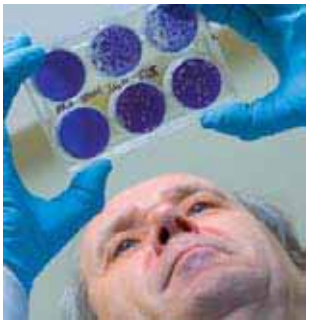
bbsrc
biotechnology and biological sciences research council



Annual Report & Accounts 2006-2007

Biotechnology and Biological Sciences Research Council

Annual Report & Accounts 2006-2007

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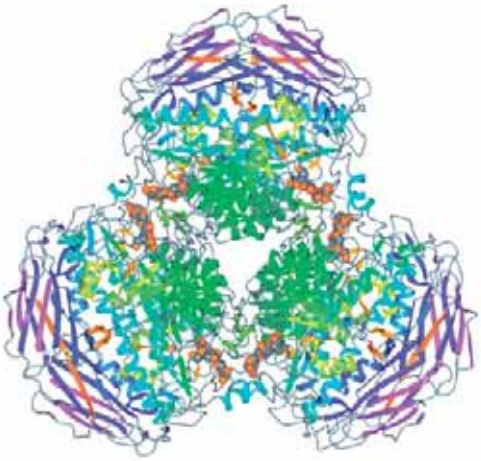

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This Annual Report covers activities during the period 1 April 2006 to 31 March 2007.

The Biotechnology and Biological Sciences Research Council (BBSRC), established by Royal Charter in 1994, is the UK's principal funder of basic and strategic research across the biosciences (www.bbsrc.ac.uk). It is funded primarily by the Science Budget, through the Office of Science and Innovation (OSI). Our mission is to support high-class science and research training, and to promote knowledge transfer in support of bio-based industries and public engagement in bioscience.

Chairman's statement

UK bioscience and healthcare sectors generate over £23 billion a year in revenues and employ over 400,000 people. Moreover, the UK is the most highly sought after European location for investment in pharmaceutical and biotechnology R&D[1]. This sets in context the importance of BBSRC's role in helping to maintain the UK's world-leading bioscience research base. It is this strength, within a supportive business and social culture, that attracts multinational companies to locate and invest in the UK.

Dr Peter Ringrose with Bioscience Prize winner Dr Valerie Ferro from the University of Strathclyde, at the final of the 2006 Business Plan Competition

A year after reporting that bioscience in the UK was second only to that of the USA in terms of indicator outcomes, I am delighted to record this year that the UK bioscience sector has overtaken the USA in terms of citation impact[2]. This is a tremendous achievement for the UK bioscience community, which BBSRC is proud to support, as well as a strong endorsement for our policy of making scientific quality the principal criterion for funding in what will be an increasingly competitive future internationally.

This year we have focused strongly on enhancing the social and economic impact of the research we fund. We have challenged ourselves to identify, much more rigorously than before, the scale and rate of progress we should achieve, and how best we can optimise outcomes through targeted partnerships with industry and other funders, and through national programmes such as the Technology Strategy Board. We have worked through the Research Councils Knowledge Transfer and Economic Impact Group to commission an independent study of economic impact from several areas of our activity. BBSRC has separately funded a study of impacts and interactions arising from our funding of research and training in leading university bioscience departments.

We have streamlined our activities across collaborative research, commercialisation and skills training. Most significantly, we have made a step change in working jointly with industry to define and fund high-quality science to support emerging technologies in Bioprocessing and Diet & Health, with combined new funding of over £20M.

We are building from a strong base. BBSRC research, for example, on gene function and transgenesis, structural protein chemistry and cell biology generated knowledge that underpins the biopharmaceuticals sector (estimated global value of over $50Bn) as well as emerging fields such as stem cell therapies and tissue engineering. Our research has also led directly to many new businesses and products (see table); as have our activities to promote entrepreneurship and commercialisation. Our review in 2006 of outcomes from bioscience participants in our Business Plan Competitions since 1999 revealed some significant successes, including 13 companies that were helped by the Competition and subsequently secured significant investment income.

Examples of spin-out companies from bioscience research

HAPTOGEN (antibody engineering; www.haptogen.com)
DOMAINEX (protein folding technology; www.domainex.ltd.uk)
PROTAMAX (protein folding technology; www.protamax.com)
XSTALBIO (nanotechnology drug delivery; www.xstalbio.com)
RENOVO (wound healing; www.renovo.com)
EXOSECT (insect control; www.exosect.com)
REGENTEC (stem cells; www.regentec.net)
AXORDIA (stem cells; www.axordia.com)
BIOTICA (novel antibiotics; www.biotica.com)
PROLYSIS (novel antibiotics; www.prolysis.com)
ORLA PROTEIN TECHNOLOGIES (nanotechnology: self-assembling biological interfaces for use in protein arrays, cell culture etc; www.orlaproteins.com)
HYBRID SYSTEMS (cell specific gene supplementation therapy using coated parvoviruses; www.hybridsystemsltd.co.uk)
GENTRONIX (genotoxicity testing; reducing number of animals used; www.gentronix.co.uk, see page 12)

The Biotechnology YES Competition provides early-career researchers with unique training in business skills. The standard is exceptionally high, and the Competition has a strong record of launching individuals into productive collaborative research and careers in industry (page 22).

In August 2007 Professor Julia Goodfellow steps down as BBSRC Chief Executive. The Council and the research community are indebted to her for her energetic and inclusive leadership, which has enabled the community to develop and deliver a shared vision for UK bioscience. This has led to significant progress scientifically, for example in the rapid establishment of world-class research capacity in systems biology; and helped to secure long-term sustainability of the science base through increased investment in research tools and resources, and renewed focus on training and career development. It is a particular pleasure to record my personal thanks and those of the BBSRC Council.

Dr Peter S Ringrose

July 2007

[1] R&D in the UK: A world-class proposition, UK Trade and Investment, January 2007

[2] March 2007 Evidence Report on PSA Target Metrics – www.dti.gov.uk/files/file38817.pdf

Chief Executive's report

As this Report illustrates, BBSRC has made significant progress across the board: increased integration of research within multidisciplinary partnerships (page 10); identification and funding for research training that provides the skilled individuals needed in academic research and by UK industry (pages 22-27); and collaborative funding within Research Councils UK (RCUK) and with other partners in areas of national importance, such as stem cell science (page 11), research into ageing, and the mitigation of environmental change (pages 14-15).

Professor Goodfellow speaking at the UK Trade and Investment Conference in Germany in February 2007 which included networking platforms and discussion of commercial-academic networks

I was pleased to serve on the Research Council Economic Impact Group chaired by Mr Peter Warry, which reported in July 2006. BBSRC is responding through Research Councils UK, and with new activities within our business and innovation portfolio (page 18). The difficulty in quantifying achievements in this area is widely recognised, but there is no doubting the changed culture and energy for innovation within UK bioscience.

Icon Photos

The Secretary of State for Trade and Industry, Rt. Hon. Alistair Darling MP (left), announced BBSRC's £20M commitment to bioenergy research at the launch of National Science Week 2007

We have also helped to encourage and support 'upstream' public dialogue on the applications and social implications of new areas such as nanotechnology and stem cell therapies, in line with the Government's Science and Innovation Ten-Year investment framework (page 29). Broad consultation and consideration of public attitudes is now embedded in our policymaking.

Sponsored institutes

The future scientific direction and governance of BBSRC-sponsored institutes has been a major theme. We were pleased that the report of the House of Commons Science and Technology Select Committee Inquiry on Research Council Institutes (HC68-1, 2007), to which we submitted evidence, recognised both the need for long-term funding and for review, renewal and restructuring. BBSRC Council's deliberations have been science-led and focused on how institutes can best deliver their missions. Following an independent review of BBSRC-sponsored institutes, chaired by Professor Sir Brian Follett FRS, the Council, at its meeting in October 2006, endorsed three possible options on which it consulted with institute Governing Bodies and the trades unions. These were: transfer of assets to another body, for example, a university; full independence; and direct control by BBSRC. Further discussions at the December 2006 and February and April 2007 Council meetings generated a 'roadmap' for phased change to secure institute science for the medium- and longer-term. Previously announced funding to institutes is not affected. Thus, we expect the following to occur:

By 2008,

- **Institute of Grassland and Environmental Research** (IGER), other than North Wyke, to transfer to partnership with the University of Wales, Aberystwyth (UWA) creating a new centre; subsequently UWA and University of Wales, Bangor will form an Institute for Sustainable Land Use.
- **Roslin Institute** (including the Neuropathogenesis Unit, which transferred from the Institute for Animal Health in April 2007) to become part of EBRC at the University of Edinburgh.
- **Rothamsted Research** to come under direct BBSRC control (including North Wyke site of IGER).
- The other institutes are continuing analysis and discussion with a view to clarifying changes by the end of 2007 and implementing these by April 2009.

We are also changing our funding to institutes, which will be through a small number of fully-costed strategic programme grants rather than a single core grant as at present. This will bring added clarity to what BBSRC is funding, while encouraging long-term sustainability in key areas.

The formation of the new institute in Edinburgh, EBRC (page 8), is an exciting example of how we can bring groups of excellent researchers together to create a more sustainable institute that can compete internationally.

Some research achievements

- **Discovery of genetic imprinting in maize, revealing molecular interactions that ultimately determine grain size and content (University of Oxford, Hamburg University, Germany and Biogemma)**
- **Characterisation of a 'nanomachine' (Tat system) that exports proteins from bacterial cells, which could be used to improve production of biopharmaceuticals in cell cultures (John Innes Centre)**
- **Evidence from studies of fruit fly genetics of the mechanism of the human disease hereditary spastic paraplegia, and implications for other conditions involving motor neuron degeneration (University of Cambridge)**
- **New insights into how enzymes work, from structural-mechanistic studies of 'quantum tunnelling' (University of Manchester)**
- **Studies on the use of harmless lactic acid bacteria to deliver antigens to stimulate immune response offer a possible route to modulating allergic responses (Institute of Food Research)**

Other examples of outputs from BBSRC-funded research are provided throughout this Report.

The Systems Biology Centres that we established in 2005 and 2006 are developing well. To help UK bioindustries harness the expertise and facilities at the Centres, we have announced support of £2.5M to a LINK initiative that will enable researchers at the Centres to work with company partners on projects of direct industrial relevance (page 19).

We are complementing the work of the Centres through a major initiative with EPSRC, totalling up to £30M, to support systems approaches to strategically important bioscience problems across our remit (page 10). We are also making £400k available for small awards (typically £50k - £100k) to support research networks providing mathematical tools for systems biology. These new schemes bring BBSRC's total investment in the area to over £85M, and are helping to establish the UK as a major force in systems biology.

Our annual Next Generation Meeting for PhD students and early-career postdoctoral researchers has become a model forum for dialogue on career development and other support issues

Broadcaster Sue MacGregor chaired our 2007 Open Meeting in Glasgow at which Council and Strategy Board members, BBSRC staff, University Vice-Principal, Professor John Coggins, and Director of the Scottish Bioindustry Association, Dr Barbara Blaney, discussed research training provision, and answered questions from an audience of over 120

I step down as BBSRC Chief Executive in August 2007. It is a great pleasure that this Annual Report shows both BBSRC and UK bioscience in such a healthy state. This is due to the efforts of a very large number of people across the UK. I am very grateful for all the support that I and the BBSRC have received over the past five years, and for the dedication and commitment of colleagues throughout BBSRC.

