

A close-up photograph of a scientist wearing a blue surgical cap and a white face mask, looking through the eyepiece of a white and black microscope. The scientist is wearing a red lab coat. The background is a blurred laboratory setting.

**The Biotechnology and
Biological Sciences
Research Council**

www.bbsrc.ac.uk/

An exclusive interview with Professor Melanie Welham, BBSRC's Interim Chief Executive.



The Biotechnology and Biological Sciences Research Council (BBSRC) is one of seven Research Councils that work together as Research Councils UK (RCUK). BBSRC invests in world-class bioscience research, with the goal of tackling major challenges such as lessening the impact of climate change, achieving a healthier old age, and making our food and energy production sustainable. **Professor Melanie Welham**, BBSRC's Interim Chief Executive, gives us insight into the organisation, and describes the ways in which it supports and promotes biological sciences in the UK and further afield.



Firstly, could you please briefly introduce BBSRC, and tell us a little about its history, focus and scope?

BBSRC was formed in 1994 and for over 20 years has been investing in biological and biotechnology-focused research and innovation. Our Royal Charter defines three key objectives for BBSRC: to promote and support bioscience research and post-graduate training, to advance knowledge and technology to meet the needs of users for economic and societal benefit and to promote dissemination of knowledge and public understanding of biological science research. The bioscience we invest in spans plants, animals, microbes and humans, and we seek to fund the best research in the UK. One of our key aims is to support the UK bioscience research base so that it retains its world-leading status. What would you say are the guiding principles by which BBSRC is able to promote and support scientific research?

We are very clear – a key principle is to fund excellent bioscience research which has the potential, in the longer term, to have an impact – be this creation of new knowledge or translation of new discoveries so that they bring benefits to the people and economy of the UK.

What are the greatest challenges that currently shape the UK's research agenda?

BBSRC seeks to invest in excellent frontier bioscience across our remit. Within this, and in close consultation with experts across our research community, BBSRC has identified a number of grand challenges that form our strategic research priorities. These are: Agriculture and Food Security – producing sufficient safe and nutritious food to meet the demands of a growing global population using fewer resources; Industrial Biotechnology and Bioenergy – seeking to harness the power of biological systems to generate renewable supplies of energy, materials and fine chemicals; Bioscience for Health – helping the UK population to live healthier lives for longer, and Exploiting New Ways of Working – enabling researchers in the UK to be early adopters and developers of new approaches and technologies, as we did in the early days of genome sequencing.

In order to address these challenges, how does BBSRC, along with the rest of RCUK, promote cooperation between researchers across different disciplines and from different institutions?

All of the Research Councils recognise the importance of interdisciplinary research and are proactive in supporting research across disciplines. We often partner with other Research Councils

to promote cooperation, for example the establishment of six multidisciplinary Synthetic Biology Research Centres, jointly supported by BBSRC, EPSRC and MRC and the Global Food Security programme, which not only involves Research Councils but also other Government departments. We also have a cross-council funding agreement that facilitates cross-council support of research applications that come in to us in responsive mode competitions.

Does BBSRC support international collaboration? What funding is available to promote research that might not be entirely UK based?

BBSRC is a strong advocate for international collaboration and we work closely with a number of international partners to support collaboration. A variety of funding opportunities are available, from small-scale international partnering awards that enable scientific exchange through to jointly funded research programmes, such as Lead agency agreements with the US National Science Foundation, Science Foundation Ireland and the Brazilian agency FAPESP. The Newton Fund supports research which primarily benefits developing countries and provides funding for joint collaborative programmes with 15 countries on the DAC list. We are also partners in many European funding schemes.

What are the main routes by which UK research receives BBSRC funding?

We operate a number of schemes through which researchers in UK universities and institutes can apply for funding to support their research. Our largest scheme allows researchers to submit their best ideas for research to us and these can be in any area of our remit – it is very much bottom-up researcher-led. We also have funding calls in specific areas related to our strategic priorities of Agriculture and Food Security, Industrial Biotechnology and Bioenergy, Bioscience for Health and Exploiting New Ways of Working. Often we will work in partnership with others, including research councils (e.g. Synthetic Biology Research Centres with EPSRC and MRC), Innovate UK (e.g. Agritech and Industrial Biotechnology Catalysts) and Industry (e.g. Research Industry Clubs), as well as with International Partners.

Considering the great range, and variety, of biological and biotechnological research that is undertaken in this country, how does the BBSRC ensure that the available funds are best allocated?

We seek to invest in excellent research wherever it is located in the UK and expert peer review is critical to achieving this. We assess all applications submitted to us using expert reviewers from across the research community (national and international scientists) and assessment panels then meet to discuss the applications, determine those of highest priority for funding and make recommendations to BBSRC on which should be funded. Involvement of the scientific community in peer-review is essential.

In the past you have worked upon BBSRC funded projects. Can you tell us how that period influenced your own research career?

I have been very fortunate to have received support from a number of different funders during my research career. The award of a BBSRC Research Development Fellowship (2003-2006) had one of the biggest influences on my career. In essence, this Fellowship allowed me to focus all of my efforts on research as it allowed my university to employ someone to cover my teaching and administrative duties. I

was able to shift the focus of my research from investigating the processes controlling the behaviour of white blood cells to understanding how signals controlled the characteristics and behaviour of stem cells – embryonic stem cells became a particular focus. As a consequence of this fellowship my research team became focused on stem cell biology, which led to involvement in a large-scale European project as well as working as part of a public-private-partnership research consortia seeking to generate functional liver cells from embryonic stem cells.

Please tell us a little about the BBSRC's position on public engagement and knowledge dissemination?

Public engagement and science communication are important and we encourage our researchers to talk openly about their research and findings, processes and implications. For science to be useful and valued it needs to be an integral part of society – this means that as scientists we have a responsibility not only to tell people about our work but also to discuss and listen to others' views on our work and aspirations.

You have personally been involved in BBSRC outreach activities. Can you please tell us about your views upon the value of direct engagement with UK universities and research institutes?

Engagement with UK Universities and research institutes is vital for a number of reasons. First, it provides an opportunity to learn about the outcomes of the investments we have made in different areas of research. Secondly, we listen to concerns from our community – it is important that we work together to make a strong bioscience research base in the UK. Third, community engagement helps Universities and Institutes understand the influences on BBSRC as an investor of public funds as this carries with it very important responsibilities.

Finally, can you please share your thoughts on the future of biology and biotechnology in the UK, and the ongoing role of the BBSRC in that future?

There has never been a more exciting time! UK bioscience is world-leading and we have a real opportunity to expand the contribution that the Bioeconomy makes to the UK, improving the wellbeing of society and benefitting the wider economy.



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