

# Open Resources: Who Should Pay?

*This blog is the first in a series of three which considers the perspectives of researchers, funders and universities in relation to the support for open resources, coordinated and written by Dr Lauren Cadwallader. This post asks the question: **What is the responsibility of national funders to research resources that are internationally important?***

In January 2017 the Office of Scholarly Communication and Wellcome Trust started an [Open Research Pilot Project](#) to try to understand how we could help our researchers work more openly and what barriers they faced with making their work open. One of the issues that is a common theme with the groups that we are working with is **the issue of the sustainability of open resources**.

## The Virtual Fly Brain Example

Let's take the [Connectomics](#) group I am working with for example. They investigate the connections of neurons in fly brains (*Drosophila*). They produce a lot of data and are committed to sharing this openly. They share their data via the [Virtual Fly Brain platform \(VFB\)](#).

This platform was set up in 2009 by a group of researchers in Cambridge and Edinburgh; some of the VFB team are now also involved in the Connectomics group so there is a close relationship between these projects. The platform was created as a domain-specific location to curate existing data, taken from the literature, on *Drosophila* neurons and for curating and sharing new data produced by researchers working in this area.

Initially it was set up thanks to a grant from the Biotechnology and Biological Sciences Research Council (BBSRC). After an initial three year grant, the BBSRC declined to fund the database further. One likely reason for this is that the BBSRC resources scheme explicitly favours resources with a large number of UK users. The number of UK researchers who use *Drosophila* brain image data is relatively small (<10 labs), whereas the number of international researchers who use this data is relatively large, with an estimated 200 labs working on this type of data in other parts of the world.

Subsequently, the Wellcome Trust stepped in with funding for a further three years, due to end in September 2017. **Currently it is uncertain whether or not they will fund it in the future**. By now, almost eight years after its creation, VFB has become the go-to source for openly available data on *Drosophila* brain information and images integrated into a queryable platform. **No other resource like it exists and no other research group is making moves to curate *Drosophila* neurobiology data openly**. The VFB case raises interesting and important questions about how resources are funded and the future of domain specific open infrastructures.

## The status quo

On the one hand funders like the Wellcome Trust, Research Councils UK and National Institutes of Health (NIH) are encouraging researchers to use domain specific repositories for data sharing. **Yet on the other, they are acknowledging that the current approaches for these resources are not necessarily sustainable.**

A recent [review on building and sustaining data infrastructures](#) commissioned by the Wellcome Trust acknowledges that in light of the FAIR principles “it is clear that data is best made available through repositories where aggregation can add most value”, which is arguably in a domain-specific repository. Use of domain-specific repositories allows data to be aggregated with similar data recorded using the same metadata fields.

It is also clear that publishers can influence where data is deposited, with publishers such as [Nature Publishing Group](#), [PLOS](#) and [F1000](#) all recommending subject-specific repositories as the first choice place for deposition. If no subject-specific repository is available then unstructured repositories, such as [Dryad](#) or [figshare](#) are often recommended instead, which complicates infrastructure needs and therefore provisions.

The economic model for supporting data infrastructures is something the Wellcome Trust are considering, with reports recently published by other funding agencies ([here](#), [here](#) and [here](#)). **The Wellcome Trust’s commissioned review noted that project-based funding for data infrastructures is not sustainable in the long term.**

However, historically funders have encouraged, and still encourage, the use of domain specific resources, which have been born from project-based funding because of a lack of provision elsewhere. This has created a complex situation – researchers created domain specific data infrastructures using their project funding; these have become the subject norm; funder’s encourage their use, but now don’t have the mechanisms to be able to pledge sustained long-term funding.

## **National interests?**

What is the responsibility of national funders to research resources that are internationally important? **Academic research is collaborative. It crosses borders and utilises shared knowledge regardless of where it was generated** and this is acknowledged by funders who see the benefits of collaboration. Yet, the strategic goals of funders, such as the [BBSRC](#), are often focused on the national level when it comes to relevance and importance.

On the one hand it is understandable that funders concentrate on national interests – taxpayers’ money goes into the funder’s coffers and therefore they have a responsibility to those taxpayers to ensure that the money is spent on research that benefits the nation.

But, one could argue that international collaboration *is* in the national interest. The US-based NIH funds resources that are of international importance, including most of the model organism databases and genomic resources, such as the [Gene Expression Omnibus](#). These are highly used by US researchers so one could argue that NIH are acting in the national interest but they are open to researchers all over the world and therefore constitute a resource of international importance.

Wellcome Trust do have a global outlook when it comes to funding, with 21% of [their total spend](#) (2015-6) going to projects outside of the UK. Yet, **the VFB resource is still vulnerable despite being an internationally important resource.**

One of the motivations for the Connectomics group to participate in the Open Research Pilot is to open a dialogue with the Wellcome Trust about these issues. The Wellcome Trust are committed to strategically investing in Open Research and encourage the use of domain-specific resources. The Connectomics group are interested in how will this strategic investment translate into actual funding decisions now and into the future.

### **Issues on which researchers would like clarification**

All the researchers who are part of the Open Research Pilot have had the opportunity to contribute to questions on open resources sustainability. Posts on the funder's and University's perspective will be published as parts 2 and 3 of this blog.

1. What do you think is the responsibility of national funders towards research resources that are of more international benefit than national?
2. How do you think the funding landscape will react to the move towards open research in terms of supporting the sustainability of resources used for curating and sharing data?
3. Researchers are asked to share their data in domain specific resources if they are available. There are 1598 discipline specific repositories listed on [re3data.org](#) and each one needs to be supported. How big does a research community need to be to expect support?
4. What percentage of financial support should be focussed on resources versus primary research?
5. If funders are reluctant to pay for domain specific resources, is there a need to move to a researcher pays model for data sharing rather than centrally funding resources in some circumstances? Why? How do they envisage this being paid for?
6. How can we harmonise the approach to sustainable open resources across a global research community? Should we move to centralised infrastructures like the European Open Science Cloud?
7. More generally how can funders and employers help to incentivise open research (carrot or stick?)
8. Wellcome often tries to act in a way to bring about change (e.g. open access publishing): Do they envisage that the long term funding of open research (10-20 years from now) will be very different from the situation over e.g. the next 5 years?

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*Written by Dr Lauren Cadwallader*