Professor Julia Goodfellow CBE

29 June 2007

A healthy UK science base

Providing the environment for world-leading research

Basic, curiosity-driven research is the life blood of bioscience, generating new knowledge that drives forward understanding, applications and new technologies. Providing funding for scientists to pursue such research, across our remit, remains a major BBSRC priority. We are committed to steadying or increasing application success rates for this 'responsive mode' support, taking into account the increasing cost of bioscience research. We are broadly on schedule to meet our targeted increase of 4% pa. overall in responsive mode funding by 2007-08, having made small adjustments to our spending plans to accommodate the DTI's one-off decision of February 2007 to reduce the Research Councils' funding over the spending review period. Our responsive mode funding for 2006-07 was £126.3M.

The speed of advance in bioscience is largely due to scientists' growing ability to deploy a range of expertise, technologies and analyses to tackle much bigger scientific questions than before. However, this requires them to work in larger teams, and on bigger research programmes, over longer periods than the traditional three-year project grant. We have introduced procedures to encourage applications for longer (up to five years) larger (£2-5M) responsive mode grants to tackle strategically important problems in biology. We intend to build a rolling portfolio of 10-15 awards by 2008. As well as the benefits to science, this move is designed to help reduce the amount of time researchers spend on applying for funding.

We have continued to monitor the impact of the introduction of 80% Full Economic Costing (FEC) on our funding profile, in partnership with other Research Councils, Universities, OSI and other stakeholders. We were pleased to note that the science budget settlement, announced in March 2007, included provision for continuing costs of 80% FEC funding.

Summary of grant applications and success rates

	2005-06			2006-07			
	Spring	Autumn	Winter	Spring	Summer	Autumn	Winter
Number	776	668	404	465	486	383	405
% success	25	27	25	29	26	26	24

Application and success rates by gender

Percentage of successful applications from total applications

	2004		2005		2006	
	Male	Female	Male	Female	Male	Female
Project grants	26.3	24.1	27.0	24.5	27.2	23.0
Programme grants	44.9	37.9	42.9	39.7	41.3	45.7
New investigators	41.8	50.0	40.8	33.3	31.7	35.0
Fellowships	9.3	17.4	16.9	5.6	16.7	9.1

Percentage of female applicants for peer reviewed funding

	2004	2005	2006
Project grants	19.8	21.4	21.9
Programme grants	14.1	19.4	18.1
New investigators	21.2	29.7	27.8
Fellowships	32.2	35.6	42.3

Ensuring our operations are fit for purpose

▶ We have acted to ensure that our policies and funding continue to meet the needs of increasingly cross-discipline research, and of the burgeoning bioscience research base.

Peer review

In March 2006, the Research Councils launched a study into the cost of the peer review process. Among the report's findings were that peer review is effective at allocating funds and has underpinned the success of the UK's research base; and that efforts to improve efficiency should focus on optimising the use of the academic time needed to prepare and review proposals. The Research Councils have consulted on the identified options for possible efficiency gains.

Committee operations

In Summer 2006 we consulted the research community on the appropriateness of our research committee structure. Results were discussed at an independently run workshop of stakeholders in November, and considered by BBSRC Council in December. As a result we are:

- **re-allocating our remit across six new committees, which will operate from 2008, to provide better support for interdisciplinary research and basic and applied sciences**
- **introducing a system of core, standing members and a wider 'community'**
- **reviewing assessment of applications of different sizes and complexity**

We have reviewed the operation and output of three of our Research Committees: Animal Sciences, Biochemistry and Cell Biology, and Genes and Developmental Biology. Findings are published on the BBSRC website.

Open access

BBSRC is committed to the principles set out in the RCUK statement on open access (June 2006). We have specified requirements for BBSRC grantholders to deposit their publications in electronic repositories, where possible. BBSRC supports UK PubMed Central, which provides a stable, permanent and free-to-access online digital archive of full-text, peer-reviewed research publications.

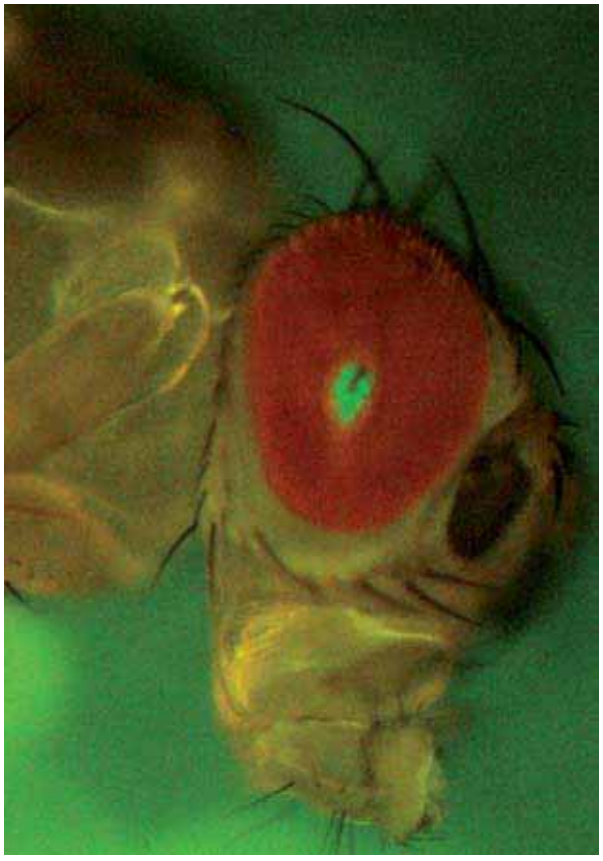
Data sharing

Following consultation with the research community, we are embedding a culture of data sharing. Our new policy will require all scientists applying for BBSRC research grants to provide a statement on data sharing.

Eligibility

In partnership with other Research Councils, through RCUK, we have refined the criteria for eligibility to BBSRC funds. The new framework[3] defines the independent research organisations that are eligible for funding, alongside the Councils' institutes and all UK Higher Education Institutions.

Following recommendations in the House of Commons Science and Technology Select Committee's report on Research Council institutes, to extend access to responsive mode funding, we will establish a one-year pilot that enables scientists at our sponsored institutes to apply for funding, without a limit on institute applications. We will also allow institutes sponsored by the Medical Research Council (MRC) and the Natural Environment Research Council (NERC) to apply for responsive mode grants, in a reciprocal arrangement.



Research at the Babraham Institute into the mechanism of sensory transduction in *Drosophila* photoreceptors has proved to be an influential model for the analysis of signalling pathways conserved within mammals and of potential biomedical importance

[3] www.rcuk.ac.uk/research/eligibility

A healthy UK science base

Maintaining the UK's research portfolio

As we continue to embed systems-based approaches across the biosciences, we are also working to maintain underlying disciplines for the overall health of UK bioscience.

BBSRC Council commissioned an independent review of microbial science research, chaired by Professor Charles Dorman. The review found strong research groups, spread across institutes and universities. The report's recommendations, in particular the development of dynamic networks, were considered by Strategy Board in September 2006. BBSRC will explore opportunities to integrate research and training in microbiology.

We also analysed food research in the UK: the findings have informed our strategy, including the future development of research at Institute of Food Research, and the development of collaborative academic-industry approaches (page 19).

Analysis of Final Reports

	2004-05	2005-06	2006-07
Research grants delivering high-class work adding significantly to knowledge in the field (%)	77	78	79

Top 25 universities by grant funding

	University	Research grants (£M)
1	Manchester	13.26
2	Cambridge	12.97
3	Imperial College London	9.39
4	Oxford	8.98
5	Glasgow	7.32
6	Nottingham	7.10
7	University College London	6.36
8	Edinburgh	6.21
9	Sheffield	5.76
10	Newcastle	5.59
11	Leeds	4.84
12	East Anglia	4.50
13	Bristol	4.45
14	Birmingham	4.43
15	York	4.40
16	Liverpool	3.63
17	Warwick	3.44
18	Cardiff	3.34
19	King's College London	3.24
20	Aberdeen	2.82
21	Leicester	2.37
22	Southampton	2.13
23	Royal Veterinary College	1.94
24	Durham	1.92
25	Dundee	1.89

Three universities account for 25% of our grant funding; eight account for 50%; 18 for 75%; and 86 for 100%.

Research funding: Analysis of gross expenditure

(£M)	Universities	BBSRC-sponsored institutes	Other organisations	Total
Responsive research grants	108.4	10.6	7.3	126.3
Core strategic grants (CSG)	-	73.6	-	73.6
Research initiatives	41.2	5.8	5.2	52.2
Equipment and facilities	10.3	0.5	0.9	11.7
Capital and buildings	-	38.7	3.8	42.5
Training awards and fellowships	40.1	3.0	1.5	44.6
TOTAL:	**200.0**	**132.2**	**18.7**	**350.9**

Bioscience increasingly requires new tools, data handling resources and other infrastructure. We have identified, and are addressing, technological challenges that are bottlenecks to progress. We are supporting new approaches in bioimaging; computational tools, including integration of different models, data types and descriptions; bio-based tools, such as RNAi; and analytical tools, including chip-chip approaches and SNP sequencing.

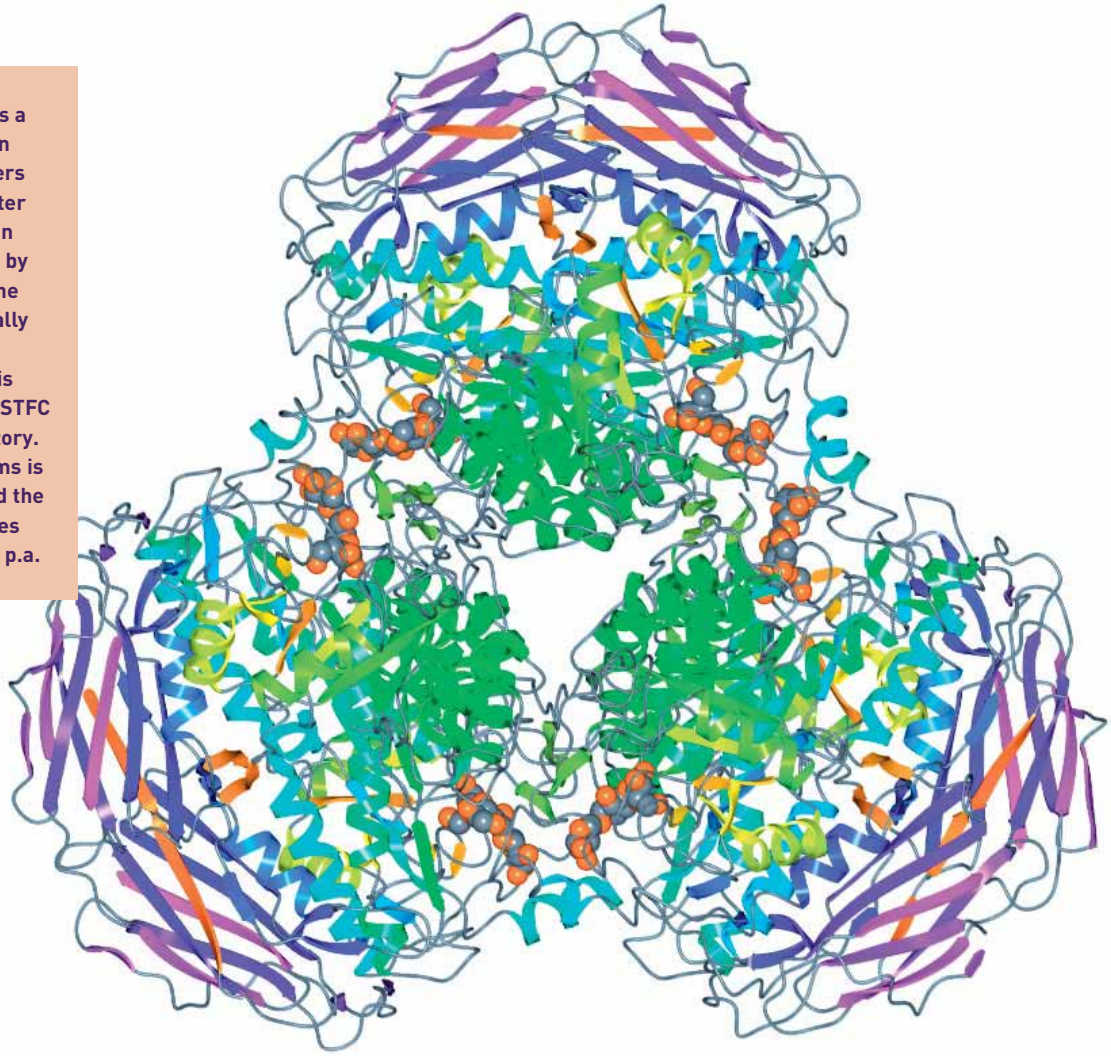
In 2006, we launched a £6M pilot Bioinformatics and Biological Resources Fund. This will support resources used by researchers, such as databases and genetic resources and collections that require long-term maintenance and curation.

