suggesting that processing and approval of this preprint, despite its flaws, may have been selected for non-academic reasons, possibly for personal and professional links.

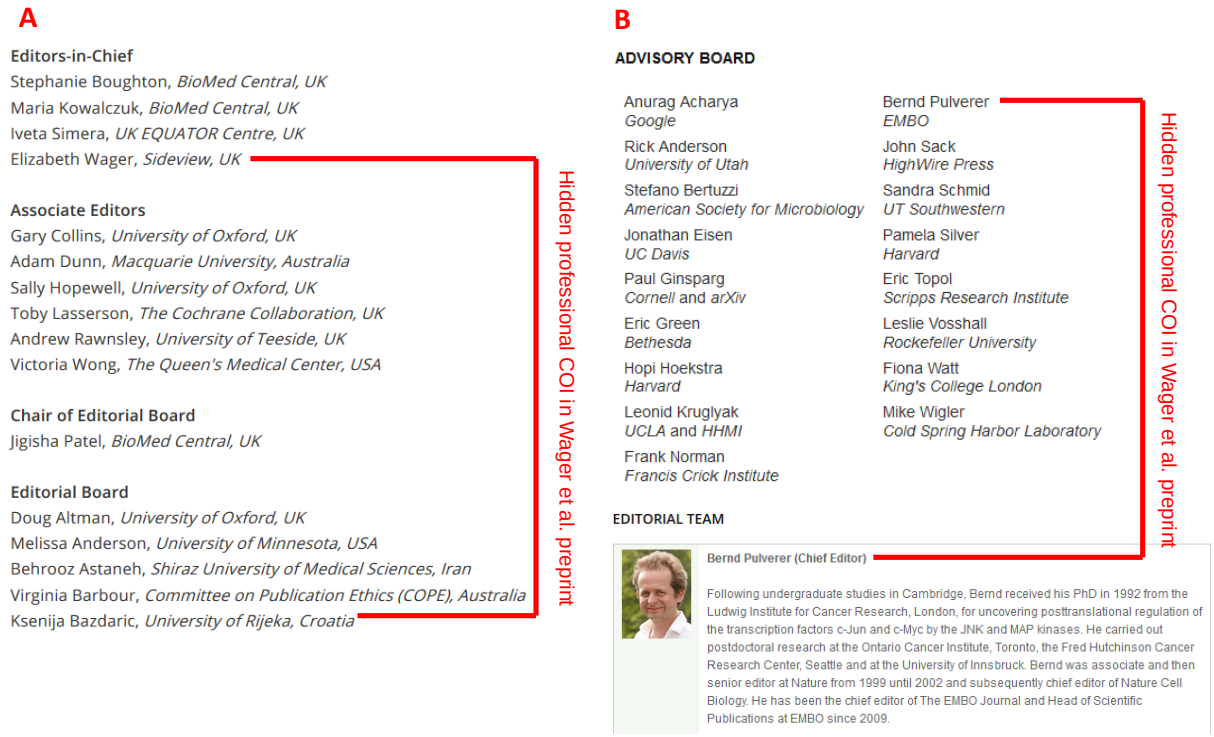

Fig. 3. Hidden conflict of interest in the Wager et al. (2017) preprint

(A) Both Elizabeth Wager and Ksenija Baždarić serve as editor-in-chief and editor of BMC-published Research Integrity and Peer Review. (B) Bernd Pulverer, an author of the Wager et al. (2017) preprint, is the Chief Editor of EMBO Journal and also serves on the Advisory Board of bioRxiv, the preprint server where this preprint was published within 24 hours. Sources: (A) RIPR (2017); (B) (bioRxiv, 2017b) (top); EMBO Journal (2017) (bottom).

Thus, a new risk in preprints, as exemplified by these preprints, are hidden professional COIs. The vast majority of the Wager et al. (2017) preprint discusses broad concepts, many of which are not substantiated by the published literature, but which the authors were hoping to enrich with ideas from the public and from closed circle meetings at the 5th World Conference on Research Integrity (5th WCRI) (WCRI, 2017a), which received some snide critique – with some merit – on Twitter by a science watchdog (Teixeira da Silva, 2016), Leonid Schneider, who was found guilty of libel in two German courts earlier in 2017. It is unclear how a wide range of ideas and proposals received from the public and at the 5th WCRI will be acknowledged, and the risks of intellectual phishing are high, as exists for the Barbour et al. (2017a) preprint. Notice carefully how the conference proceedings of the 5th WCRI include what appears to be a guest opportunity to publish in *RIPR* (WCRI, 2017b). Readers should also note that the proceedings of the 4th WCRI were published in *RIPR* (RIPR, 2015), and unlike all other papers published in *RIPR*, which undergo open peer review, no such peer reports exist for the 4th WCRI proceedings, i.e., an apparent case of publishing ethical exceptionalism (Teixeira da Silva, 2017f).

