



Scientific Integrity Requires Publishing Rebuttals and Retracting Problematic Papers

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Abstract

Recently, an article by Seneff et al. entitled “Innate immunosuppression by SARS-CoV-2 mRNA vaccinations: The role of G-quadruplexes, exosomes, and MicroRNAs” was published in Food and Chemical Toxicology (FCT). Here, we describe why this article, which contains unsubstantiated claims and misunderstandings such as “billions of lives are potentially at risk” with COVID-19 mRNA vaccines, is problematic and should be retracted. We report here our request to the editor of FCT to have our rebuttal published, unfortunately rejected after three rounds of reviewing. Fighting the spread of false information requires enormous effort while receiving little or no credit for this necessary work, which often even ends up being threatened. This need for more scientific integrity is at the heart of our advocacy, and we call for large support, especially from editors and publishers, to fight more effectively against deadly disinformation.

Keywords Misinformation · COVID-19 · SARS-CoV-2 mRNA Vaccines · Cancer · Retraction · UN SDG3 · Public Health · Science Integrity · Pseudoscience

In this commentary, we would like to alert the scientific community against the dissemination of pseudoscience in presumed trustful scientific journals, and the dangers that

such a spreading are causing to public health [1]. We will explain and detail our recent failure to get a problematic paper retracted and our rebuttal published by the editor to raise awareness among the scientific community of the rising misuse of the scientific publication process. The problem is far from novel, and we have seen during the pandemic an explosion of misinformation, especially in the domain of poorly conducted clinical trials of unproven drugs such as hydroxychloroquine and ivermectin [2, 3]. Predatory journals have taken advantage of the threats on public health to publish hundreds of papers of low or null scientific value [4, 5]; they considered the pandemic as an opportunity to gain access to the mainstream media and to flatter the general public [6]. In contrast, when a true scientific journal published erroneous reports, as it was the case for *The Lancet* or *The New England Journal of Medicine* in 2020 [7, 8], the paper was rapidly retracted with the apologies of the journal’s editors. This is the way allowing science to improve, but it is very difficult to combat predatory journals or journals whose editor remains deaf to substantiated alerts and supports the dissemination of fake medicine.

The problem is different when seemingly rigorous scientific journals publish false science under pressure from the Editor in order to increase their impact factors points

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and, they think, notoriety. Such an attitude is also predatory and authors, editors and publishers of such articles should be publicly condemned by the scientific community. This technique of using science to vehiculate nonsense has been named ‘agnotology’ by Robert N. Proctor, which he defines as “*the study of deliberate, culturally-induced ignorance or doubt, typically to sell a product or win favor, particularly through the publication of inaccurate or misleading scientific data*” [9]. There is some similarity between the connivance of the tobacco industry with some ‘key opinion leaders’ who made the propaganda in favor of tobacco consumption; just to name a few [9]: Clarence Cook Little, renown geneticist, former president of the universities of Maine and of Michigan, who declared in 1969 that “*there is no demonstrated causal relationship between smoking and any disease*”; Victor Buhler, former president of the College of American Pathologists who declared, also in 1969, that “*the cause of lung cancer remained unknown*”; more recently, Suzanne Oparil, former president of the American Heart Association, who claimed in 1997 that the epidemiological data relating lung cancer to tobacco consumption were old and that “*how accurate they are is really not clear to [her]*”.

We are presently witnessing the same type of misinformation carried out by scientists and journal, endangering millions of people. We would like to describe the fight that we have engaged, and share with the readers our concerns on public health matters. In April 2022, *Food and Chemical Toxicology*, an Elsevier journal, published a review article dealing with mRNA anti-SARS-CoV-2 vaccines [10], pretending that these vaccines are at the cause of a series of dreadful diseases for a large number of people (neurodegenerative disease, myocarditis, immune thrombocytopenia, Bell’s palsy, liver disease, impaired adaptive immunity, impaired DNA damage response and tumorigenesis). This 16,071-words review including 231 references was first submitted on February 9th 2022 and accepted on April 8th. It was submitted just one month after a call for papers on potential toxic effects of Covid-19 vaccines in this journal made by its Editor in chief, Prof J.L. Domingo [11]. Alerted by the unusual number of shares on social networks (> 30 k tweets and > 10 k Shares, Likes & Comments on Facebook) [12] and overwhelmingly within the anti-vaccination spheres, we were concerned by the content of the manuscript which contains unsubstantiated claims such as “*billions of lives are potentially at risk*” with mRNA COVID-19 vaccines. The authors pretend that mRNA COVID-19 vaccines are responsible for the “*suppression of type I interferon responses*” resulting “*in impaired innate immunity*” and therefore that they “*potentially cause increased risk to infectious diseases and cancer*”.

