

**Submission to the House of Commons Science and Technology
Committee's Inquiry into Scientific Publications**

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Publisher
On behalf of BioMed Central Limited**

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About BioMed Central

BioMed Central Limited is an independent publishing house committed to providing immediate free access to peer-reviewed biomedical research. This is known as Open Access.

All the original research articles in journals published by BioMed Central are immediately and permanently available online without charge or any other barriers to access. This commitment is based on the view that open access to research is central to rapid and efficient progress in science and that subscription-based access to research is hindering rather than helping scientific communication.

BioMed Central is committed to ensuring efficient and effective quality control through full and stringent peer review of the research it publishes.

BioMed Central publishes a wide variety of journals and other services.

BioMed Central's portfolio of over 100 journals ranges from the highly selective, general interest Journal of Biology, which publishes both online and in print, to a range of specialist online only journals. BioMed Central also publishes Faculty of 1000, the leading literature evaluation service.



Premise

Free and unrestricted availability of biomedical research findings* (known as Open Access) is technically possible, financially viable, and of great benefit to the advancement of research. It should also be the right of any interested member of the public to have free access to publications describing the results of publicly funded research.

* For the avoidance of doubt, published *research findings* are what is also known as *primary research literature*, and does not refer to so-called *secondary publications* such as literature reviews, news, commentaries, and other information services.



Science Publishing

A. Present situation

1. Most scientific literature is now available online, but the potential for universal availability with the associated benefits for science and society at large are not realised due to the inherently restrictive practices of economic publishing models based on subscriptions or access licences, which are still the prevailing norm.
2. The subscription model was well suited to print publications, but does not do justice to the potential of online publications, which are inappropriately ‘shoehorned’ into this model, severely limiting their potential.
3. As a result, the dissemination and usefulness of scientific research literature is inadequate for the modern and future needs of scientific discovery.
4. The traditional publishing model is the cause of growing dissatisfaction among researchers – both in their role of authors and of readers – as well as among librarians and university administrators, who feel the ever-increasing squeeze of budget limitations.
5. Free and unrestricted access to research literature increases the visibility of scientific results, whereas the old, subscription model restricts dissemination. However, access alone is not sufficient. When results can also be freely used, freely re-analysed, and freely re-distributed, their usefulness and impact is increased and scientists in their role as both authors and readers benefit, as does anyone interested in research results, such as teachers, students, health-related workers, patients and their families, administrators and policy-makers, journalists, and any other interested parties.

6. Whilst very strong economic arguments exist for free access benefiting scholarly libraries, they are not the most important: the future of science requires the benefits of full availability of the science literature including the possibilities of free and unrestricted re-distribution and use. Free availability and usability of the full-text also ensures proper indexing by search services such as Google and others, which greatly enhances the ability of the material to be found.
7. A few science publishers – one of the first and largest of which is our UK-based company, BioMed Central Limited, and another is the Public Library of Science in the USA – have pioneered a radically new publishing model that ensures universal, barrier-free (i.e. gratis and without the requirement to register) online access, now commonly known as Open Access.



B. Open Access

8. The definition* of Open Access that we use at BioMed Central has three, equally important, elements:
 - The universal and permanent free online availability of research articles in an easily readable and re-usable format;
 - The affirmation from the author (or copyright holder) that the material can be used, re-used, reproduced, and disseminated freely, on condition that it is correctly cited;
 - Permanent secure archiving and perpetual barrier-free access to and usability of research articles. (This is ensured by requiring that Open Access research articles be archived in at least one, and preferably more, widely and internationally recognised archive committed to providing Open Access to the medical and life science research literature, such as PubMed Central.)
- *For the avoidance of misunderstanding: Open Access is a property of individual articles, not necessarily of journals or publishers.
9. This definition has, in essence, been accepted and adopted by funding bodies as diverse as the Howard Hughes Medical Institute (USA), the Wellcome Trust (UK), the Max Planck Society (Germany), the German Research Council (DFG), the French Scientific Research Council (CNRS) and the French National Medical Research Institute (INSERM). It is also used by the recently started publishing venture Public Library of Science (USA).
 10. The Open Access publishing model recognises that publishing carries a cost, but instead of paying the cost out of subscription income, with its associated restrictive consequences, it derives its income from ‘article processing charges’ at the input-side of the publishing process. This ensures that there are no restrictions to universal dissemination, access, or usage of the published research.

