

*BioMed Central Branches Out:

an Interview with Matthew Cockerill and Chris Leonard

[BioMed Central](#) (BMC) is one of the longest running and most successful open access publishers. As well as publishing 170 journals across the life sciences, they offer a range of services to institutions or organizations wishing to set up their own journal or institutional repository. Many BMC journals were pioneering in implementing systems of open peer review, in which the signed review is offered online alongside the article, and in offering authors the chance to retain copyright over their work and distribute it under [Creative Commons](#) licenses as well as having it automatically archived in [PubMed](#). BioMed Central has also been swift to adopt new methods of content delivery, offering [customization opinions](#), [RSS feeds](#) of journal content, and full-text delivery to mobile devices via [AvantGo](#).

Recent years have seen the open access model enter the mainstream. Huge numbers of open access journals have been launched, including the high-impact publications of the [Public Library of Science](#) (PLOS), and academic institutions across the world have set up their own institutional repositories. Major academic bodies, including the US [National Institutes of Health](#) (NIH), the [Wellcome Trust](#) and several of the UK's Research Councils requiring authors whose research they have funded to deposit their papers in an open access repository shortly after publication. Major publishers, including [Nature](#) and [Oxford University Press](#) have also begun to take note of the growing trend towards open access and some of their journals now offer an option to pay to have work freely available in [PubMed](#) immediately. Governments and publishers are coming under increased pressure from organizations such as SPARK and [SciDevNet](#) to enforce open access policies.

BMC has also continued to expand its range of services, most notably by launching two new portals that apply the BioMed Central model to the physical and chemical sciences. [Chemistry Central](#) was launched in October this year and hosts its own generalist [Chemistry Central Journal](#) as well as seven other open access publications. It features some interesting articles about the unique impact of open access in chemistry research, including a piece entitled [Open Source Research, the Power of Us](#), which discusses the application of open source collaboration to specific biochemical problems. Its eagerly awaited sister site, [PhysMath Central](#), is currently in discussions with the academic community in these areas to develop new open access journals. Nevertheless, open access continues to face strong opposition from traditional publishers and others who argue that quality journals cannot be produced using the open access model without relying on philanthropy.



So, how has this revolution in open access changed the practices of its prophets, what are their predictions for the future, and what will be unique about the new services for the physical and chemical sciences amid their host of rivals? First Author spoke to BMC's publisher, Matthew Cockerill and to the head of the new PhysMath Central service, Chris Leonard, to find out.

FA: A recent press release described BioMed Central as leading the way in open access: could you discuss how you view the future of the open access movement? How do you see BioMed Central changing as it expands its remit?

MC: Open access publishing took off first in the biomedical sciences. This may partly be because open resources like PubMed and GenBank alerted biomedical researchers to the benefits of open access. Other fields have different starting points - for example, many areas of physics have close-knit communities within which preprints play a key role in scientific communication. The most critical resources in Chemistry are accessible only to subscribers. But there has been increasing recognition that the benefits of open access for the publication of original research apply in all fields, although the most appropriate funding model may depend on the field.

For example, rather than leaving it to individual authors to find funds to pay publication charges, CERN is working to create a consortium of research labs that will collectively fund open access publication for all particle physics papers.

<http://public.web.cern.ch/press/PressReleases/Releases2006/PR16.06E.html>

As open access publishing continues to grow in scale, both within biomedicine and in other fields, we imagine it is likely that such models will proliferate. Open access can be funded in many ways, all of which are compatible with the underlying goals of open access as long as they do not depend on restricting access.

FA: As open access goes mainstream will the 'author pays' model be sufficient to cover the costs of high quality publishing, especially given exceptions for authors in less wealthy countries and/ or institutions?

MC: In general, the cost of open access publication (around \$1500 in a typical BioMed Central journal) is very reasonable compared to the amount that libraries spend on journal subscriptions. For example, OUP quoted figures recently that for every article it published in Nucleic Acids Research in 2003, it received \$4224 of subscription revenue. <http://www.oxfordjournals.org/news/Presentation%20slides>

Such comparisons suggest that the costs charged by open access publishers such as BioMed Central are very reasonable. They are also realistic and sustainable. We have worked hard to develop efficient online systems for running online journals and managing peer review, and as a result we can offer a high quality service at a very competitive price. We expect to break even within the next 12 months, and overall we believe that the efficiencies introduced by open access publishers such as BioMed Central have the potential to save the research community significant sums of money that are currently spent on over-priced subscription journals. Reports from both the House of Commons Science & Technology Committee and the European Commission have expressed the concern that the scientific journals system does not appear to function as an effective market. Open access journals, with publication fees, can improve transparency and competitiveness in this area.

<http://www.publications.parliament.uk/pa/cm200304/cmselect/cmsctech/399/39902.htm>

<http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/06/414>

In terms of low-income countries - just as many publishers currently subsidize access for those in low-income countries, so it is equally possible for open access publishers to subsidize publication for authors in those countries. BioMed Central routinely provides waivers for authors in low-income countries, and this has not proved to be an obstacle to creating a sustainable business model.

It is also important to recognize that whereas authors in low-income countries previously had to get their work published in rich-country journals for that work to be read and cited, open access means that it is now feasible for local journals to achieve wider readership and impact. Brazil and India are both leading the way in this area, with many local journals now operating on an open access model (typically with central institutional support rather than depending on author-fees), and achieving improved Impact Factors as a result.

See for example:

Salvador Declaration on Open Access

<http://www.icml9.org/channel.php?lang=en&channel=91&content=439B>

Bangalore Declaration on Open Access

<https://mx2.arl.org/Lists/SPARC-OAForum/Message/3479.html>

FA: How would you respond to Nature's recent claims that PloS has proved the model to be unsustainable without philanthropy? Do you have an opinion on hybrid models (in which the author can choose to pay to have their article freely available immediately) such as that piloted by the Royal Society?

