

First of all greetings to everyone taking part in this workshop, wherever you are, and I hope that you and those close to you are keeping as safe and well as you can. Unless you're in New Zealand, in which case all I can say is I am deeply jealous.

I am very grateful to Koen and the Global Young Academy for the invitation to speak. My name is Simon Chaplin, and I am Director of Culture & Society at the Wellcome Trust. Wellcome is an independent foundation with a mission to improve health for everyone by helping great ideas to thrive. We are based in London, UK, and the majority of the 14,000 or so researchers we support are also based in or linked to UK universities, but our approach is becoming steadily more global as we shift from being simply a funder of research to being an organisation which seeks to address significant health challenges. We are known by many as a biomedical research funder and it is true that science is core to our mission, but we also fund research in humanities and social sciences related to health, as well as supporting work in arts and culture and community and public engagement.

Wellcome has a longstanding commitment to open access to research and responsible data sharing, both of which I will speak about today, but more recently we have also taken a much stronger interest in research culture, recognising that many of the challenges to making science more open are cultural and structural rather than technical. So in keeping with the theme of the workshop and the work of the Global Young Academy I am going to frame our work in Open Science in this context.

So Let me begin by saying a bit about what Open Science means to Wellcome, and how we are promoting action in a global context, before moving on to talk about the wider obstacles and how they might be overcome.

There are lots of definitions of open science, but the one we have worked with at Wellcome defines it as the practice of science in such a way that others can collaborate and contribute; where research data, lab notes, articles, code, materials and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and method.

This definition includes what we have traditionally regarded as open access, that is the unrestricted ability to find, read and use peer-reviewed research articles. But open science builds on open access by recognising that openness is not an end in itself but is a step which allows for wider (and hence greater) use of research, that this facilitates scrutiny and hence improves the quality and reliability of research, and that it depends on the material outputs of science not simply being findable and accessible, but also interoperable – that is, presented in common formats that enable them to be collated and compared – and re-usable, that is, presented under licences that don't preclude the kinds of activities that enable value to be derived from access and interoperability. Data and text mining are examples of such activities.

For this reason, much of what Wellcome has done on Open Science takes open access and the FAIR principles – findable, accessible, interoperable and re-usable – as the foundation stones.

Supporting Open Access is not straightforward. As many of you will know, there are many different flavours of open access, and many different ways of achieving what on the surface appears to be a single goal. One of the key elements that has helped drive the Open Access movement has been to persuade research funders to work together to develop common tools and common principles which mean that researchers are, to some extent, not expected to change their approach with every publication.

In the UK, Wellcome began this work by working with other science and health research funders to create a shared framework for supporting publication in fully open access and hybrid open access journals, with the costs of publication being met by the funder. We also coordinated the creation of platforms such as UK PubMedCentral so that open access research was available in a single repository.

UK PubMedCentral is now Europe PMC, supported by a wider coalition of mostly European research funders. And Wellcome is now part of a global consortium – Coalition S – which is creating a shared approach to open access by funders around the world. We also support initiatives such as the Global Biodata Coalition, which goes beyond open access to research

articles to look at how core data resources are sustained and not subjected to the vagaries of episodic funding.

These kinds of coalitions are important and will be critical to the success of open science. But the downside of coalitions is that if not managed carefully they can become unwieldy and exclusive. Let me address each point in turn. Coalitions become unwieldy because as you add more partners, each may want to slightly flex or adapt the approach. If we are not careful we end up with something that is not a set of common principles but a mess of conflicting ideas. Keeping focus on what is essential, and allow variation around a common core, is critical to success. For Coalition S this means funders supporting a common goal – zero embargo access to research under permissive licences – with a number of different ways to achieve this, not all of which need to be applied by every partner.

The second problem is that even when open science coalitions have a clear set of core goals, they risk becoming exclusive. This is particularly true of funder-led coalitions, which need to make sure that they take account of the large number of researchers whose work is not directly supported by a grant. This is true in a country such as the UK, which has a strong research funding economy, but even more importantly in a global context, when access to research grants may vary hugely between countries, and across disciplines, and at different career stages. We must ensure that other stakeholders – especially researchers - are part of the conversation. For example, with cOAlition S we are working with the GYA (and other early-career researcher groups) to help us define indicators which will seek to measure the impact of Plan S, through the Plan S Monitor Task Force. Here we are addressing the very specific concerns that some early career researchers have that initiatives such as Plan S will mean that they can't collaborate with other (non-Plan S researchers) or that their ability to get future grants will be impacted by the perception that they won't be able to publish in prestigious journals such as Nature.

Whether these fears are well-founded will become clearer as Plan S is implemented: already we are seeing a number of major publishers, including Springer Nature, indicate that they will develop solutions which are compliant with Plan S. But engagement with researchers points to a more fundamental challenge, which is what I will focus on in the final part of this

presentation. That is, that to really achieve lasting change in open access, open science and open research in the widest sense, what we need is to create is not – or not just - a set of policies or technical platforms, but a change to research culture.

The Global Young Academy has been one of the agents of change here, and I welcome the news for example that the GYA has endorsed the San Francisco Declaration on Research Assessment, or DORA. This is an important step but it is one thing to become a signatory, it is another to actually change the mindsets and behaviours of individual researchers and funders, especially those who hold positions of power when it comes to promotions and appointments, for example. So, in some countries there are still “approved lists” of journals; worse still there are financial rewards for publishing in high impact-factor journals. This is changing as seen by the growth of the number of funders/institutions which have signed up to DORA. This has been true within Wellcome, where we have worked very hard to ensure that grant reviewers and committee members don’t use journal impact factors or titles as proxies for research impact. But there is a real and valid fear from Early Career Researchers that even if some funders or some universities do succeed in breaking with tradition and adopting DORA, others will not and those who succeed will either be the ones who continue to play the old game or who have already reached a stage of career seniority that they can afford to not to play by the rules because they are already confident and secure in their roles.

We have to make this new approach not simply something that is applied on top of an existing model, but to go back to basics and redefine what we mean by ‘excellence’. This means not simply looking beyond the venue of publication at the intrinsic quality of the research, but looking much more broadly at what the outputs of research are. So recognising and valuing the work that goes into data collection or field research, not simply the analysis; counting as significant outputs things like code, materials, datasets and tools – recognising that we can apply the same principles of openness to these as we do to articles. And beyond this even, recognising that open science must recognise openly all the work that goes into research – mentoring junior staff, providing peer review or writing review reports, fostering networks and supporting equality, diversity and inclusion in the research

workplace. These are separate to, or subordinate to, the process of creating new knowledge, and they cannot be subordinate to it either.

Wellcome is proud to be taking these steps, working with others but also publishing our own guidelines to institutions we fund to describe how they can implement responsible and fair approaches for research assessment. At the moment these are still guidelines, and we want to work with institutions and researchers to test and develop them, much as we did in the early days of open access. But over time we can and must make these stronger. As Wellcome develops its next strategy we will build it on a foundation that recognises that openness in science is not simply about what we do, but how we do it, and that requires a commitment to rethink excellence in ways which place openness at its heart.

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