Such important statements should be supported by undoubtable facts, especially when they are made in a scientific article (published in a journal with an impact factor of

6), and should not solely rely on the authors’ fallacious inferences. We thus contacted Prof J.L. Domingo to warn him against the highly misleading nature of many of the authors’ assertions and the highly contentious nature of previous authors’ publications. We therefore asked for the retraction of the article to prevent it from being used as a scientific reference for the dissemination of false information on vaccination. Prof Domingo answered on the April 18th 2022: “*When this manuscript was submitted to the journal, due to its topic, I already anticipated it could be potentially controversial. Therefore, for the review process, instead of making my decision in the comments / recommendations of 2–3 reviewers, as usual, the decision for that paper was based on the comments of 5 reviewers experts in the field. Based on your e-mail, and of course if you wish it, I invite you to submit a Letter to the Editor on that paper where you can state your concerns.*”

We therefore wrote a Letter to the Editor [13], in which we demonstrated that this article contained several fallacious scientific assumptions leading to misunderstandings and thus invalidating the conclusions drawn by the authors. We suggested that the article be withdrawn because a careful analysis of the provided bibliography indicates profound misinterpretations of the topics and conclusions about the negative impact that vaccination against SARS-CoV-2 could have on immunity. To illustrate our point, we have detailed a non-exhaustive list of 10 misunderstandings in the literature interpreted by the authors (Table 1 in Ref 13). We were thus able, on the basis of the published literature, to show exactly the opposite of what the authors have asserted on the effect of IFN type I by the vaccine. From the abstract, the authors allege that they will provide “*evidence that vaccination induces a profound impairment in Type I interferon (IFN) signaling, which has various adverse consequences to human health*”. This claim relies on a still unpublished preprint available on medRxiv since August 2021 [14] but of which it should be noted that the final conclusion established “[...] *that despite the lack of dramatic inflammation observed during infection, the vaccine elicits a robust adaptive immune response*”. Data shows a differential gene expression profile in peripheral dendritic cells based on vaccinal status, but does not support the authors’ claim that there is Type I IFN suppression due to the vaccine. Published research shows this is simply the reaction expected from any vaccine: a high immune response without a systemic and uncontrolled inflammation [15, 16]. Furthermore, arguing that vaccination would result in loss of the interferon-mediated Type I immune response (and therefore leading to a higher infectious risk or lack of cancer surveillance) contradicts other published data on the immune response after vaccination [17]. To date only a set of SARS-COV-2 viral proteins have been shown to antagonize type I interferon response, not the vaccine [18].

Of course, we argued that relying on hypothetical physiological disturbances induced by vaccination to suggest a possible increased risk of various cancers, which had never been published so far was unacceptable, especially for patients for whom COVID-19 vaccination is still strongly recommended such as patients with cancer [19–21]. We then concluded that *“the important shortcomings and misuse of scientific literature and data have no place in a scientific journal. Therefore, we suggest that this article should be retracted in an effort to prevent further damages to health care policies.”*

The revised and corrected letter is available as a preprint since it was finally rejected on June 13th 2022 after 3 rounds of reviewing by 4 anonymous referees. One reviewer argued there was no reason for retraction because *“there is no evidence of scientific fraud that justifies the demand for retraction of the original submission”*. Another one stated that *“the original paper need not be somewhat accurate since this is a review, so conjecture is allowed, if disproven it is fine.”* And the last one questioned our experience and previous works, going even as far as to check our résumés and arguing that *“we might not have the required experience”*. Only one out of 4 reviewers made more constructive remarks and gave us feedback for the letter to be published.

We then contacted the ethical board of the publisher, Elsevier. To date, we received no answer.