The McNutt et al. (2017) preprint, which includes some very powerful individuals in publishing ethics and the publishing industry generally, focuses on "transparency in authors' contributions and responsibilities." Despite this, there is no formal COI statement, and only a small single sentence appears in tiny font on the front page "Several authors' employers are ORCID member organizations. Veronique Kiermer serves as Chair of the ORCID Board of Directors in a volunteer capacity." Emilie Marcus, for example, the CEO of Cell Press, also oversees Cell Press' Sneak Peek (Cell Press, 2017), in which only academics who registered at Mendeley can access information about manuscripts that are in review in Elsevier-hosted Cell Press journals. Sneak Peek serves as a type of Cell Press-exclusive preprint service that also received considerable stoning on social media, for example by Michael Eisen who stated in a Tweet ".@CellCellPress is cynically trying to kill @biorxivpreprint and undermine the public preprint movement - DO NOT FALL FOR THIS - #ASAPBio". Michael Eisen's brother, Jonathan Eisen, serves on the Advisory board of biorXiv (Fig. 3B). Critique was also offered at the same Sneak Peek blog by Boris Barbour, whose PubPeer is funded by the Laura and John Arnold Foundation (LJAF), which also funds Retraction Watch's parent organization, the Center for Scientific Integrity Inc. (CSI), where Wager (of the Wager et al. 2017 preprint) serves as a co-Director (Retraction Watch, 2017a) (Fig. 4A), possibly explaining why Wager is so frequently positively profiled by Retraction Watch (Retraction Watch, 2017b).