C. Open Access is beneficial for all biomedical science, but urgently needed for medical research

11. A substantial amount of biomedical research in the UK is publicly funded. Currently, about 30% of SET (Science Engineering Technology) R&D is public money (£5 billion out of a total of £17 billion), according to DTI figures.
12. Results from this research are likely to have a substantial impact on the quality, ease and efficiency of providing medical care, and on facilitating further biomedical research.
13. Results of a significant proportion of this research are currently never published, because journals (or researchers themselves) are unwilling or not interested in publishing them.
14. There are strong arguments that all citizens should have unrestricted access to the published results of publicly funded biomedical research:
 - i. Clinicians will be able to provide better care;
 - ii. Researchers will be able to speed up research and minimize duplication;
 - iii. Patients will be better and more fully informed about the medical options available to them.
15. Currently, most of the results that are published appear in journals that severely restrict access to this information to those who have paid a subscription or access licence. Significant segments of the interested community and of the intended audience do not have easy access to this information, including teachers, students, patients and their families, health-related workers, administrators and policy-makers, journalists, and frequently also researchers in institutions without subscriptions to all the relevant literature.
16. Scientists, science administrators and funding bodies have been aware for some time of the flaws in the current system and are beginning to act to change the situation. Many would support the introduction of a requirement that a) all sound publicly funded (biomedical) research must be published; and b) all this research must be published under the Open Access rules which guarantee free and unrestricted access, the right to redistribute and to use the information contained in the published results for any other legitimate purpose.
17. All Open Access proponents agree that research findings should not be published without having undergone proper peer-review in order to ensure that the information is presented correctly, fully and without exaggeration.

D. Government intervention

18. Government intervention is needed because of the benefits of Open Access to science and society at large. The tools and infrastructure exist (internet) and the cost is likely to be considerably lower than with the traditional publishing model. Yet the widespread adoption of Open Access is hampered by the usual objections to change and the deeply ingrained system of judging publications, for the purpose of grants or careers, by the Impact Factor of the journals they appear in. Whilst we believe that, given time, the benefits of Open Access are strong enough that they would on their own win over the academic community, obtaining the benefits for science and society in the short term requires additional stimuli for the development and growth of Open Access.
19. Because we believe that unrestricted access to findings of publicly funded medical research is a right of all citizens, **we urge the UK Government to mandate that research results obtained from publicly funded medical research (most urgently those from clinical trials) are published under Open Access rules.** Note that this requirement does not restrict publication to Open Access journals, but would require any journal publishing such research findings to accept the Open Access rules for the article in question. Many subscription journals are in fact already operating or considering operating a mixed publishing model, allowing some papers to be published under Open Access rules.



E. The specific points on which the Committee is inviting written evidence

Q1. What impact do publishers' current policies on pricing and provision of scientific journals, particularly "big deal schemes", have on libraries and the teaching and research communities they serve?

20. *The current policies, based around a subscription or access-fee publishing model for research literature, have a severely limiting effect on the dissemination and efficient use and re-use of the scientific literature and as a result also on the spread and usefulness of knowledge. They harm the teaching and research communities they are meant to serve.*
21. *The economics of the current scholarly subscription-based journal-publishing model are unsustainable. It already harms the ability of libraries to provide substantial and balanced information services to their constituencies. BigDeal bundling schemes and the prevalence of very high prices for science journals have led to a budget crisis in libraries in both the sciences and the humanities. Taming price inflation is not enough. Unless the current model is changed, academic libraries and universities will be unable to continue providing researchers, students, and teaching staff with the access they require to the*

world's scholarship and knowledge. Scholars will be unable to make the results of their research widely available.