We have started to build a multidisciplinary community of technologists through our Technology Development Research Initiative. In 2006, we made the first 19 awards, totalling £9.6M for projects at a total of 15 institutions. Examples include robotic technology in metabolomics; video atomic force microscopy for imaging *in vivo*, and electron spin resonance imaging in biomedical science.

Following a successful pilot, we will continue our Tools and Resources Development Fund in 2007-08. This supports small or short duration pump-priming technology and methods-driven research, which might not otherwise be funded. This year we made 39 awards, totalling £3.4M, for projects including the design of a novel photonic biosensor for high-throughput immunoassays; the development of new tools and resources to enhance wheat functional genomics; and a novel system to analyse the effects of drugs on beating heart cells derived from stem cells.

Under our Research Equipment Initiative, we made 35 awards totalling £6.5M, with emphasis on multi-user and multi-project applications.

▶ BBSRC supports a major collaboration between researchers working on computer software for protein structure analyses by crystallography. The project was originally established by the former SERC, and is coordinated at the STFC Daresbury Laboratory. Its suite of programs is used widely around the world and generates income of c. £750k p.a.



Courtesy of York Structural Biology Laboratory

3D structure of arabinofuranosidase, Araf51 – a heat-stable enzyme, with unusual specificity, from the bacterium *Clostridium thermocellum*, with potential application for the digestion of plant material into fermentable sugars – shown in a complex with α-1,3-linked arabinoside of xylobiose

A healthy UK science base

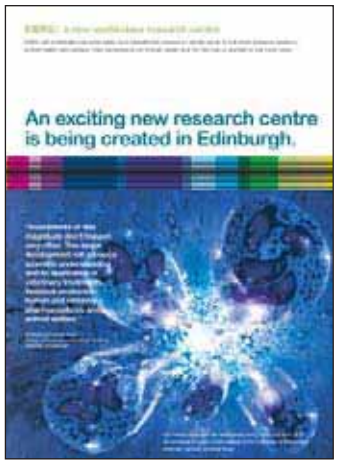
Sponsored institutes

BBSRC-sponsored institutes undertake mission-oriented research, often requiring specialised and sometimes unique, research infrastructure. They provide national capability in key strategic areas such as animal health and sustainable agriculture. As bioscience research increasingly requires large, multi-disciplinary teams and access to costly facilities, we need to ensure that institutes have appropriate critical mass and can benefit, as university research departments have, from collaborative partnerships and mergers to provide centres of sufficient capacity to remain internationally competitive.

Our vision of institute science has informed our deliberations about the future governance arrangements for the institutes (page 2), with a strong emphasis on science need and securing a sustainable research base.

Bringing together complementary expertise

With the University of Edinburgh, we have announced the appointment of Professor David Hume as first Director of the new bioscience research centre (EBRC), with effect from May 2007. The new Centre, which will be formally established in 2008, will bring together complementary expertise in animal bioscience from the University of Edinburgh Royal (Dick) School of Veterinary Studies, Roslin Institute (including the Neuropathogenesis Unit, which until April 2007 was part of the Institute for Animal Health), and the Scottish Agricultural College. From 2010, the Centre will be based around a new £55M building on the University of Edinburgh's Easter Bush campus.



The Centre will focus on basic research, using the knowledge harvested from modern genome science to understand the shared biology of animals and humans. This will underpin applied aspects, including harnessing the natural genetic variation that makes some animals more resistant to disease than others, developing new treatments in veterinary as well as human medicine, and controlling diseases that can pass between wildlife, domestic animals and people. Around 450 scientists and support staff will work at the Centre, with expertise ranging from mathematics to genetics and from immunology and microbiology to ethology and economics.

Research at the Neuropathogenesis Unit in Edinburgh has provided evidence that some abnormal forms of the prion protein implicated in transmissible spongiform encephalopathies (TSEs), such as BSE and vCJD, are not pathogenic. Several mice inoculated with a human TSE had abnormal prion aggregates in their brain tissue but no 'spongiosis' or clinical signs of TSE disease.

Courtesy of LNS

Collaborative research between researchers at Roslin Institute (RI), University of Stirling, University of Glasgow, FRS Marine Laboratory, Aberdeen and breeding company Landcatch Natural Selection (LNS) has identified genetic determinants for resistance to the serious viral disease of salmon, Infectious Pancreatic Necrosis. RI and LNS are working together to develop the first marker-assisted selection programme for disease resistance in commercial salmon.

Institute funding (£k)

	BBSRC CSG	Other BBSRC funding	Defra/ FSA	Industrial Contract Income	Other Research Income*	EC/ International	Other Sources	TOTAL Revenue Income	BBSRC Capital Funding
Animal health and welfare									
Institute for Animal Health	12,488	4,665	8,511	284	2,309	906	4,571	33,734	17,297
Roslin Institute	5,023	2,033	1,517	944	902	696	1,924	13,039	579
TOTAL:	**17,511**	**6,698**	**10,028**	**1,228**	**3,211**	**1,602**	**6,495**	**46,773**	**17,876**
Biomedical and food sciences									
Babraham Institute	12,648	2,674	-	643	2,195	177	4,342	22,679	7,871
Institute of Food Research	10,655	1,199	437	178	1,777	1,684	389	16,319	2,853
TOTAL:	**23,303**	**3,873**	**437**	**821**	**3,872**	**1,861**	**4,731**	**38,998**	**10,724**
Sustainable agriculture and land use									
Institute of Grassland and Environmental Research	5,753	458	7,079	1,155	1,385	380	1,138	17,348	1,460
John Innes Centre	13,956	5,222	818	150	866	1,716	2,467	25,195	4,282
Rothamsted Research	13,118	3,662	3,891	2,038	1,318	694	1,968	26,689	4,309
TOTAL:	**32,827**	**9,342**	**11,788**	**3,343**	**3,569**	**2,790**	**5,573**	**69,232**	**10,051**
TOTAL:	**73,641**	**19,913**	**22,253**	**5,392**	**10,752**	**6,253**	**16,799**	**155,003**	**38,651**

** Including charities and Government Departments*

We have announced that, with effect from April 2008, the North Wyke research station of the Institute of Grassland and Environmental Research (IGER) will become part of Rothamsted Research (RRes), but retaining its distinctive remit and UK-wide collaborations. This aligns strengths at North Wyke and RRes in soil science and agro-ecological research in grassland and arable systems respectively, which are highly relevant to sustainable farming, and to the UK's capability to respond to the impact of climate change on land use.

A coordinated approach to exploiting scientific synergy in cereal and grass genomics and translating research from model species to crops has been established through MONOGRAM, a programme that links researchers at IGER, John Innes Centre, RRes, and the SEERAD-funded Scottish Crop Research Institute. This focuses on four themes: accessing genetic diversity (recombination); accessing the genome (including bioinformatics); output traits (yield and quality); and input traits (resource use efficiency and disease resistance).

We have established new institute fellowship schemes (page 26) to help develop the skills base in key strategic areas and to encourage collaborative research.

Publications from BBSRC sponsored institutes

	2004	2005	2006
Refereed publications per scientist	2.1	2.2	2.1
Total publications per scientist	5.0	4.5	4.5

A strong mathematical base

Integration of experimental and computational approaches is increasingly important in bioscience research. In 2006, BBSRC Council commissioned a review of mathematical biology provision in institutes, chaired by Dr Malcolm Weir. Among the recommendations, which are being taken forward in 2007, were increased interaction between experimental and theoretical scientists; development of a strategic approach to capacity building through training and recruitment; and policy development on data curation and management of intellectual assets.

The Environmetrics Group at Rothamsted Research has developed an intelligent soil sampling system, with support from an Industrial Partnership Award with the Home-Grown Cereals Authority. The program provides land managers with high-quality information, and avoids costly over-sampling. It has potential to improve mapping for farmers and for management of soil pollution. The system is based on an adaptive mathematical model that tailors sampling to local conditions. Lessons learned from the development of this system are currently being applied in the development of a sampling scheme for monitoring soil quality across the UK.

A healthy UK science base

Opening new avenues in bioscience

We have continued to explore opportunities to enable the UK bioscience base to seize emerging scientific opportunities through national and international partnerships.

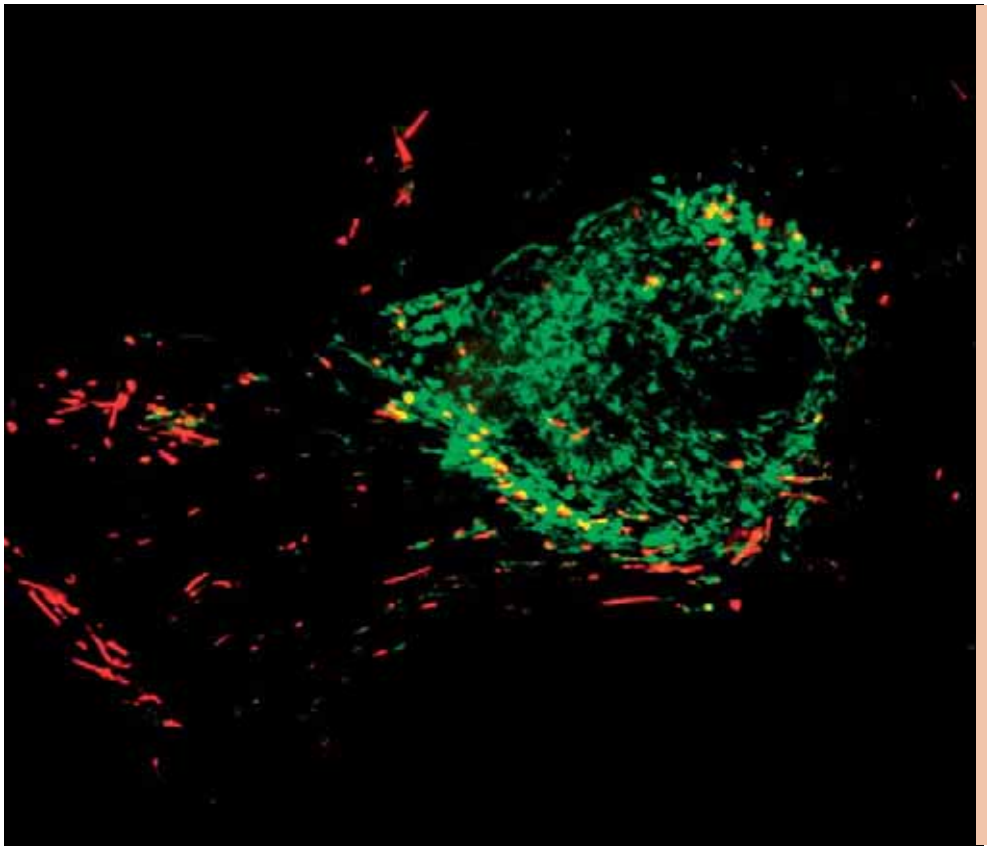
Cross-disciplinary approaches

Bioscience research is increasingly conducted by multidisciplinary teams. Systems biology plays a major part in delivering our 10-year vision 'Towards Predictive Biology', and is, by its nature, multidisciplinary. We have worked with Research Council partners to attract students and researchers from mathematics, physical sciences and engineering to work on complex biological problems, and so strengthen bioscience research. In 2006 we launched a £30M joint initiative with EPSRC (up to £25M from BBSRC, £5M from EPSRC) to increase capability in systems biology. This will support large projects, typically £2M to £6M, and we will require applicants to demonstrate private sector involvement. We will also support up to 20 Doctoral Training Grants through this initiative (page 24).