In 2015, the United Nations established 17 Sustainable Development Goals (SDG), including Target 3.3: Fight communicable diseases. We believe that vaccine disinformation is hindering such efforts. Vaccine hesitancy was also flagged by the World Health Organization as one of the ten major global health threats in 2019. That's why papers criticizing vaccines should only be published when claims are strongly supported, which is not the case in Seneff et al.'s paper.

We therefore made a militant choice, refusing to change our position about the demand of retraction of the paper. We do think that this is not a scientific controversy, but a matter of public health; millions of people have been protected from the disease by the vaccines that have been developed and distributed all over the world (although not enough in developing countries) [22], and this article, as well as the publicity that it has received on social media, tends to destroy the unprecedented efforts to save people from disease and premature death. Fighting against scientific disinformation may be risky, too slow and insufficient [23, 24]. The scientists involved in such efforts receive little to no credit for this necessary work and can often end up being threatened [25]. Aside from the recent recommendation by Besançon et al. to improve the error-checking culture of academics and the correction of the scientific literature, we believe that the present case of the Seneff et al. article in *Food and Chemical Toxicology*, further highlights

the need for more transparency in reviewing and editorial processes. Indeed, there is currently no information above the article from Seneff et al. that would highlight to readers the fact that the scientific community heavily disputes the claim of the article. We believe that the valid concerns we have raised, to which the Editor in Chief seemed to initially adhere, should have rapidly been reflected in an editorial note above the article. Further, this case illustrates the need for reviewers' reports to be made transparently available particularly with “potentially controversial” research articles. If this had been done, scientists and readers could have verified the rigor of the reviewing process [25] and have had access to the potential concerns raised by the reviewers about the article at hand. We also argue that the pervasive use of metrics to assess scientists and their productions is partially responsible for the continued existence of questionable research practices [26]. As long as the sole metric to evaluate scientific journals remains the Impact Factor, editors and publishers will have no incentives to take actions on problematic papers. Eventually, we join Besançon et al. in their suggestions to destigmatize and speed up the scientific correction process. We hope our efforts in rebutting Seneff et al. will successfully counter the misinformation on COVID-19 vaccine and the risk for cancers as well as promote the thankless but essential tasks of fighting against scientific fraud [27].

We don't know how many people were convinced to keep smoking because they believed the ‘scientific authorities’ who declared, in spite of evidence, that it was not harmful; we will never know how many people will contract COVID-19 and how many will die because they believed in the false science published in an otherwise respected scientific journal. But, as we can say that people like Clarence Cook Little participated to the organized crime conducted by the tobacco industry, we can say that the authors of this paper, as well as the Editor of *Food Chem Toxicol*, participate to deadly misinformation. The declaration of Joseph R. Biden, President of the United States, that *“the only pandemic we have is among the unvaccinated; and they're killing people”* applies especially to the people who encourage the unvaccinated's beliefs.

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JB is a medical oncologist, involved in COVID-19 vaccination for patients with cancer and is author or co-author of more than ten publications on this topic. FF has a PhD in Biological Sciences and is today a CEO web-designer and data manager. LB has a PhD in computer science and is now a postdoctoral researcher at Linköping University, Sweden. AS has a PhD in molecular biology and is today a high school teacher.

VS is a Pharm-D biologist at Gustave Roussy anticancer Institute, France, and co-author of three publications related to COVID-19 and cancer, EB is a senior scientist in immuno-oncology and full-time employee of Novartis Pharma AG (NIBR), author and co-author of five publications related to COVID-19. AJA is an associate professor in Pharmacology at TTUHSC-JHHSOP, USA. He is an expert of the blood-brain barrier, teaching basic pharmacokinetics to PharmD and PhD students, pharmacology and neurosciences to PhD students of the Graduate Program in Pharmaceutical Sciences. BSS is full time professor of immunology at The Côte d'Azur University, France, and is involved in SARS-CoV-2 immune response and more specifically interferon response. JR is emeritus professor of cancer science at the University of Bordeaux, France, and honorary Hospital practitioner at the Cancer Center of Bordeaux; he is past President of the French Cancer Society.

Author Contributions Manuscript writing: JB, JR contributed equally. All other authors made substantial modifications and gave critical revision of the manuscript. AA designed the graphical abstract and substantial corrections of the final version of the manuscript.

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Declarations

Conflict of Interest EB is a full-time employee of Novartis Pharma AG (NIBR). Others authors have no conflict of interest to declare.

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