- 22. There are four separate (but related) policies that, particularly when operated jointly, exacerbate the impediments to teaching and research communities' access to science literature to such an extent that the academic community should no longer support them.*
- 23. The first problematic publishing policy is charging for access (be it via subscriptions, licences, document-delivery, or pay-per-view). For academic scientists, publishing their actual research results is a necessity, unlike publishing many other kinds of information, which is optional. A research publication is unique, only published once, and not interchangeable. A system in which there are barriers to access compromises the very basic need of optimal dissemination of scientific knowledge.*
- 24. The second problematic policy is a necessity for the payment-for-access model, but throws up a barrier in its own right as well. This is the policy of requiring the author to transfer either all copyrights, or, sometimes, the exclusive dissemination rights to the publisher. Whilst this may be necessary for the subscription model to operate properly, it makes subsequent re-use of research material very cumbersome and sub-optimal, due to the need to obtain prior permission for many forms of re-use, such as inclusion in course-packs, textbooks (even if written by the same author as the articles to be included), databases, et cetera, especially as permission often necessitates a fee. This, obviously, also hampers dissemination and is, in the case of textbooks and course-packs, particularly damaging to scientific education.*
- 25. The third is the practice of 'bundling' (BigDeal schemes) in which libraries are deprived of the option to subscribe to only the journals that are relevant to their institution, or punished for being selective by facing subscription prices that effectively put the cost of the selection at or near the cost of the entire bundle. The effect of this is that libraries spend a growing proportion of their budgets on a decreasing number of bundles and increasingly lack the means to subscribe to relevant journals from smaller publishing houses (such as specialised scholarly societies) that publish only one or a few unbundled titles. This is an impediment to the ability of libraries to tailor their collections optimally to the research and teaching needs of their institution.*
- 26. The fourth is a practice by some publishers of giving access to 'legacy' publications and journal archives only to those with a current subscription rather than making the archives available separately. This locks subscribers in. This practice needs to be abolished where it is current and made impossible to implement by those who do not currently do it but might wish to in the future.*
- 27. The Open Access publishing model suffers from none of the disadvantages above and offers genuine relief for libraries and the researchers, teachers and students they serve.*



Q2. What action should Government, academic institutions and publishers be taking to promote a competitive market in scientific publications?

28. *Research articles are, by necessity, unique, published only once, and not interchangeable. The same article cannot be published in more than one journal without causing grave difficulties for the system of citations that gives science literature its coherence. This makes any given journal a monopoly preventing a properly functioning competitive market in scientific publications as long as the reader (or someone on behalf of the reader) has to pay subscription fees.*
29. *Because of these inherent monopolies, the current market in scientific publications is not competitive in the usual economic sense. The problem is not that any one publisher has control over the market, but rather that any traditional science publisher has a monopoly on the distribution of every article it publishes. Readers and libraries are not in a position to make an economic choice. If they need to read – or provide – a particular research article, they have to pay the price set by the publisher of the journal in which it appears. When neither readers nor libraries have an effective economic choice, prices are not subject to the corrective pressures of a functioning competitive market.*
30. *There is no such lack of choice for authors. They can exercise their choice when deciding to which journal to submit an article for publication (in most disciplines and on most levels there is more than one option). Open Access publishing, whereby access to the research literature by the reader is free and unrestricted, provides a mechanism for payment by the author (or on behalf of the author) which pays for the cost of providing maximum dissemination rather than for access. This mechanism allows economic factors (price) to play a role in the author's choice and thus ensures a functioning competitive market with its natural effect of price moderation.*

What Government should do:

31. *Given that:*
- a. *the scientific community as well as society at large benefit from maximal dissemination and optimal re-use of scientific knowledge;*
 - b. *the technology to achieve maximal dissemination exists;*
 - c. *the cost of the scientific literature is largely borne by the research establishment in either the Open Access or the traditional publishing model;*

the Government is urged to seek to reverse the traditional publishing models and encourage a competitive Open Access model, which avoids the limitations of the traditional model and delivers the benefits of maximal dissemination and unrestricted use of scientific research literature.