We are funding the establishment of research networks to bring together mathematicians and bioscientists. A total of £400k is available to support the networks over three years, and to develop the mathematical tools needed to understand a number of complex biological processes.

We have awarded £5M (plus £800k from EPSRC) for 10 projects, at the interface between chemistry and biology, in the second round of our Selective Chemical Intervention in Biological Systems initiative. This will support researchers, at a total of 12 universities, in projects ranging from small molecular probes to study the role of prion protein and plant cell wall metabolism, to cell signalling in nerve cells and the immune system.

We are re-focusing aspects of ongoing e-science and post-genomics funding programmes to complement our systems biology approaches.



Activity of the mitochondrial network in a senescent cell (green is poor, red is good)

A flexible computer modelling system – funded through the Bioinformatics and e-Science Programme, which allows experimenters and theoreticians to explore the multi-causal nature of the ageing process, provided a platform for the Centre for Integrated Systems Biology of Ageing and Nutrition (CISBAN) at Newcastle University.

CISBAN scientists discovered recently that defects in mitochondria are an important contributor to the ageing of dividing cells, previously linked only with chromosome damage through the shortening of 'telomeres'. Defective mitochondria are an important source of damaging superoxides: by-products of cellular respiration, which may accelerate telomere loss.

BBSRC is involved in the following cross-Council research programmes:

Ageing
New dynamics of ageing (AHRC, EPSRC, ESRC, MRC)
Lifelong health and wellbeing (EPSRC, MRC, ESRC)
Strategic promotion of ageing research capacity (EPSRC)

Brain science and mental health
Cognitive systems (ESRC, EPSRC, MRC, Wellcome Trust)
Neurobiological basis of mental health and behaviour (MRC)

Environment and land use
Environment & human health (NERC, ESRC, EPSRC, Environment Agency, Wellcome Trust, Defra)
Rural economy and land use (ESRC, NERC)
Research Councils' energy programme (EPSRC, ESRC, STFC, NERC)

Stem cells
Stem cell science and engineering (EPSRC)

Systems biology
Systems approach to biological research (EPSRC)

With MRC, EPSRC and ESRC, we have agreed to co-fund the UK National Stem Cell Network in its first three years, at a total of £150k per year. The Network was established in July 2006, following a recommendation in the report of the UK Stem Cell Initiative[4], to promote cross-discipline research, and accelerate translation of basic science into therapeutic applications.

www.uknscn.org

With EPSRC, ESRC, MRC and the Wellcome Trust, we have awarded eight projects, totalling around £3M, for interdisciplinary research on cognitive systems, under the Cognitive Systems Foresight programme. These include two led by BBSRC-supported researchers on categorical decisions in machines and human brains (University of Birmingham) and contextual influences on orientation perception (City University, London).

Preventing age-related ill health was the top priority identified in our study of public attitudes to research into ageing (page 29). This is a focus of 'New Dynamics of Ageing', a seven-year, cross-Council research programme. Awards have been announced for two projects and 11 networks, one and two of which, respectively, contain significant relevance to BBSRC. BBSRC is also contributing up to £2M, as part of MRC's Lifelong Health and Wellbeing initiative, which is also supported by EPSRC and ESRC, to fund basic research on the biology of ageing, including its modulation by diet, exercise and developmental factors, and how ageing is a risk factor for frailty and poor health.

▶ SPARC-funded (page 14) researcher Dr Mark Hollands, University of Birmingham, is examining how the brain's ability to process visual information, describing environmental features such as obstacles and safe places to step, is affected by ageing and other factors. The aim is to develop diagnostics to identify people at risk of falling, and identify treatments and interventions to promote safety.

Person wearing a gaze tracker in studies of how environmental features are visualised

We have launched a small grants scheme, also supported by the Linnean Society, aimed at pump-priming new collaborative research in systematics and taxonomy. The scheme will be administered by the Systematics Association.

[4] The UKSCI, chaired by Sir John Pattison, was established in 2005 to develop a strategy for UK stem cell research.

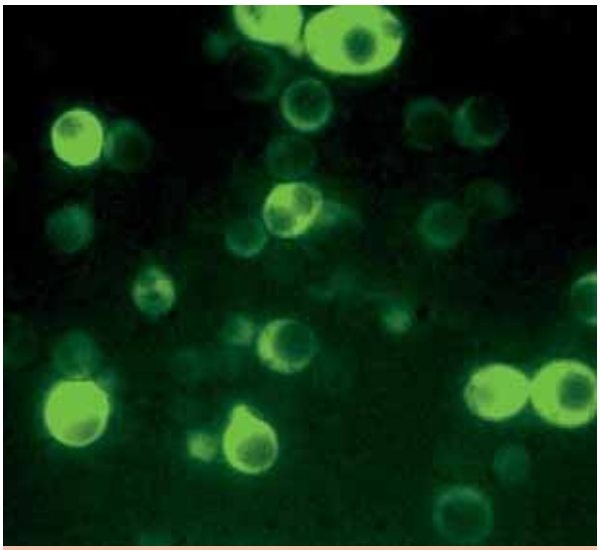
Capturing scientific opportunities

We continue to target funding to build capacity quickly in emerging strategic areas, and to address particular challenges. For example, following a review in 2005-06, we have announced funding of up to £20M to develop future options for bioenergy (page 15).

In partnership with the National Centre for the 3Rs (NC3Rs), we have invited applications for research into replacing animal experiments with tissue engineering solutions; for example, through the use of *in vitro* 3D tissue cultures that can partially replace *in vivo* studies.

Microbiologist Professor Mark Stevens and his team at the Institute for Animal Health were awarded the 2007 Intervet Dieter Lütticken Prize for work that has reduced, refined and replaced the use of animals in research. Professor Stevens and colleagues developed organ culture and surgical models to examine interactions between enteric pathogens and intestinal tissue, as well as employing tagging methods to follow the fate of large numbers of bacterial mutants in a single animal. The insights from their studies were judged to have significantly reduced animal use in the development of vaccines and medicines to reduce transmission of bacterial pathogens from food-producing animals to man.

Following the establishment of a working group to advise future strategy on the emerging field of synthetic biology, we held a workshop in February 2007 which considered the development of an interdisciplinary research community, and potential ethical and societal issues.



BBSRC-funded scientists were awarded prizes at an event for Parliamentarians in February 2007 (page 28), which showcased research to develop alternatives for the use of animals in research and testing: The Replacement Prize was awarded to BBSRC/Unilever Research Industrial CASE student Tracy Hughes and colleagues from Cardiff University for their work to find an alternative toxicity test for airborne materials. They have developed 3D cell cultures of lung tissue, which accurately mimic the human responses to tissue damage. The Reduction Prize was awarded to Richard Walmsley and Nick Billington from Gentronix Ltd – a spin-out company from UMIST (now University of Manchester) – and Paul Hastwell from GlaxoSmithKline for their work to improve genetic toxicity tests using human cell cultures. Based on fundamental science, much of which was funded by BBSRC, their GreenScreen technology is more accurate than existing cell culture tests, which means that far fewer chemicals have to be tested in animals.

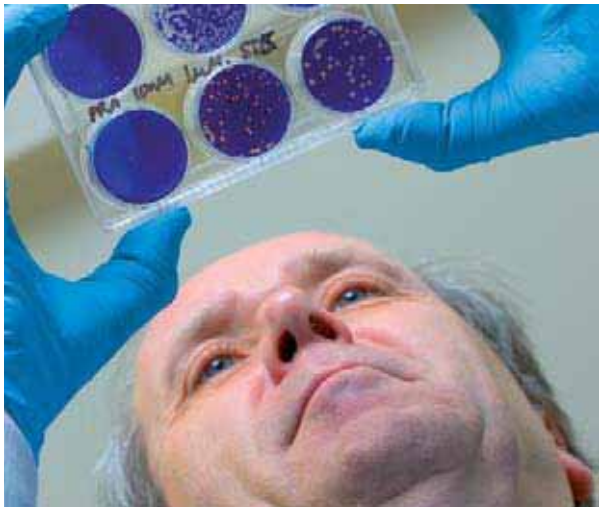
A biosensor design, to detect trace levels of arsenic in drinking water, from students at the University of Edinburgh won 'best real world application' at the 2006 international Genetically Engineered Machine (iGEM) competition, organised by Massachusetts Institute of Technology.

We have made 18 awards, totalling £13.3M, under our Innovation in Crop Science initiative. These transfer understanding of basic plant science to crop science. Twelve involve collaborations between two or more institutions, and four are being supported as Industrial Partnership Awards (IPAs, see page 20). Areas include:

- Enhancing resistance to insect pests of UK cereals
- Identifying gene targets in the potato pathogen *Phytophthora infestans*
- Accelerating breeding for biomass in willow by exploiting knowledge of shoot development in the model plant *Arabidopsis*

We have funded four projects totalling £4.6M through our Combating Avian Influenza initiative. These deploy specialised facilities for *in vivo* studies at the Institute for Animal Health (IAH), and other institutions, to enhance understanding of the behaviour and spread of avian influenza virus in its animal hosts. The projects are aimed at generating the underpinning scientific knowledge that will enable development of more effective control methods.

- Scientists at IAH, the Veterinary Laboratories Agency, and the National Institute for Medical Research are investigating the dynamics of virus transmission and immune response to avian influenza
- Scientists at Imperial College London and IAH are studying how to optimise immune response in poultry following vaccination with a modified fowlpox vector vaccine
- Scientists at IAH are developing novel vaccines, to prevent both disease in poultry flocks and the environmental spread of influenza virus
- Scientists at the University of Edinburgh are investigating genome sequence variation in relation to increased virulence in the H5N1 strain



We have approved funding for 10 awards, totalling £11M, including three IPAs (page 20), in support of multidisciplinary research to investigate endemic infectious diseases that reduce the health and welfare of farmed animals and undermine the sustainability of the livestock, poultry or aquaculture industries. Co-funding will be provided by Defra and SEERAD. Examples include: measuring the impact of genetic variation in emerging strains of *Mycobacterium bovis*, responsible for bovine TB infections around the UK; studying the molecular basis of drug resistance in sheep parasites; and identifying the disease-causing genes of *Streptococcus uberis*, the major cause of mastitis, a serious health and welfare problem, in dairy cattle.

