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Wellcome Trust joins 'academic spring' to open up science

Wellcome backs campaign to break stranglehold of academic journals and allow all research papers to be shared free online

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Wellcome's move adds weight to the campaign for open access to academic knowledge, which could lead to benefits across a broad range of research fields. Photograph: Mauricio Lima/AFP/Getty Images

One of the world's largest funders of science is to throw its weight behind a growing campaign to break the stranglehold of academic journals and allow all research papers to be shared online.

Nearly 9,000 researchers have already signed up to a boycott of journals that restrict free sharing as part of a campaign dubbed the "academic spring" by supporters due to its potential for revolutionising the spread of knowledge.

But the intervention of the Wellcome Trust, the largest non-governmental funder of medical research after the Bill & Melinda Gates Foundation, is likely to galvanise the movement by forcing academics it funds to publish in open online journals.

Sir Mark Walport, the director of Wellcome Trust, said that his organisation is in the final stages of launching a high calibre scientific journal called eLife that would compete directly with top-tier publications such as Nature and Science, seen by scientists as the premier locations for publishing. Unlike traditional journals, however, which cost British universities hundreds of millions of pounds a year to access, articles in eLife will be free to view on the web as soon as they are published.

He also said that the Wellcome Trust, which spends more than £600m on scientific research a year, would soon adopt a more robust approach with the scientists it funds, to ensure that results are freely available to the public within six months of first publication.

Researchers who do not make their work open access in line with the Trust's policy could be sanctioned in future grant applications to the charity.

Walport, who is a fellow of the Royal Society, Britain's premier scientific academy, said the results of public and charity-funded scientific research should be freely available to anyone who wants to read it, for whatever purpose they need it. His comments echo growing concerns from scientists who baulk at the rising costs of academic journals, particularly in a time of shrinking university budgets.

The majority of the world's scientific research, estimated at around 1.5m new articles each year, is published in journals owned by a small number of large publishing companies including Elsevier, Springer and Wiley. Scientists submit manuscripts to the journals, which are sent out for peer review before publication. The work is then available to other researchers by subscription, usually through their libraries.

Publishers of the academic journals, which can cost universities up to €20,000 (£16,500) a year each to access, argue the price is necessary to sustain a high-quality peer review process.

A spokesperson for Elsevier said the company was open to any "mechanism or business model, as long as they are sustainable and maintain or improve existing levels of quality control".

He added that the company had been working on open access initiatives with funding bodies. "There has been a constructive collaboration as we've worked with the Wellcome Trust to build support and participation among authors ... At the same time, we will also remain committed to the subscription model. We want to be able to offer our customers choice, and we see that, in addition to new models the subscription model remains very much in demand."

But the government has also signalled its support for open access. At the launch of the government's innovation strategy in December, David Willetts, minister for universities and science, said he aspired to have all government-funded research published in the public domain.

"We want to move to open access, but in a way that ensures that peer review and publishing continues as a function. It needs to be paid for somehow."

Science funders say this is not the problem. "I think publishing is a cost of research in the same way as buying a centrifuge is a cost of research," said Walport. "We have to maximise the public benefit of the research that we publish and we only do that by distribution."

According to David Prosser, executive director of Research Libraries UK, British universities spend around £200m a year on subscriptions to electronic databases and journals, which is around 10% of the block grants the institutions receive from government. The exact prices paid by university libraries are covered by confidentiality clauses with publishers but Prosser said that many of Britain's big universities "are spending, with some of our largest publishers, more than £1m a year each".

The rising costs of journal subscriptions have led many scientists around the world to question the business models of the publishers, which can make profit margins of more than 35% through selling access to the results of publicly-funded research. Proponents for open access in science argue that research papers should be freely available to anyone who wants to read them, with the publication costs borne by the authors of the work, perhaps as part of the research grant that pays for their work.

"If you look at the way the web works and what makes effective information dissemination on the web, then it's clear that open content spreads further, has more influence, is used in more ways than the people who wrote it could ever expect," said Cameron Neylon, a biophysicist who will take up a position as director of advocacy at Public Library of Science, an open access publisher, in July.

"From the perspective of research funders, particularly public research funders, the attitude has to be 'we fund this research, it generates these particular outputs, some of them are journal publications, how do we ensure that we maximise the impact that those outputs have?'"

The Wellcome Trust makes money available to its grant holders so that they can pay publishers to make their work freely available. The problem, said Walport, is that only 55% of Wellcome-funded researchers comply. Scientists often do not take up the open-access option or end up publishing in journals that refuse to make the work open access.

To force more scientists into submitting their work into open-access journals, Walport

said the Wellcome Trust was considering sanctions for researchers and universities if Wellcome-funded research is not made freely available. One option under examination is to make grant renewals contingent on open access compliance, so that new money would be released only once a scientist's previous Trust-supported work is fully accessible.

Another proposal is to require universities to confirm that papers produced with a Wellcome grant are accessible before the final instalment of that grant is paid.

"If a journal won't comply with our grant conditions, then we're effectively saying you can't publish in that journal," he said, although the Trust does not support the boycott of paid-access journals.

Even the six-month stipulation keeps original research out of the public domain for too long, added Walport.

"Frankly, it's a bit like saying you can have the Guardian free after three weeks – the news section has little value at that stage. I would say that even six months is ultimately too long for research."

Another issue for many scientists is that publishing houses get the services of scientists, for the purposes of peer review, for free.

"One of the biggest costs in the whole scientific publishing world is borne by the academic community, which is the peer review," said Walport. "The journals have benefitted from having free, potentially very expensive consultancy. Again, why do we do that, if the end product is going to be locked behind a paywall?"

Walport said there was a trend for conservatism in the scientific community because scientists want to get published in the most prestigious journal brands such as Nature, Science or Cell. Until relatively recently, there were not many alternatives for researchers who wanted to make a big impact with their work – but the commercial success of open-access journals published by the PLoS group, has proved that open access can make money. "PLoS ONE is now the largest scientific journal in the world and this is ramping up," said Walport.

To address the lack of competition, the Wellcome Trust has teamed up with the Max Planck Society in Germany and the Howard Hughes Medical Institute in the US to set up a new open-access journal called eLife. "The idea is that that will take on the very top end of the scientific publishing industry, a visible high-profile competitor to Nature and Science," said Walport. "In no sense is this a war in which we're trying to put them out of business, the thing that would be best for them [publishers] to do is to change their publishing model."

Willetts has appointed Dame Janet Finch, a former vice-chancellor of Keele University, to sit down with academics and publishers to work out how an open-access scheme for publicly-funded research might function in the UK.

Research Councils UK, the co-ordinating body for the distribution of more than £3bn of government money via the science research councils, has issued a consultation on open access. The main recommendation is in line with the Wellcome Trust's policy, that the final version of research papers produced as a result of public money must be made open access online within six months of initial publication.