32. Specifically, Government is urged to:

- a. Require that Government-funded research results are freely available with full Open Access;**
- b. Mandate that included in any Government grant is an amount sufficient for the author to pay any reasonable article processing charges necessary for publishing in Open Access journals.**

What academic institutions should do:

33. *To accelerate the establishment of the input-paid Open Access model as the norm for the publication of biomedical research, academic institutions should:*
- i. De-couple their tenure, promotion, and funding procedures and decisions from the metrics that are currently provided for traditional subscription-based journals, such as citation Impact Factors;*
 - ii. Judge scientific articles on their intrinsic merits instead. (While new Open Access journals are not in principle excluded from obtaining Impact Factors, it is a process that takes at least three years and often longer, losing valuable time for the benefits that Open Access confers to science and society, because authors – rightly, in the current assessment climate – perceive publishing in a new journal without an Impact Factor as potentially jeopardizing their career prospects.);*
 - iii. Support the payment for publication at input.*

What publishers should do:

34. *It is understood that publishing costs money. Open Access is a commercially viable model to defray those costs. Publishers, including scholarly societies with a journal-publishing programme, have the expertise and experience to organise and manage the publishing process and are in a position to expedite a transition to Open Access. We recommend that publishers review their current practices in the light of the changed scientific and technological environment, and make the transition to a viable Open Access publishing model.*
35. *We recommend that journal-publishing scholarly societies with a charitable status stay true to their charitable mission and advance the interests of their chosen scholarly discipline by providing Open Access to their journals. We recommend that they do not use their charitable and tax-exempt status to engage in profitable commercial journal publishing along the traditional subscription model to raise funds for their other, non-publishing, activities, as this is, in our view, contrary to their mission.*

Q3. What are the consequences of increasing numbers of open-access journals, for example for the operation of the Research Assessment Exercise and other selection processes? Should the Government support such a trend and, if so, how?

36. *Open Access is only relevant to the RAE in the sense that all Open Access journals are new and therefore do not yet have the reputation that is universally perceived as being the crucial factor in impressing the RAE assessors.*
37. *This perception drives researchers to attempt to publish in a very select number of journals - a fact much lamented by the researchers but seen as a necessity.*
38. *The journals are those with high Impact Factors - an average measure of the number of citations to papers published in the journal, not a measure of an individual paper in the journal, and widely recognized as a crude and flawed measure.*
39. *The RAE should strongly encourage the development of far more sophisticated metrics, including the number of downloads of articles online, and should consider operating some form of positive discrimination in favour of those who choose to publish in Open Access journals and thereby help to advance research.*



Q4. How effectively are the Legal Deposit Libraries making available non-print scientific publications to the research community, and what steps should they be taking in this respect?

40. *If and when Legal Deposit Libraries make deposited online scientific research publications available to the scientific community, they can only do so at a price arranged with and determined by the publisher or copyright holder. They are prevented from doing anything else until the publisher or copyright holder does not, or cannot, make the material available himself any longer. However, Legal Deposit Libraries are in an excellent position to provide and preserve an Open Access Archive for all Open Access material that is available, and in doing so give assurance to the scientific community that research articles will not be lost or become inaccessible if journals or publishers disappear.*
41. ***The Government is urged to require that the Legal Deposit Libraries in the UK provide and preserve Open Access Archives for medical and scientific Open Access articles published in the UK.***



Q5. What impact will trends in academic journal publishing have on the risks of scientific fraud and malpractice?

42. *Open Access is not expected to have much impact on most scientific fraud and malpractice per se, but will materially increase the chances that fraud will be detected because of the ready availability, in full, of Open Access articles. One specific type of fraud, plagiarism, is especially more likely to be found out if the full text of articles is available for comparison by readers or by software designed to detect textual identities.*