A healthy UK science base

Tackling major challenges

New knowledge generated from basic bioscience research is going to be crucial in tackling major social and economic challenges in the decades ahead. BBSRC continues to support such research and to work with others to help translate the findings into practical solutions.

Healthier ageing

As life expectancy increases in developed countries, so does the challenge to prolong health into old age. We have funded almost 50 projects totalling over £9M in two initiatives in the past decade: Science of Ageing (1998) and Experimental Research on Ageing (2001). Among the outcomes have been important new insights into the reduced efficiency of elderly people's immune systems – a major factor in their susceptibility to 'flu and pneumonia after fall-induced injuries or surgery.

Scientists at the University of Birmingham have found evidence that an imbalance between two stress-induced hormones in elderly patients with hip fractures could lead to suppression of the immune system. This could explain why these patients had impaired white cell function. It also suggests that hormone treatment could be effective in stimulating the patients' defences and reducing infection rates, and this is now being tested.

Researchers at the Royal Free and University College Medical School have found that some other immune system cells (T lymphocytes) also work less well in older people. They have characterised an age-related change in the receptors on these cells which leaves them less able to migrate to the source of infection in older people. The implication and possible treatment is being pursued through clinical studies.

The Strategic Promotion of Ageing Research Capacity (SPARC) programme, launched by BBSRC and EPSRC in 2005 (see also page 11) with 13 awards, is successfully supporting networking of researchers through small grants. In 2006, a further 21 awards were made, on topics including factors influencing locomotion and falls, biomarkers for cognitive ageing and dietary factors. We have also announced new funding through two cross-Research Council programmes (page 11).

Combating disease threats

Emerging and re-emerging diseases are a constant threat as disease-causing organisms evolve, and the conditions for disease spread alter, for example through climate change and the increased movement of people and materials through globalisation. Bioscience research is benefiting from the power of computational and mathematical modelling techniques that significantly increase the capacity to predict, track and combat disease spread.

In partnership with plant breeding companies across Europe, scientists at the John Innes Centre have identified wheat genes that protect against the fungus *Septoria tritici*, which causes the most important disease of UK wheat. As a result, new high-yielding varieties, such as Alchemy, are being bred that have significant resistance to the fungus. Research is continuing to help breeders to develop commercially successful, resistant varieties. These are needed because *Septoria* is currently becoming insensitive to both major classes of fungicide.

Mathematical modelling is being used by scientists at Rothamsted Research (RRes), University of Cambridge, and Imperial College London (ICL) to understand how resistant crop varieties may place selection pressure on plant viruses to become more virulent. By modelling the plant-virus-vector system and examining the impact of different types of resistance mechanisms in the plant, they are providing information to help breeders develop combinations of resistance that do not lead to viruses becoming more harmful. Similarly, mathematical models are being developed to identify disease control strategies for plant viruses that infect staple food crops in many less developed countries.

Predictive mathematical models are also helping in the fight against diseases of livestock by identifying where and when attacks are most likely, so that preventative measures may be targeted for maximum effect. An example is bluetongue disease, which arrived in continental Europe in 1998. For the first time in 2006, over 2000 cases were recorded in cattle and sheep in northern Europe. The virus that causes this disease, once regarded as tropical, is spread more efficiently by

midges at higher temperatures, and has spread northwards during warmer than average periods of weather that parts of Europe have experienced recently.

The risk of bluetongue-infected midges entering the UK, from a nearby source on the continent, is being estimated, as part of a collaboration between the Met Office and virologists and entomologists at the Institute for Animal Health, using a weather model, real-time weather observations and a knowledge of the optimum conditions for wind-borne spread of midges.

Tracking the risk of bluetongue: a portable automatic weather station will be deployed to areas that become infected, which will ensure that the weather conditions in the close vicinity of any infected animals are well-defined

A team of population biologists and microbiologists at the University of Warwick has developed novel molecular tools to detect TB infection in soil and animal faeces. The test is helping to clarify whether TB bacteria that have been shed into the environment provide a reservoir of infection in the soil that could help account for bovine TB 'hotspots' in the UK. This has important implications for understanding how the pathogen survives outside its natural host, how the disease spreads, and for the design of effective control and environmental monitoring strategies. The test is expected, for example, to reveal environmental TB 'hotspots' on farms, and to safeguard against cattle sensitisation with environmentally shed BCG following oral BCG vaccination of badgers[5].

[5] Some of this research is also funded by Defra.

Coping with climate change

In December 2006, we published a summary of the ways basic bioscience is informing strategies to help to minimise harmful impacts of climate change on farming and other land-based industries (page 30). These include: the use of genomics to identify traits that breeders can introduce into crop plants to equip them for specific growing conditions or disease threats; models of organic carbon dynamics in soil that are informing national carbon budgets for the UN Framework Convention on climate change and to guide land use policy as part of the reform of the Common Agricultural Policy; and decision-support systems for farmers that enable them to choose varieties and agronomic regimes for optimal yield under different climate scenarios and to meet specific market needs.

In March 2007, the Secretary of State for Trade and Industry announced BBSRC's £20M initiative on bioenergy which will be used, in partnership with other funders, to increase research capacity and strengthen UK expertise within a network that helps to feed through outcomes quickly to industry. This will build on ongoing research on energy crops and biofuels.

▶ Forests for construction-grade timber fix large amounts of carbon, and so can contribute to combating climate change alongside their commercial role in timber production. Research supported through a BBSRC/Forestry Commission CASE studentship in the Chemistry Department of the University of Glasgow has shown that, contrary to expectation, timber quality is not significantly reduced in spruce genotypes that offer greatly increased yields. The findings were incorporated into the Commission's planting policy within a year of the research.

Courtesy of Leena Vihermaa

A healthy UK science base

New international opportunities

We have increased our international relations activities to ensure that the UK continues to attract high calibre bioscientists and that UK researchers can work with leading groups around the world.

We have published a new international strategy for the next five to ten years based around: promoting the movement of people; enabling research and collaboration; ensuring access to world-class infrastructure and information; and discharging our global responsibilities.

UK-USA collaboration on energy crops

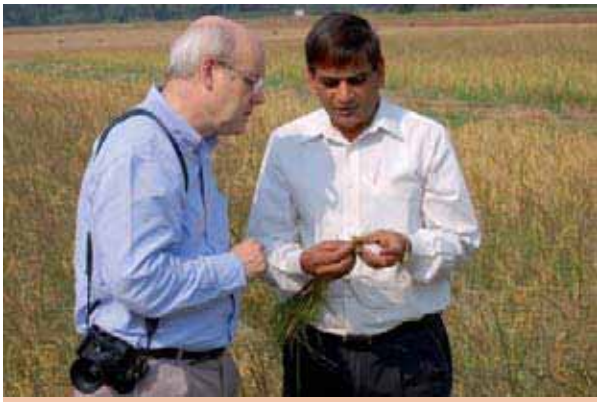
The John Innes Centre has entered a partnership with the US Departments of Agriculture and Energy to sequence and analyse the genome of the grass *Brachypodium*, as a model species for identifying genes important in breeding new generation energy crops.

Copyright Susumu Nishinaga/ Science Photo Library

Scientists at the Roslin Institute are working with the Burnham Institute for Medical Research in California on a £1M project, funded by the US National Institutes of Health, to advance understanding of mineral deposition in bone. This could lead to therapeutic strategies for disorders such as osteoarthritis, osteoporosis and hardened arteries.

Partnerships

- We have participated in UK ministerial bilateral meetings with officials in China, Japan and India
- We have announced a new scheme to support laboratory-to-laboratory linkages between scientists in the UK and the USA
- We have made the first eight India Partnering Awards (IndiaPAs), which build on the success of our similar schemes for UK scientists to partner with researchers in China and Japan, where we have made a further eight and four awards respectively



An IndiaPA is supporting collaboration between the University of Leeds and the Indian Agricultural Research Institute on rice genomics and applications in areas such as disease control. Other IndiaPAs address vaccine design and fundamental studies into biological clocks and cell signalling.

We have launched a £6M scheme with the Department for International Development to support high quality strategic research and collaborations to translate UK research on crop science into practical solutions for developing countries in Africa and Asia.

BBSRC helped set up the Year of Brazil-UK Partnership in Science, through the Government's Global Science and Innovation Forum, which was launched by the Chief Scientific Advisor, in March 2007.

We awarded 28 grants totalling £62k through our International Scientific Interchange Scheme (ISIS), and funded four international workshops.

European networks

BBSRC has explored, with international partners, how to increase the involvement of UK scientists in 'common pot' funding schemes, by reducing the administrative burden on the assessment of bilateral funding applications. We continue to monitor developments of the EU's Framework Programme 7 (FP7), launched in December 2006, and have announced, for example, our plans to contribute to the development and implementation of the European Roadmap for New Large Scale Research Infrastructures, including the ELIXIR European Biological Information facility and new infrastructure for structural biology.

We have funded EU consortia building through ISIS, and we are also exploring ways of increasing opportunities to advance UK bioscience through European Research Area Networks (ERA-Nets).

We contributed £7.4M to a pilot programme within the Systems Biology ERA-Net (ERA-SysBio), to study medically and commercially important microorganisms.

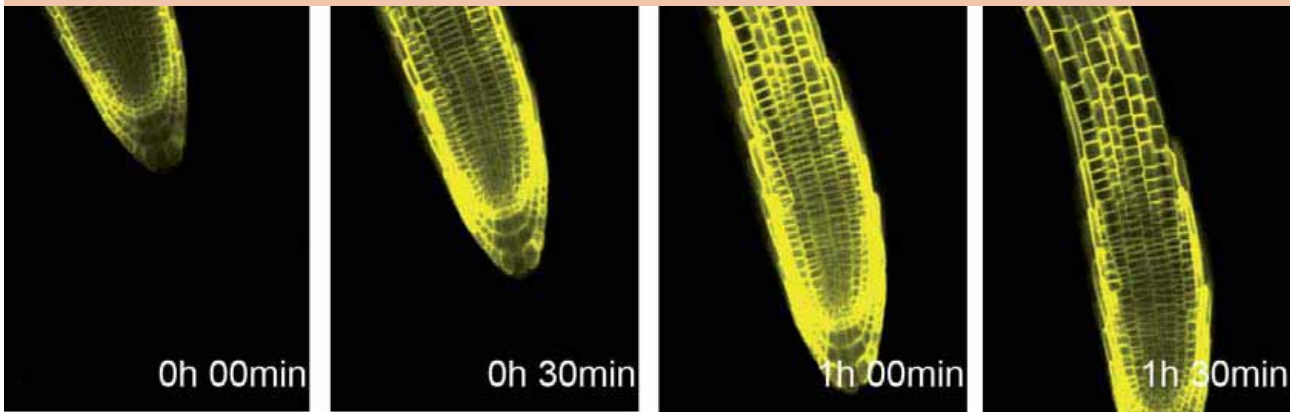
The programme supported 11 projects, 10 of which had UK partners, at a total of £18M and was funded in partnership with national research funders in Germany, Austria, Netherlands, Norway and Spain. In March 2007, we hosted the first ERA-SysBio Strategy Conference, to identify areas for future collaboration. We have announced up to £5M for a bilateral funding programme with the Agence Nationale de la Recherche (ANR) in France. The scheme seeks to encourage cross-national research projects in the systems biology of animals, plants and micro-organisms, and across the hierarchy levels – from molecules to organs.