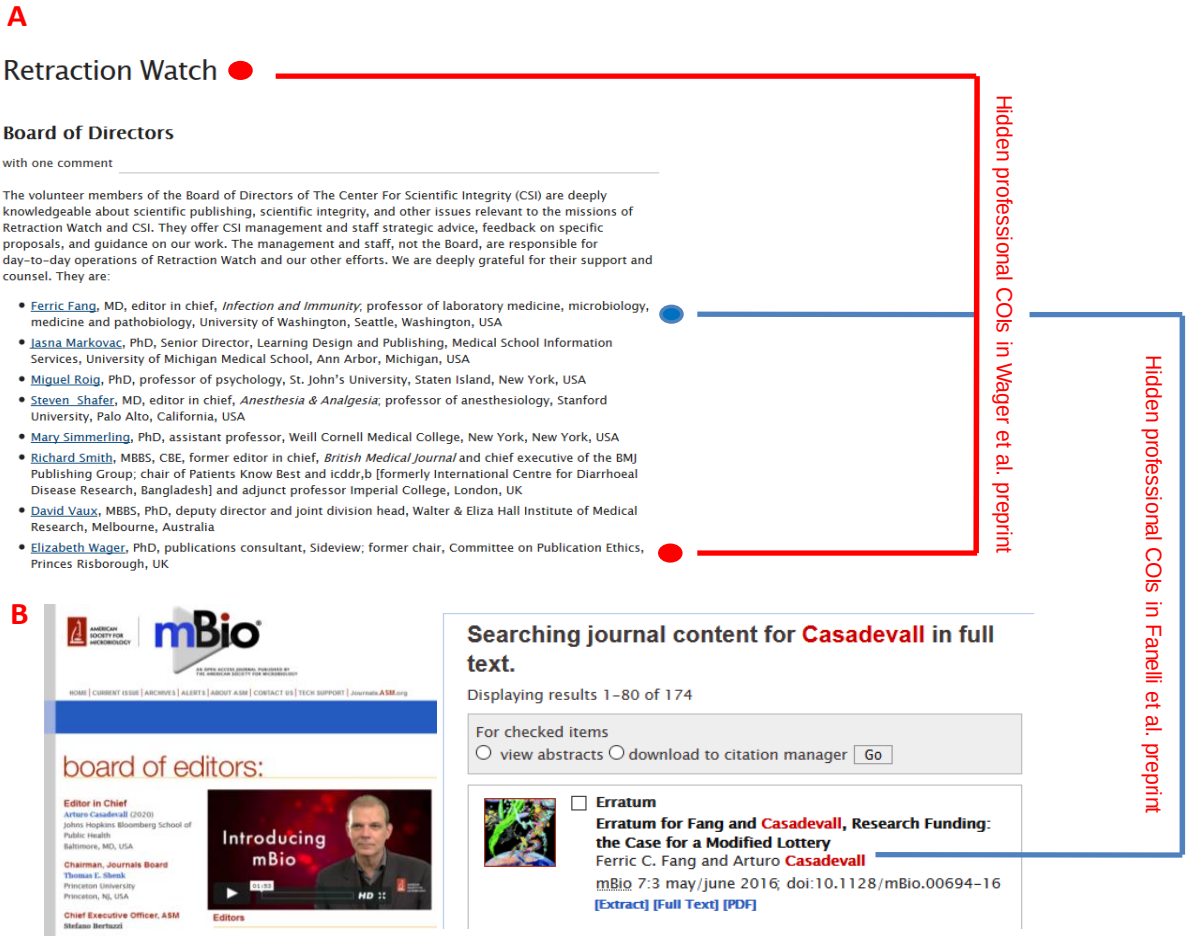

Fig. 4. Hidden conflict of interest in the McNutt et al. (2017) and Fanelli et al. (2017) preprints.

(A) Both Elizabeth Wager, of the Wager et al. (2017) preprint, and Ferric Fang, of the Fanelli et al. (2017) preprint, serve as Directors for the parent organization of Retraction Watch, the Center for Scientific Integrity Inc. (CSI), which operates from the apartment of Ivan Oransky. (B) Fang and Arturo Casadevall, who is the mBio Editor-in-Chief, who have published an estimated 13 papers, including two errata (one is shown), in mBio, are co-authors of the Fanelli et

al. (2017) preprint. Daniele Fanelli works as a senior research scientist at METRICS, at Stanford University in the USA, which is funded by the Laura and John Arnold Foundation, which also funds METRICS. None of these professional and financial COIs have been stated in the Fanelli et al. (2017) preprint. Sources: (A) (Retraction Watch, 2017a); (B) mBio (2017) and "Search" at http://mbio.asm.org/

LJAF also funds the Center for Open Science, run by Brian Nosek at the University of Virginia, and their set of preprint servers at the Open Science Framework (OSF, 2017). So, apart from one of the McNutt et al. (2017) preprint authors exposing a deep set of COIs to this preprint, such COIs have not been mentioned, which is considered by some as an act of publishing dishonesty or misconduct (Thornton, 2017). An error was detected with one of the references in the McNutt et al. (2017) preprint, and Marcia McNutt was immediately contacted to correct the error. Dr. McNutt promised on May 23, 2017, to correct this error, showing that preprints can avoid the publication of erroneous information.

Other Risks of Preprints: Anti Open Data Policies and Opacity by the "Ethics" Elite

Another recent bioRxiv preprint, Fanelli et al. (2017), assessed image duplications in the biomedical literature to assess why scientists are driven to fabricate data. Although this is not a laboratory experiment, the authorship contribution statement states, erroneously "contributed reagents and materials: EB, FF, AC." This is false because no reagents were involved in that paper. Also, there is a glaring missing COI statement. The COIs of the Fanelli et al. (2017) preprint are, curiously or incidentally, linked to authors of some of the other bioRxiv preprints discussed in this paper. For example, like Elizabeth Wager, Ferric Fang is a Director of Retraction Watch's CSI (Fig. 4A), and his work is thus continuously positively profiled by Retraction Watch (Retraction Watch, 2017c). As had been noted on PubPeer (PubPeer, 2017a), but now deleted by PubPeer, the Fanelli et al. preprint suffers from two main ethical problems: a) a COI statement is missing, and even if the authors have no COIs, this should have been stated, but was not; as can be seen a bit later on in this discussion, there is an intricate link of undisclosed professional and financial COIs; b) the authors refuse to release the raw data for the 20,000+ papers whose images they analyzed, and which formed the core basis of this reprint's analysis and for the publication of another paper (Bik et al., 2016).

mBio has a mandatory requirement to declare COIs in *mBio* papers, making the Bik et al. paper, with the *mBio* EIC, a direct and blatant violation of *mBio* ethical policies, and thus a clear case of editorial corruption, misconduct and ethical exceptionalism. A formal request was made on April 13, 2017, to obtain the raw data and to indicate that the email of the first author of the Bik et al. paper, Elizabeth Bik, was dysfunctional (@stanford.edu) since Bik had been relieved of her position at Stanford University in late 2016 – it is believed as a result of her whistle-blowing activities and use of social media (Twitter) during working hours – and that a suitable substitute email was needed to contact the corresponding author about the content of that paper. An email request to Bik's co-author's Arturo Casadevall and Ferric Fang, the latter the third author of the Fanelli et al. (2017) preprint, for the raw data and also to modify the corresponding author's email were neither acknowledged, nor was the raw data provided. The e-mail for Bik has still not been corrected by mBio.

