

EVALUATION OF BBSRC'S PLANT AND MICROBIAL SCIENCES COMMITTEE RESPONSIVE MODE PORTFOLIO 2009

BBSRC RESPONSE TO THE PANEL'S REPORT

This document sets out BBSRC's response to the findings of the Review Panel convened to provide an independent scientific evaluation of the research supported in responsive mode through BBSRC's Plant and Microbial Sciences Committee since 1996.

BBSRC thanks the Panel members for their hard work and commitment to this exercise. We are pleased to note the Panel's views that the overall quality of research funded through the PMS Committee was very good, with many examples of internationally significant research. The remainder of this document sets out our response to the Panel's key conclusions.

KEY CONCLUSIONS

Research Quality

- *The PMS Committee has supported a broad range of excellent science across its remit*
- *The Committee has supported some outstanding scientists working in the fields of plant and microbial sciences*

BBSRC welcomes the Panel's assessment of the overall quality of the research in the PMS Committee portfolio, and in particular, the world-leading quality of plant and microbial sciences research within the UK. We note the observation that the highest quality research has arisen from individuals working in institutions with strong intellectual and capital infrastructure, and that these individuals have been able to develop exciting research programmes through competitive responsive mode grant applications. BBSRC will continue to support excellent and creative investigator-driven science through responsive mode; in 2007/2008 BBSRC invested £143 million in responsive mode funding, of which over £17 million was delivered through the PMS Committee.

- *The outputs that arose from the funded grants were very good and reflect the high standard of the research in the portfolio*
- *The research supported through the PMS Committee has played an important role in building strong research communities within the UK*
- *PMS Committee support has enabled researchers to access a wide range of other funds*

We welcome the Panel's views on the outputs and outcomes of the research supported by the PMS Committee and note the variety of measures of success which supported those views including peer-reviewed research articles, citations, further funding, training of researchers and their subsequent career-development, new collaborations in the UK and overseas, the development of intellectual property and the formation of start-up companies.

- *A small but significant number of grants were less successful than expected either failing to meet their original objectives or resulting in little or no tangible output*

We share the Panel's concern over the less successful grants. It should be noted that the evaluation covered a ten year period during which application success rates were higher compared with today. The relatively high success rate may have resulted in some less competitive grants being funded and is likely to have contributed to the proportion of underperforming grants. We are partly reassured, however, by the small number of grants in this category, and agree with the Panel's conclusions that limited success in meeting

objectives is sometimes the inevitable consequence of conducting innovative or high-risk science, and that it is important to continue to invest in such research.

Research Impacts

- *The research supported by the Committee has delivered economic and social impacts*

BBSRC recognises that basic research in the plant and microbial sciences underpins developments in many of our key strategic priorities, including bioenergy, food security, global security, living with environmental change, health and wellbeing, and animal health. We are pleased that the research supported through the PMS Committee has delivered important economic and social impacts in these areas, and that researchers recognise that their research can ultimately benefit agriculture, the environment, human health, or animal health and welfare.

We welcome the observation that the majority of grantholders was involved in public engagement activities; we share the Panel's view that these activities help to improve awareness and understanding of plant and microbial sciences, and illustrate how BBSRC science is addressing issues of public interest. BBSRC is committed to encouraging grantholders to engage with the public and requires that one to two days per year of the grant is spent on these activities. We provide a wide range of mechanisms to assist grantholders with this commitment, including funding schemes, web-based resources and communications training. We also participate in cross-Council schemes to which our grantholders can apply. See www.bbsrc.ac.uk/society for further details.

- *There are opportunities for the strong base of basic research supported by the PMS Committee to deliver even greater impact to UK society*
- *The effectiveness of identifying increased impact from research could be improved by incorporating coherent plans for knowledge exchange within grant applications at the outset*
- *There is a need to promote greater links to other stakeholders who benefit from plant and microbial sciences research*

BBSRC is committed to delivering and demonstrating increased economic and social impact from our research funding. From 2009, all applications will have to include statements about the impact of the research which will be assessed as part of the refereeing process. We are also introducing other measures to encourage a change of culture within the academic community including, for example, the impact incentive schemes 'Innovator of the Year' and 'Excellence with Impact Awards' (see www.bbsrc.ac.uk/business/impact_incentive). BBSRC recognises that the delivery of impact is dependent on supporting high quality research; scientific excellence remains the primary driver in the assessment of grant proposals.

One mechanism BBSRC is using to deliver increased impact from research is Research and Technology Clubs. These support high quality, innovative research in areas identified as strategically important by BBSRC and industry, and encourage closer links between academia and industry. They operate by establishing funding pots, supported jointly by BBSRC, other funding bodies and consortia of companies. Plant and microbial scientists are participating in the Integrated Biorefinery Technologies Initiative Research and Technology Club (IBTI Club). The IBTI Club supports research aimed at developing biological processes and feedstocks that will reduce our current dependence on fossil fuels as a source of chemicals, materials and fuel. In addition, BBSRC is currently talking with plant breeders and end users (bakers and millers) with a view to setting up a new Research and Technology Club for crop improvement. This funding stream will support innovative crop science research in areas such as quality, yield and disease resistance. See www.bbsrc.ac.uk/business/collaborative_research/industry_clubs for details.