We have announced support totalling £1.2M to fund the UK partners in each of three projects awarded under the European Science Foundation-led Collaborative Research Programmes Scheme (EUROCORES) in RNA Quality.

Three crop science awards, totalling over £2M, have been made jointly by BBSRC and the Institut National de la Recherche Agronomique (INRA). The four-year projects will draw on the complementary experience and expertise of researchers in the UK and France, and help translate basic plant science research into practical information for crop and agronomic improvements.

Scientists at the Babraham Institute are leading a Europe-wide study to help unlock the vast amount of information within the human proteome – the full set of over 100,000 proteins that are predetermined by our genetic code. The €1.8M project, supported by EU Framework Programme 6, will provide protein binding molecules, including antibodies, with the aim of creating a European resource infrastructure for proteome analysis.

UK researchers are leading five consortia funded through the Plant Genomics ERA-Net and are involved in 13 of the 15 projects. Researchers at University of Cambridge are leading a consortium of Dutch, Finnish, German and Portuguese scientists to understand the networks regulating plant stem cells, and how they respond to environmental and stress signals.



Tracking cellular dynamics in growing plant stem cells

Economic and social impact

▶ Our research underpins advances and applications in many sectors including healthcare and lifestyle, bioprocessing and manufacturing, agriculture and horticulture, food quality and safety, and renewable energy.

We have strengthened our operations to help ensure that the UK research base:

- ▶ **has the breadth, capacity and expertise to underpin innovation in the bio-industries**
- ▶ **can rapidly identify and realise the commercial potential of research outputs**
- ▶ **produces scientists with the skills to work with and in the bio-industries**

BBSRC is contributing to the Government's **Technology Programme**. In partnership with EPSRC and the DTI, we have committed £1.6M to co-fund six collaborative projects in biocatalysis and biotransformation.

With the same partners, we have allocated £1M for proposals for technologies for developing and manufacturing biopharmaceuticals (see opposite).

We are contributing £1M to support projects in regenerative medicine that have a high academic component. These are part of a £12M portfolio supporting 14 projects in which we are partnering EPSRC, DTI and MRC.

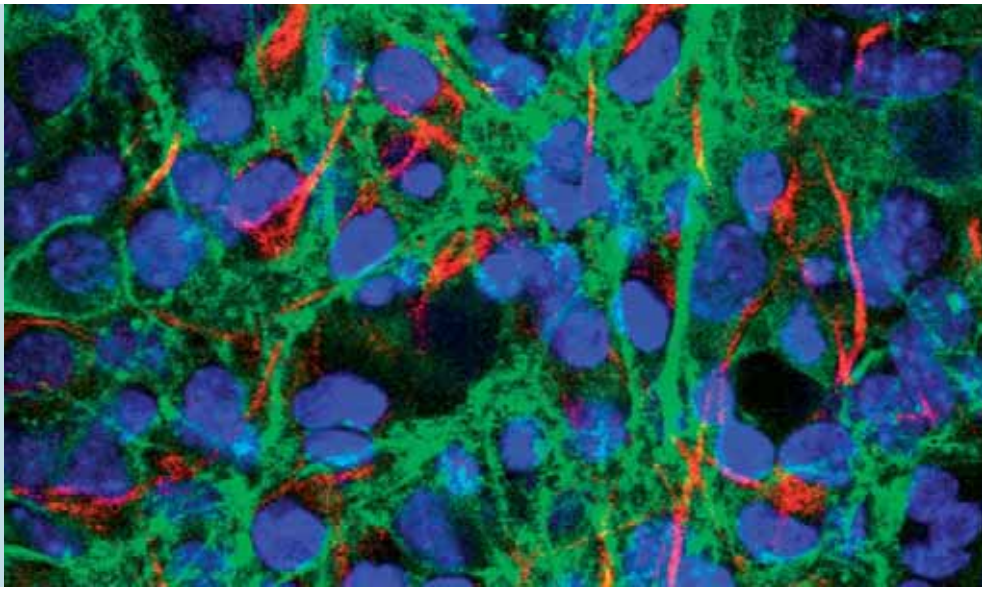
Working through RCUK, the Research Councils are responding collectively to the recommendations of the report[6] from the Research Councils Economic Impact Group chaired by Mr Peter Warry. This includes: establishing a national forum to examine the Knowledge Transfer (KT) process and barriers to innovation; analysing opportunities for rationalising Councils' schemes; and developing an RCUK portal as a single point of access.

We have commissioned a study by People Science and Policy Ltd into the KT interactions and impacts at ten of our leading funded university departments, which between them receive around 25% of our grant funding. The findings will be published in summer 2007.

To strengthen interactions with Regional Development Agencies (RDAs) and the Devolved Administrations, particularly on biotech innovation in small to medium-sized enterprises, we are making two new staff appointments to work in the agriculture/food/energy/environment and pharmaceuticals/biotech/chemicals/healthcare sectors respectively.

▶ **Roslin Cells Ltd was launched in September 2006, with a £2M grant from Scottish Enterprise Edinburgh & Lothians, in collaboration with the University of Edinburgh and the Scottish National Blood Transfusion Service, to exploit Roslin Institute expertise in stem cell derivation.**

▶ **An innovative way of testing new drugs using human stem cells is being backed by BBSRC, EPSRC and the DTI under the Technology Programme. Scientists at the University of Southampton, the University's spin-out company Capsant Neurotechnologies Ltd, and King's College London are growing 3D cultures of cells in plastic dishes in the laboratory and using these 'mini-organs' to test new pharmaceuticals.**



[6] Increasing the economic impact of Research Councils

Technology Strategy

Our Technology Strategy focuses on working with industry to identify and support areas where high-quality research can address generic needs of UK industry over the next decade. We have, for example, ear-marked £4M to match any forthcoming industrial support for research to accelerate innovation and commercialisation of biorefinery technology; this will complement our £20M Bioenergy programme. We are also targeting training support through priority studentships (page 23) and modular training for industry (page 25).

We have identified Farm Animal Genomics and Genetics as a priority area, and announced ring-fenced funding of £1.5M to support collaborative proposals with industry within our initiative on Combating Endemic Diseases of Farmed Animals for Sustainability.

We have also announced funding of up to £2.5M to support LINK funding from industry for collaborative research projects with BBSRC's six Centres for Integrative Systems Biology.

We are working with consortia of companies to support high quality strategic research that has the potential to drive innovation in different sectors.

We have made the first nine awards, totalling £5M, through the **Bioprocessing Research Industry Club** (BRIC) that we announced last year, which we support with EPSRC and a consortium of 16 companies. The awards focus on improving development and manufacture of biopharmaceuticals, where the global market is estimated at over $50Bn.

The new research includes: developing rapid screening tools so that up to 1,000 samples a day can be tested to optimise the formulation of putative protein-based medicines (University College London); characterisation and release of constraints that limit the amount of recombinant protein produced from cell cultures (University of Kent); use of metabolomics to optimise production of therapeutics such as insulin and clot-buster drugs from recombinant cells in culture (University of Manchester); and developing novel culture systems for stem cells that enables them to grow and develop normally, providing sufficient numbers of specialised cells for use in therapies and tissue engineering (Universities of Bath and Southampton).

BRIC is managed with bioProcessUK, the DTI-funded Knowledge Transfer Network for supporting growth in the biopharmaceutical and processing sector.

BRIC-funded researchers at the University of Kent are analysing the antibody, and general recombinant protein, assembly line in cultured mammalian cells. Their research will lead to remoulding the process for more efficient drug production at reduced cost and higher quality.

Courtesy of Avecia Biologics Ltd.

We have announced a £10M **Diet and Health Research Industry Club** in which 12 leading companies, including manufacturers and retailers, are collectively contributing £1M. This will focus on bioactive compounds in foods, and improved understanding of healthier diets. Where appropriate, projects will also be supported by EPSRC.

Economic and social impact

Collaborative research with industry

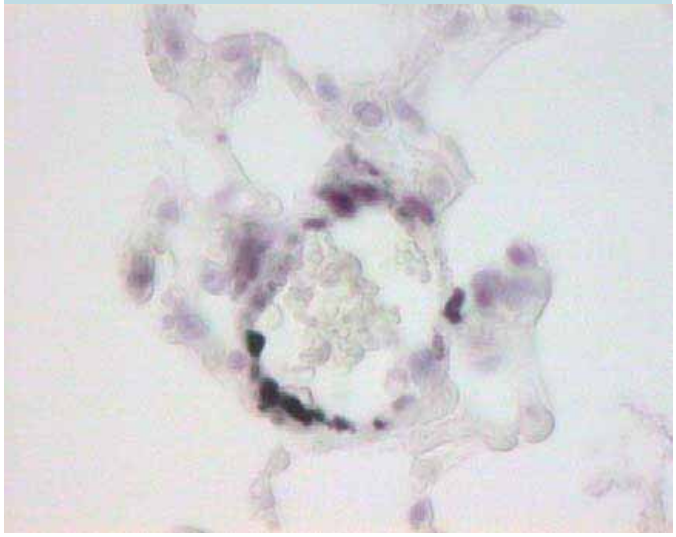
We are on course to meet the commitment reported last year to double our grant support, during the Spending Review period, for collaborative research with industrial partners to £8M by 2007-08.

We have made four **Industrial Partnership Awards** (IPAs), totalling £1.9M, within our Crop Science initiative (page 13). IPAs support research of the same high quality as standard BBSRC research grants, but their commercial significance is reflected by at least 10% of the project costs coming from industry.

Two awards were made to Warwick HRI for collaborations with Syngenta on genetic determinants of seed vigour and improving post harvest quality of green vegetables. Two awards, one to Rothamsted Research and one to the John Innes Centre and the National Institute of Agricultural Botany, are supporting collaborative research with British Wheat Breeders and the Home-Grown Cereals Authority on enhancing plants' natural defence mechanisms against pest attack and to harness 'pre-breeding' expertise to address key targets in sustainability of the wheat crop in the UK.

We also approved funding for three IPAs within our Combating Endemic Diseases of Farmed Animals for Sustainability Initiative (pages 13 and 19).

An Industrial Partnership between scientists at the Institute of Biomedical & Life Sciences at the University of Glasgow and Pfizer Global R&D is investigating the role of natural chemicals in the body that have been implicated in thickening of the walls of blood vessels that supply the lungs (pulmonary hypertension). In particular this research is exploring whether effects observed in isolated cells also occur at the level of the whole animal, with the aim of identifying targets for novel approaches to prevention.



Raised serotonin transporter levels in mice lead to increased expression of the calcium binding protein mts-1 in a small pulmonary artery

BBSRC invests around £3M a year in support of LINK projects in which there is 50:50 funding with industry.

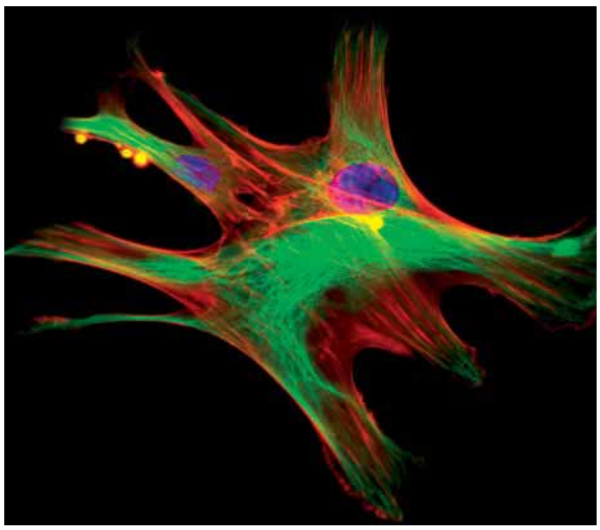
A five-year LINK project launched in 2002 to take forward new findings about vitamin C synthesis in blackcurrants to help boost increased levels in crop plants has made good progress. With funding from SEERAD, GlaxoSmithKline, the Horticultural Development Council and BBSRC, scientists at the Scottish Crop Research Institute and East Malling Research have identified key elements in the vitamin's metabolism and deposition in blackcurrants. They are using this information to search for genetic and molecular markers that breeders can use to produce high quality commercial varieties with raised vitamin levels.