MC: Starting new journals and making them profitable is hard work - that's true for subscription journals as much as for open access journals: subscription journal also tend to take several years before they break even.

PLoS's approach initial approach was to start high-end journals which publish relatively few articles, and are expensive to run, but it is now broadening its remit with PLoS One, which should improve its finances.

BioMed Central has taken the broader approach right from the start. We have some journals which are highly editorially selective (Genome Biology and Journal of Biology, for example), but we have other titles such as the BMC-series which aim to publish all sound research, while highlighting the best. This has allowed us to create a business model which offers authors low publication charges, while also allowing us a realistic prospect of making a profit.

FA: Your websites, like those of some other science publishers, have an increasingly 'portal' feel - a focus on thematic rather than volume/issue-based delivery. There is also a growing movement towards legislating to require authors to deposit their work in open access journals shortly after publication. Will these tendencies eventually break down the distinction between journals and subject-based repositories?

MC: Journals are not just distributors and organizers of content. They are trusted brands that convey kudos and authority. That role is independent of the medium. Journals can convey this 'badge of quality' in print, or online, or via an RSS feed, or through a podcast. As the web evolves, there are certainly going to continue to be changes in how journals operate. Integration of published articles with datasets is likely to become more important, as are computer-readable semantic representations of the content of articles. For example, BioMed Central is developing the [Journal of Medical Case Reports](#) – at one level, this will simply consist of short case report articles, published in high volume through a streamlined publication system. But more importantly, these case reports will be integrated into a database that can be searched in a structured way in order to identify, for example, all case reports involving teenage patients taking antidepressant drugs in North America.



First Author spoke next to the head of the forthcoming PhysMath Central, Chris Leonard, about how the new service will meet the unique needs of the maths and physics community and learn from the experience of a technologically adept target audience.

FA: How do you think the research needs and/or interests of the Physics and Maths differ from those of biomedical researchers? How will you service cater for these needs?

CL: In most respects they are very similar, but physicists (and latterly mathematicians) were very prescient in seeing the benefits that the Internet offers in terms of dissemination of research material, which is no real surprise given the origins of the Web. However, what is missing from [arXiv.org](#) is the validation and quality branding that a rigorous peer review process brings. This is why arXiv and traditional journals enjoyed a symbiotic relationship for many years. What we are hearing now from scientists is that once this peer-review process has taken place, they want those results available for free to everyone and not 'locked-up' in subscription journals. This is where open access comes in. With a history of supporting OA for many years in the biosciences, BioMed Central was well placed to expand its reach into the physical sciences.

Physicists and mathematicians do have their own habits which differ to the biosciences though, and we will be accommodating these habits with our journals. What this means in practice is that authors can submit articles in TeX format, submit directly from arXiv and even submit to PhysMath Central and arXiv simultaneously. We will also link to the main databases in physics and provide support for multi-author uploads (where there are 10s or 100s of authors) and specialist publishing entities such as astronomical objects. We will also be adopting the standard PACS and MCS codes for physics and mathematics classifications.

FA: The physics and maths academic communities were pioneering in their adoption of open access. Notably, as you mentioned, with the founding of Arxiv. You also have experience in the commercial sector. How will you work with and borrow from the experience of both these sectors?

We are a commercial company providing an open access service. From a commercial standpoint open access makes sense. Scientists are demanding it and it is almost seen as unethical in some fields to publish results in a subscription journal. It is difficult to see the future of subscription journals as rosy.

But open access does not necessarily imply 'free'. If we are based on a sound financial footing, that bodes well for the long-term future of open access. We are not dependent on grants or philanthropy and will be able to grow with the growing interest in open access in the future.

FA: You recently promised to take advantage of new technologies to communicate research findings clearly and to meet the challenges of the future. Can you give some examples of these technologies and how you believe they will change the ways scientists research, collaborate, and publish?

CL: Sure - this is one of the most exciting parts of working in open access. Not only can we develop tools and services around our data, but anyone can. All articles are available, for free, to anyone in fully-formed XML, so we hope to see some suite of services like 'Google Labs' develop around this data.

However, for our part we intend to use new technology to support the scientific process in many ways. Apart from the tight arXiv integration already mentioned we are also going to use wikis with the editorial board members to refine the scope of the journals, journal blogs to inform everyone of editorial developments, OAI-PMH to update A&I services, RSS for journal content updates, multimedia to support the online text, comments from readers on each article, and we are very keen in working on ways to further structure and open up our data to other services. Other developments, such as 'tagging' of articles and refining the peer-review process will be considered if there is an appetite for it from the community we serve.

There is also an increasing drive to make raw data of experimental results available alongside the article itself. For particle collision data, for example, this would be problematic given the sheer volume of data - but this barrier will come down with time and for some fields it is already possible to publish raw data, so we will be investigating this option in the coming weeks.

Both Matthew and Chris make a forceful case for open access, as well as lighting its way forward. That BMC is about to break even without philanthropy is a forceful argument against the claim of some skeptics that open access is an unsustainable business model and vital encouragement for the development of local journals that challenge the traditional domination of English language titles published in the West. Semantic representations of data and the subject portal will change the way data is arranged and accessed. Finally, among the most exciting ideas mentioned are the tools for communication, wikis, blogs and tagging, that PhysMath aims to include. Although these 'Web 2.0' tools emerged alongside open access as part of the effort to 'reclaim' the web from corporate domination, the two principles have two rarely converged: to see an open access service make use of these tools for communication could contribute toward revolutionising pre- and post-publication methods of scholarly discussion and collaboration. Clearly, BioMed Central and its sister sites are not content to rest on the laurels of their previous successes, but are set to continue to lead the way in open access.