Bik, Fang, Casadevall and Retraction Watch are part of a small and exclusive close-net group leading the movement on "open science", calling for full transparency in the publication process and even calling for the open data movement to become a publishing standard. Yet, when formal requests are made for the raw data of the Fanelli et al. (2017) preprint and its precursor paper published in *mBio* (published by the American Society for Microbiology) – which lists Casadevall as the EIC (mBio, 2017) – the authors fail to respond to formal queries, displaying complete opacity, and refusing to provide the underlying data, i.e., they are showing the complete antithesis of the open data movement. A search on *mBio* reveals that Casadevall and Fang share at least 13 publications, including two errata, an editorial COI that should have been published in the Bik et al. (2016) paper – an issue that was registered at PubPeer (PubPeer, 2017b) – which was quickly processed by *mBio* after it had been on bioRxiv as a preprint. Fang, Casadevall and Bik, the three authors of the Bik et al. (2016) paper, are all co-authors of the Fanelli et al. (2017) preprint. It was

revealed fairly recently that Bik was the whistle-blower (Schneider, 2017) behind the reports made to journals about 20,500+ images, and which involved PubPeer, by documenting some or all of those image manipulations. This is another hidden COI by Bik et al. because PubPeer also receives funding from the LJAF. The final, and possibly most important hidden COI of the Fanelli et al. (2017) preprint, is financial. Fanelli's stated affiliation on the preprint is "Meta-Research Innovation Center at Stanford (METRICS), 1070 Arastradero Road, Stanford University, Palo Alto, CA 94304, USA". METRICS, which is headed by John P.A. Ioannidis (METRICS, 2017a) (the other director is Steven Goodman), received funding from the LJAF, the same philanthropic organization that funds Retraction Watch's CSI and PubPeer, as part of a wider "war on bad science" policy by LJAF's John Arnold (Wired.com, 2017). Finally, why has Fanelli used a non-institutional email for his preprint (METRICS, 2017b), when he has an @stanford.edu email? It is for these possible / plausible reasons (hidden COIs, ethical exceptionalism, editorial corruption or cryonyism, and double standards by elements of the so-called "ethical elite") that it is essential to be monitoring the science watchdogs (Teixeira da Silva, 2016) and proponents of the open science and preprint movements.

Conclusions

Traditional publishing in science, technology, engineering and medicine is under strain and the number of scandals rocking academic publishing appear to be emerging weekly, if not daily. It has been proposed that one effective way to fortify the publishing process is by increasing the number of verifications prior to a manuscript entering the traditional route of peer review, such as the use of preprints, because it eliminates risks, errors and possible fraud (Teixeira da Silva, & Dobránszki, 2015). However, until now, it has been broadly understood that preprints should represent a fairly final state of a paper, almost ready for submission to a traditional academic journal. However, this notion has now been seriously challenged by the publication of three policy-related preprints at bioRxiv, a preprint server that, until precisely the time when two of these preprints were published, had forbidden other academics from publishing such content. Examination of the authorship of these preprints reveals powerful individuals and lobbyists in equally powerful publishing- and ethics-related organizations, suggesting that the rules have been bent to suit powerful lobbying groups who wish to use preprints as a way to phish (or fish) for intellectual ideas that might not be fully acknowledged (ghost authorship; Teixeira da Silva, & Dobránszki, 2016), or that may be misappropriated without due acknowledgement (plagiarism). Thus, "intellectual phishing", a new risk introduced by the preprint movement, may represent a new risk to the integrity of publishing, fortifying the notion that preprints carry reduced credibility (Fuster, 2017), and test the boundaries between ethical vs unethical publishing practices. This paper also documents hidden COIs among several authors of this publishing elite, suggesting a two-tier system of ethics, one for the academic masses and a separate one for the ethical publishing elite, i.e., ethical exceptionalism (Teixeira da Silva, 2017e). COIs, in all forms, including the omission of professional relationships, can introduce bias, reduce transparency and trust in the publication process (Dunn et al. 2016), and in the ethical and publishing elite, as exemplified by these select preprints.

Conflicts of Interest

The author has been profiled by Retraction Watch and PubPeer, which are discussed in this paper. The author has written about Leonid Schneider, a science watchdog and journalist in Teixeira da Silva (2016). The author has contacted all authors / corresponding authors of the preprints discussed to express concerns about missing data, hidden COIs, etc. Other than these, the author declares no conflicts of interest.

Acknowledgements

The author thanks Jordan Anaya, of PrePubMed (PrePubMed, 2017), for use of Fig. 1 (the statistics of that figure are now likely to be outdated). The author also thanks Klaas Van Dijk for providing an important PDF file with a recorded screenshot of the bioRxiv FAQ page on April 23, 2017.

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