A collaboration between researchers at the Babraham Institute and CellCentric Ltd, a leading company in the commercial exploitation of epigenetics and cell-fate control mechanisms, has started to discover reprogramming factors relevant to regenerative medicine and cancer therapies. This is supported by the Rainbow Seed Fund.

Commercialising research outputs

Having time and support to test the business potential of research findings to 'proof of concept' can be a determining step on the route to commercialisation. The Research Councils' Follow-on Fund provides such support.

In 2006 we made 15 Follow-On awards, totalling around £1.3M, to researchers at 10 universities and two BBSRC-sponsored institutes. These will provide BBSRC-supported scientists with funding for a year so that they can use this time to demonstrate the commercial potential of their research. The new awards cover topics ranging from diagnostics for bovine TB (Imperial College London), and bulk culturing stem cells (University of Manchester), to nanoscale bone tissue engineering (University of Glasgow) and improved blight-resistance in potatoes (Sainsbury Laboratory and John Innes Centre).



Mesenchymal stem cells stained for actin (red), tubulin (green) and DNA (blue) on a nanodisordered surface, University of Glasgow

a2sp Ltd

a2sp is a company that provides chemical genomics services for drug discovery. It was formed in 2006 from research at the University of Warwick, and already has a European customer base and several high-profile potential UK screening partners. The company is based on a technology (Magic Tag®), whose concept was developed from BBSRC-funded research. This was subsequently commercialised using BBSRC Follow-On funding and a grant from Advantage West Midlands. Company director Dr Suzanne Dilly was recently awarded a BBSRC / Royal Society of Edinburgh Enterprise Fellowship. The company's successes include discovery of a new receptor for the ubiquitous plant hormone abscisic acid, and identification of novel protein targets for an established clinically-used therapeutic.

From *Arabidopsis* to maize

Scientists at the John Innes Centre have developed a revolutionary new method to predict hybrid vigour for a range of important traits in plants, including yield. Plant Biosciences Ltd has funded development of the technology and demonstrated its application in maize. The company is now offering licences to the seed and plant breeding industry to use the technology to improve crop breeding worldwide.

Spin-out sells for $600M

The economic outcome from fundamental research may not be realised for many years. In January 2007 DNA-sequencing company, Solexa, was sold to US-based Illumina Inc. for $600M. The company had been formed in 1998 by Drs Shankar Balasubramanian and David Klenerman as a spin-out from the University of Cambridge. It was inspired by some basic research on DNA chemistry and single molecule biophysics, funded by BBSRC.

Licence Agreement

The drug discovery company Biotica is a spin-out based on research at the University of Cambridge at the interface between biology and chemistry. It focuses on the discovery and development of novel therapeutics derived from polyketides. In 2006 the company entered an exclusive research collaboration and licence agreement on rapamycin-type drugs with Wyeth Pharmaceuticals, potentially worth up to $200M plus royalties.

Transferring knowledge (BBSRC sponsored institutes)

	2003-04	2004-05	2005-06	2006-07
Industrial income (£k)	13,351	10,661	8,829	7,979
Patents awarded	17	13	19	15
Commercial licensing agreements	53	56	37	41
Income from intellectual property (£k)	818	443	415	551
Spin-out companies trading	13	15	16	17
Refereed publications co-authored with industry	80	69	65	82

Financial figures are subject to audit within the sponsored institutes

Economic and social impact

Since their launch in 2005, we have awarded six **Enterprise Fellowships**, which provide researchers with a year's salary to enable them to take time away from the laboratory to focus on developing the commercial potential of research that has been largely funded by BBSRC. The Fellowships are run in conjunction with the Royal Society of Edinburgh. Two new Fellowships were supported in 2006.

Taking technology to market

Dr Riccardo Bennett-Lovsey undertook his PhD research on protein folding in Professor Mike Sternberg's laboratory at Imperial College London (ICL) in 2002-05. He was one of the key developers of Phyre (the Protein Homology/analogY Recognition Engine), an advanced protein fold-recognition system designed for use as a stand-alone application or as an in-house web server. A runner up in the 2004-05 Biotechnology YES competition, Dr Bennett-Lovsey was awarded a BBSRC/RSE Enterprise Fellowship in 2005-06 which he used to help bring Phyre and other technologies to market through the ICL spin-out, Equinox Pharma Ltd (www.equinoxpharma.com). In 2006 he became the company's Business Development Manager. Along with Phyre and other bioinformatics applications, which are now on the market, Equinox Pharma also performs *in silico* logic-based drug discovery using its own artificially intelligent machine learning system.

3D structure of HIV protease with multiple docked ligands

Building on BBSRC-funded research, scientists at the University of Sheffield have launched a spin-out company, Absynth Biologics, to exploit their patented technology – targeting novel bacterial proteins to develop vaccines and antibodies to treat infections caused by the bacterium *Staphylococcus aureus*, including the drug-resistant form MRSA. By 2020, these prophylactic and therapeutic medicines are estimated to have a market value of $1.8Bn and $2.6Bn respectively.

The Biotechnology YES Competition[7] helps postgraduate and postdoctoral researchers acquire business and entrepreneurial skills through training, mentoring and development of hypothetical business plans. The 2006 competition was won by a team from Rothamsted Research, who beat 50 other teams comprising over 240 scientists. The winners will participate in the Rice University (Texas) business plan competition in 2007. Following our success in developing reciprocal arrangements with North American competitions, we are extending Biotechnology YES to include teams from India from 2007.

Research Councils Business Plan Competition

We have continued to support the Research Councils Business Plan Competition, which was won in 2006 by a spin-out company from the University of Warwick. The bioscience prize was won by Dr Valerie Ferro of the University of Strathclyde who is developing platform technology to deliver vaccines orally (page 1).

[7] Biotechnology YES is organised jointly with the University of Nottingham Institute for Enterprise and Innovation. The 2006 competition was sponsored by BBSRC, Cancer Research UK, Eric Potter Clarkson LLP, GlaxoSmithKline plc, Lonza Biologics plc, Medical Research Council, Natural Environment Research Council, Nestlé, Pfizer Inc, Royal Academy of Engineering, Smith & Nephew plc, Syngenta, UK Trade & Investment, Unilever plc, and Yorkshire Forward

Securing the skills base

The rapid pace of advance in the biosciences makes it essential that we develop our research training and career support mechanisms to ensure the supply of highly skilled scientists for academic research and for careers in bio-based industries. In particular we have focused on targeting training support to areas of strategic importance to both sectors.

We have awarded a total of 50 research studentships in areas that we have identified as being important to UK research capacity in the biosciences. These **Targeted Priority Studentships** are aligned with our priorities in research grant funding, for example as identified by our Technology Strategy (page 19) and phased so that studentships can help the academic community to build the skills base to take forward emerging areas quickly, and to maintain critical mass in key areas as they develop.

The new awards, for take up in 2007-08, were made in: bioprocessing; comparative and evolutionary genomics; crop science; integrative mammalian physiology; interdisciplinary research on technologies for regenerative medicine; and selective chemical intervention in biological systems.

Targeted Priority Studentships by area*

Priority area	Total Studentships
Bioprocessing	5
Comparative Genomics	9
Crop Science	9
Integrative Mammalian Physiology	12
Regenerative Medicine	6
Selective Chemical Intervention in Biological Systems	9

*New for October 2007

We have announced our plans to support a further 20 studentships in systems biology, as part of our Systems Approaches to Biological Research initiative.

As bioscience becomes more quantitative and dependent on data and analytical input from the physical sciences, it is crucial that researchers have high-level mathematical and computational skills. To help meet this need, we have provided 110 Masters Studentships in the form of flexible 'Masters Training Grants', (a similar approach to Doctoral Training Grant funding) for the academic years 2007-08, 2008-09 and 2009-10. These will support a range of interdisciplinary training courses, including: mathematical and physical science skills for biological science students, and biological skills training for students with mathematical or physical sciences backgrounds; mathematical modelling and computational approaches to biological systems; and training in whole animal physiology.

All Studentships*

DTG CASE	285
DTG Research	666
Industrial CASE	283
Other CASE	90
Other Research	175
Targeted Research	433
Masters	99
Total	**2031**

*Current as at 31 March 2007

Specific training in partnership with industry is described on page 25.

Economic and social impact

Our first set of quota studentships awarded as Doctoral Training Grants (DTGs) started in October 2006. This delivery mechanism provides research supervisors with greater flexibility. We have facilitated regional workshops to help them maximise opportunities from the new arrangements, and share ideas for best practice. DTGs awarded in the last Quota Competition cover intakes in academic years 2006-07, 2007-08 and 2008-09. They provide funding representing 450 four-year studentships, made in 106 separate awards covering 46 institutions; 28 departments not previously in receipt of a quota were successful.

Top 25 universities by postgraduate funding

	University	Funding (£M)	No. of post-graduates as at 31.03.07	No. of fellowships as at 31.03.07
1	Manchester	3.56	189	5
2	Cambridge	3.05	142	6
3	Leeds	2.13	109	3
4	Nottingham	1.97	108	2
5	Imperial College London	1.92	88	3
6	University College London	1.77	79	3
7	Oxford	1.68	71	3
8	Edinburgh	1.67	95	2
9	York	1.63	86	1
10	Birmingham	1.54	77	2
11	Sheffield	1.47	82	1
12	Bristol	1.20	76	1
13	Warwick	1.20	62	1
14	Glasgow	1.10	52	2
15	Newcastle	0.99	49	1
16	Liverpool	0.93	43	2
17	Dundee	0.88	43	1
18	East Anglia	0.84	63	1
19	King's College London	0.74	27	1
20	Aberdeen	0.74	39	1
21	Southampton	0.70	35	1
22	Leicester	0.68	38	-
23	Bath	0.64	39	-
24	Reading	0.61	40	-
25	Sussex	0.59	31	-

Training first rate people

	2003-04	2004-05	2005-06
Students qualifying from Masters courses (%)	96	97	95
	2000-04	**2001-05**	**2002-06**
Students submitting PhD theses within 4 years (%)	80	73	79

First destination data of PhD students

	Starting in 2001-02 academic year*
% of known destinations	
Government and public sector	9
Higher Education	36
Industrial and commercial sector	25
Further training	13
School teaching/other	3
Not employed	13

*Collected on behalf of Research Councils by HESA; new categories introduced for data collection for students starting in 2001-02

Our vacation bursary scheme is designed to help attract high calibre undergraduates into postgraduate research. During the year we made 98 awards. In partnership with EPSRC we sponsored a 'Good Practice' event to help inform development of the Councils' respective schemes. We have launched a pilot scheme for bursaries in mathematical biology.

People and knowledge flow

We have made a further seven awards, totalling around £200k, under our Industry Interchange Programme to support short term exchanges between scientists in the science base and industry.