Training and skills development

- *The training and skills development provided by PMS Committee grants was good, and this was reflected in the high quality scientific outputs arising from individual projects*
- *There are issues with the retention of trained individuals within the research environment*
- *BBSRC should encourage universities and other institutions to take a more professional approach to the training and skills development of postdoctoral researchers and PhD students*

We welcome the finding that PMS Committee grants have achieved a long-term investment in the skills and development of the researchers working on the projects, and BBSRC has introduced a new grant assessment criterion to emphasise this important role of responsive mode grants.

BBSRC has been working with Research Councils UK to address the issue of the career development of postdoctoral researchers. In 2008, Research Councils UK and Universities UK published their revised *Concordat to Support the Career Development of Researchers*. The Concordat sets out the responsibilities of researchers, their managers, employers and funders. It aims to increase the attractiveness and sustainability of research careers in the UK and to improve the quantity, quality and impact of research for the benefit of UK society and the economy. See www.researchconcordat.ac.uk for further details. The movement of postdoctoral researchers out of academia into commercial research careers and other employment sectors needs to be seen, however, as an important form of knowledge transfer. BBSRC works with the other Research Councils to fund the *Vitae* career development programme, which aims to help both PhD students and postdoctoral researchers to transfer their skills out of academia. See www.vitae.ac.uk for further details.

- *There is a severe lack of trained plant breeders in the UK*

BBSRC acknowledges that the lack of trained plant breeders in the UK is a concern which could significantly impact the UK's future food security. There are also related 'niche' areas of expertise (such as plant virology) which are becoming vulnerable in the UK, and which we will be seeking to investigate through a niche skills consultation in 2009. In parallel, we are already exploring the funding of a professional doctorate in agricultural science supported by a wider Advance Training Partnership. Professional doctorates combine research and advanced tuition in areas of professional practice, and help bridge the gap between basic science research and its translation by ensuring that students develop research expertise in a context informed by end-user needs. We will therefore be seeking to work with university partners, commercial partners and levy bodies to create a new form of doctorate in agricultural practice – the 'AgD'. As part of developing Advanced Training Partnerships, BBSRC will also be seeking to strengthen knowledge transfer mechanisms between research-intensive universities and the teaching-intensive agricultural colleges. This is to ensure that this related lower-level skills provision is also informed by the needs of R&D in the sector.

- *There is insufficient emphasis on plant and microbial sciences within university and school curricula, and in particular, there is insufficient training for undergraduates in microbiology.*

BBSRC recognises that high-quality education in universities and schools is vital to the future success of UK science, and BBSRC-supported scientists participate in a number of schemes to help foster school-scientist links (see www.bbsrc.ac.uk/society/schools). We are also exploring possible mechanisms to influence the university and school curricula, working where appropriate with other partners. BBSRC will continue to raise issues related to undergraduate education and training with universities, for example, through meetings we hold with university heads of department.

Balance and coverage of the portfolio

- *There is an opportunity to support more strategic and applied research through responsive mode funding*

In autumn 2008, BBSRC announced the restructuring of its Research Committees. An important driver for these changes was the need to deliver more multi-disciplinary and strategically focused science with greater impact within responsive mode. Under the new structure, a greater number of proposals for strategic and applied research are anticipated. The restructuring should also address the Panel's concerns over potential gaps in support where an area of science was seen to sit between the remits of two Committees (for example, PMS and Agri-Food). See www.bbsrc.ac.uk/funding/grants/roadshows for details.

- *There is scope to transfer the findings from basic research with model organisms to more applied or strategic systems*

BBSRC believes that it is important for researchers to ensure that their research findings are utilised and deliver broader benefits to the public good, and we recognise the need for research with model plants to be translated into crops. However, this will be most effective if it is informed by first identifying and understanding the challenges facing crops; crop science is an important BBSRC strategic priority.

- *There are insufficient tools and resources for microbiologists, especially for those working with non-model species*

BBSRC believes that the provision of tools and resources for microbiologists has improved since the evaluation period, and should improve further under the new Committee structure. The Committee restructuring brought together areas of microbiology that were previously split between the PMS and Agri-Food Committee remits, and this should enable a more coherent overview of support for tools and resources support to be developed. It should also be noted that researchers are able to apply to BBSRC's Tools and Resources Development Fund which supports small or short-duration pump priming, technology or method-driven research projects (see www.bbsrc.ac.uk/funding/opportunities).

- *BBSRC must ensure that there is adequate support for genomic activities within the plant and microbial sciences*

In April, BBSRC announced that the establishment of a new national centre to analyse plant, animal and microbial genomes. The Genome Analysis Centre (TGAC) will be based on the Norwich Research Park and will provide genome sequencing to underpin advances to improve food security, to protect UK agriculture from exotic animal disease and exploit weaknesses in microbes to develop new ways to kill superbugs. It will also be a centre of excellence in bioinformatics to ensure that the data generated by its genome analysis, and that of other facilities, can be effectively collected and analysed.

TGAC will be a BBSRC national centre in partnership with the East of England Development Agency, Norfolk County Council, South Norfolk Council, Norwich City Council, and the Greater Norwich Development Partnership. BBSRC is providing the majority of the £13.5 million investment in the Centre. See www.tgac.bbsrc.ac.uk for details.