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The BMRB matters

In this issue of *NSMB*, we have opened our pages to the research community to express their thoughts about the importance of the Biological Magnetic Resonance Bank as it copes with budget cuts and faces the termination of its funding from the National Library of Medicine in 2014.

The Biological Magnetic Resonance Bank (BMRB) is a public repository for NMR data on biological molecules. Established in 1988 at the University of Wisconsin–Madison, the BMRB has since become an invaluable resource for the NMR community and for researchers in the structural- and computational-biology fields. The BMRB began by storing chemical-shift data, but it now also hosts other types of NMR data and has over 8,000 entries deposited, so far. The BMRB also offers data-validation and visualization tools to its users.

The BMRB mission statement is to "collect, annotate, archive and disseminate (worldwide in the public domain)" NMR data on biological macromolecules and metabolites, to "empower scientists" and to "support further development of the field." Despite its indisputable success in achieving these goals, the BMRB is facing serious funding challenges.

Since 1990, the BMRB has received continuous support from the National Library of Medicine (NLM), at the US National Institutes of Health, in the form of five-year grants. However, the BMRB obtained its latest grant renewal in 2009, accompanied by a sharp reduction in the funding level. It was also to be the last renewal, as the NLM announced that funding for all external centers would be phased out as their grants expire. Thus, as of today, the BMRB has no means of financial support after September 2014.

We asked several NMR and computational-biology researchers: Why should the BMRB be supported? Why is it relevant? What are the 8,000-plus deposited data sets good for? How do you use the BMRB in your own work? We asked them to send us short statements to be published in *NSMB* as they were, with only minimal editing for clarity and style. These statements, along with a short piece from John Markley, head of the BMRB, can be found in a special Feature (doi:10.1038/nsmb.2371) in this issue, pages 854–860.

We received an outpouring of responses. Researchers in the US and Canada, Europe and Japan felt compelled to speak up and support the BMRB. Several scientists engaged colleagues in their institution, city or even from across their country, to submit joint statements. The level of participation from the community and the passionate tone of many of the contributions say it loud and clear: the BMRB does matter!

Collectively, the statements point to the key role of the BMRB in disseminating the fruits of biological NMR research. This is indeed an essential part of the scientific enterprise. In fact, the scientific community, funding agencies and publishers all agree that scientific data must be publicly accessible. As discussed recently in our sister journals (*Nat. Genet.* **44**, 111, 2012; *Nat. Cell. Biol.* **14**, 775, 2012), some obstacles to making that possible include the lack of adequate repositories or even community standards for many types of data. In that regard, the BMRB is clearly an example to be followed.

Having large amounts of NMR data deposited in the BMRB has allowed the development and improvement of systems and protocols to, for example, generate protein structure information from chemical shift assignments. But making those data publicly available is not sufficient to make them useful. Accordingly, the BMRB has set standards for the NMR data it hosts; it also performs data validation and curates the database. Software tools have been developed, and many are hosted by the BMRB itself. All these features ensure that the data in the BMRB can be easily retrieved and used. This avoids duplication of work, generates new knowledge and drives research forward. That is exactly what any data-based resource should aspire to accomplish.

When we invited researchers to give their input on the BMRB, we asked them to focus on scientific arguments rather than discussing funding policies, as we felt that would be the most powerful argument in support of the BMRB and also because, well, science is what *NSMB* is about. Nevertheless, several of the statements touch upon this issue, and, as the impetus for our initiative was the funding situation of the BMRB, it is clearly difficult to avoid the matter altogether.

So who should pick up the bill? This is a problem in general for data banks, and one that is being actively discussed among funding agencies, scientific institutions and publishers, but finding a solution is far from simple. Because journals publish papers that rely on deposited data sets, it has been pointed out that publishers should contribute financially to those databases, and while relying on such donations would not be a feasible way to sustain a database, the possibility is part of the ongoing debate. In the case of the BMRB, some scientists have proposed that different funding agencies, in the US and abroad, should agree on jointly supporting it. Also, because of the nature of its activities, the BMRB would probably benefit from a funding mechanism that is more stable than the usual four- or five-year grant cycle.

These are all complex issues, particularly given the current state of the economy and of the funding levels for science worldwide. Although we do not claim to know all the answers, we do know that a solution must be found. ■