These are in the areas of:

Genetics and epigenetics	University of Wales, Aberystwyth and Tepnel Life Sciences plc
Liposome technology	University of Manchester and Tepnel Life Sciences plc
Ion mobility spectrometry	University of Manchester and Micromass UK Ltd
Receptor interactions	University of Manchester and AstraZeneca UK Ltd
Modelling lipid metabolism	University of Reading and Unilever UK Central Resources Ltd
Peptide hydrogels	University of Bristol and Unilever UK Central Resources Ltd
Research Quality Management Systems	University of York and Smith & Nephew Research Centre

The UK's only female Professor of Brewing Science, Katherine Smart has been appointed by the University of Nottingham. Her Chair, sponsored with a £167k grant from the international brewer SABMiller, marks the launch of a new MSc in Brewing Science at the University, which is also funded by EPSRC and through our Modular Training for Industry programme.

Industry-relevant training

Our Targeted Priority Studentships (page 23) are aimed at ensuring that UK bio-industry draws upon a strong knowledge and skills base in strategically important areas.

In addition, we support modular training for graduates working in industry, on topics where the industry has identified a need to develop technical and specialist postgraduate skills. In 2006-07 we supported a total of eight courses at a cost of £182k. We are on course to meet our target of an overall increase of 40% expenditure on modular training by 2007-08.

We currently support 375 CASE Awards for postgraduates and 283 Industrial CASE Awards, of which 197 are Industrial CASE Partnership Awards with companies that have a strong track record in training provision.

A world-class centre for biocatalysis research and training at the University of Manchester is designed to create new processes and skilled scientists to meet industrial needs over the next 10-20 years. It draws upon the expertise of research groups that between them have a total of £10M in grant funding from BBSRC and EPSRC. The centre has a pilot biomanufacturing facility and works with industrial affiliates from a total of 17 companies and organisations.

Targeted Priority Studentships and Industrial CASE Awards by scientific area 2006-07*

	Targeted	Industrial CASE Partnerships	Industrial CASE
Agri-food	8	11	9
Animal Sciences	7	13	5
Biochemistry & Cell Biology	4	16	3
Biomolecular Sciences	8	11	4
Engineering & Biological Systems	5	4	8
Genes & Developmental Biology	3	5	1
Plant & Microbial Sciences	2	5	2
Total	**37**	**65**	**32**

*Current as at 31 March 2007

Economic and social impact

Career development

An important stage on the career path of researchers is the move from short-term postdoctoral research on a project led by others, to independent research. Our David Phillips Fellowships provide this early-career support. They are complemented by our Research Development Fellowships for later-stage researchers. During the year we awarded 10 David Phillips Fellowships, two Research Development Fellowships and one Professorial Fellowship.

We have launched two new Fellowship schemes to enhance career development in key areas at BBSRC-sponsored institutes: **Institute Career Path Fellowships**, and **Institute Development Fellowships**. Initially, the former will support scientists who wish to work at the Institute of Grassland and Environmental Research and Rothamsted Research, working on aspects of sustainable agriculture and land-use. The latter will support institute-based scientists working on collaborative research at another organisation.

We are continuing our support for the MRC-administered Career Development Fellowships in Stem Cell Research – funding up to two fellows per annum.

The RCUK Research Careers and Diversity Group, chaired by BBSRC, has published a strategy to take forward joint Research Council ambitions in this area. A priority has been to revise the 1996 Concordat for contract research staff, and its development into a code of practice for career management of research staff in the Higher Education sector, endorsed by all major UK funders.

Our third annual '**Next Generation of Researchers**' meeting was attended by over 130 PhD students and BBSRC-funded postdoctoral researchers: providing a forum for the exchange of ideas, and advice about pursuing different research careers in the biosciences.

Early-career scientists moving into industry are an important, and largely invisible, contribution to a strong skills base. Many research students and scientists, trained with support from BBSRC, work in a range of companies across the UK. For example, former PhD students, working in the area of protein folding and prion biochemistry, at the University of Warwick have moved to major biotechnology companies AstraZeneca and Accentus Biologics; a student from the Babraham Institute is applying expertise, gained from investigating cell signalling processes that mediate fertilisation, as a postdoctoral research scientist with KuDOS Pharmaceuticals, Cambridge; CASE-funded students, looking at the sensory perception of food at the University of Nottingham, have moved into the food industry with Cadbury Schweppes plc and J Sainsbury plc; a postdoctoral researcher in the field of animal endocrinology at the University of Nottingham has secured a position with Unilever Research.

David Phillips Fellow Dr Rafaël Lévy, University of Liverpool, is developing single molecule imaging methods in living cells using 'peptide-capped' gold nanoparticles as probes.

Examining the fate of the nanoparticle following endocytosis: confocal microscope imaging reveals the release in the endosome of fluorescent peptide 'ligands' – the nanoparticle is losing its protective layer (Courtesy of R Lévy and V Sée)

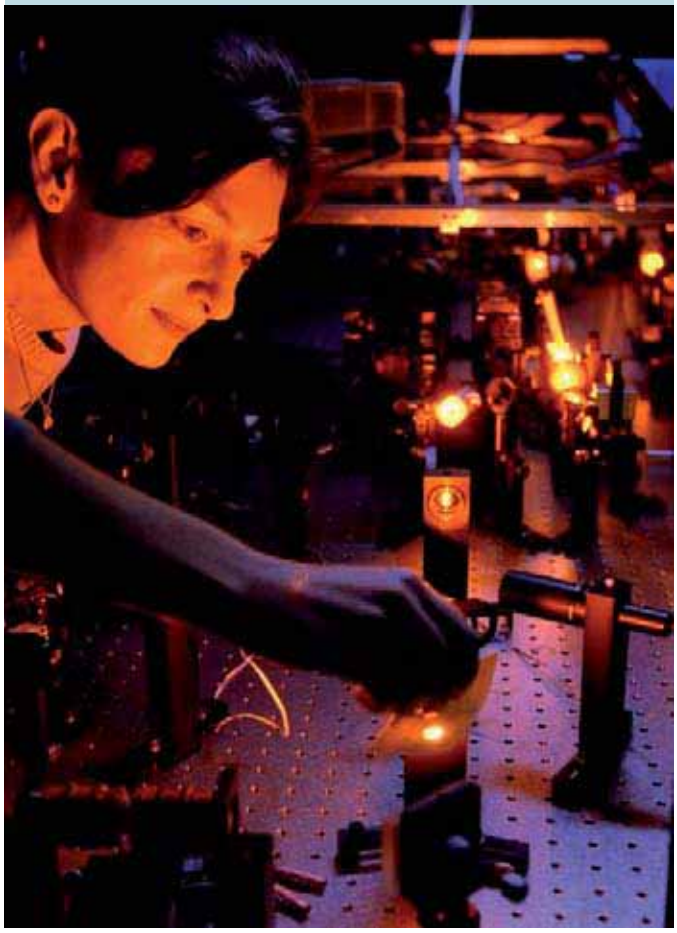
For early-career researchers, winning competitive grant funding is the critical step in establishing a laboratory and research team. Our **New Investigator Scheme**, launched in 2001, addresses this by supporting the applications of high-calibre researchers who have not had time to establish a track record in independent research. To date we have funded a total of 239 New Investigators.

In 2006 we surveyed scientists who had participated in the scheme. Of the 158 responses (89 from successful applicants and 69 from unsuccessful applicants), 97% of successful applicants reported that the scheme helped them to establish their own laboratory; 74% thought the scheme had furthered their career. An important indicator of the success of the scheme is that it enables researchers to compete successfully in subsequent funding rounds.

Dr Gabriella Kelemen of the University of East Anglia won a New Investigator Award for 2002–05, and has since won further grant funding for 2004–07 and support for two BBSRC research studentships, for her research in the area of *Streptomyces* growth and development

Dr Clare Baker of the University of Cambridge won a New Investigator Award for 2003–06, and secured a one-year responsive mode grant for a pilot study in 2006–07, for her research on vertebrate developmental biology. In 2005 she was awarded a two-year Basil O'Connor Starter Scholar Award from the March of Dimes, a US birth defects charity, and has secured Wellcome Trust funding for 2006–10

New Investigator, Dr Paola Borri, a Senior Lecturer at Cardiff University, is leading research towards a new generation of laser-scanning multi-photon microscope with improved sensitivity and chemical specificity for real-time studies on living cells. Such an instrument will allow non-invasive microscopic examination of cells and subcellular structures under physiological conditions without the need to stain or express tagged proteins. Dr Borri was recently awarded a Marie Curie Excellence Award for outstanding achievements in her field.



Courtesy of Cardiff University

In 2006, Dr Miltos Tsiantis of the Plant Sciences Department at the University of Oxford was one of 21 young researchers selected from over 150 candidates across Europe for the prestigious Young Investigator Programme of the European Molecular Biology Organisation. With funding under BBSRC's Comparative Development initiative, Tsiantis and colleagues have published some of the first evidence detailing how species-specific variation in regulatory DNA sequences results in plants developing different leaf shapes.

Model plants *Arabidopsis thaliana* and *Cardamine hirsuta* (Courtesy of John Baker, University of Oxford)

Embedding our science in society

▶ We have continued to increase the proportion of our public engagement activities undertaken in partnership with individual sister Research Councils, or through Research Councils UK. At the same time, we have focused our own programme around BBSRC's scientific priorities to help ensure that our policy and funding decisions are informed by an awareness of public attitudes, and address issues of public interest and concern.

Making our science accessible

	2005-06	2006-07
Media releases	60	64*
Corporate publications	12	11
Exhibitions	11	13+
Grants for National Science Week (awarded through RCUK)	13	7++
Public engagement awards	9^	7
Local schools' coordinators	26	22
Science communication courses	9	8~

** incl. 3 with other Research Councils*
+ incl. 9 with other Research Councils
++ out of a total of 42 awards
~ incl. 2 developed with other Research Councils, and 2 university-led courses
^ this figure was listed incorrectly in last year's report

Several of our activities are designed to encourage and equip bioscientists to engage with the wider public. We are contributing to the HEFCE/RCUK project to establish Beacons for Public Engagement in UK universities, launched in December 2006. This project, which is supported by the Wellcome Trust, will help to ensure that researchers are enabled to engage with the public and recognised and rewarded for doing so.

We are focusing our activities on specific topics to complement the work of the Beacons. We are, for example, leading in the provision of media training for stem cell researchers. A first course was held in June 2006, in partnership with MRC and ESRC. Through our Bioscience for Society Strategy (BSS) Panel, we have developed new guidelines and resources to enable BBSRC grantholders to engage with the public.

Working in partnership with the Science Media Centre, we co-ordinated a briefing for 20 invited journalists, at the BBC's Birmingham studios, to mark the launch of our Innovation in Crop Science initiative (page 13). The event, complemented by widespread distribution of a press release to media contacts, resulted in over 30 individual, identifiable items of coverage, including: BBC Radio 4's 6pm News, BBC News Online, The Scotsman, BBC Radio 4 Farming Today, Farmers Weekly, Farmers Guardian, local and regional radio and print coverage of individual projects. The initiative was also featured in the NFU Science & Technology Bulletin.

We supported the SET for Britain Bioscience exhibition at the Houses of Parliament in May 2006 at which over 100 early-career scientists presented their work.

Prize winners and judges at the 2006 SET for British Bioscience Event at the Houses of Parliament

▶ **BBSRC-funded scientists took part in a 'Showcasing the 3Rs' event for Parliamentarians, organised by the NC3Rs, hosted by Phil Willis MP, Chair of the House of Commons Science and Technology Select Committee, and sponsored by the Association of the British Pharmaceutical Industry and the Wellcome Trust (page 12).**

Tracey Hughes (left) and Kelly Berube from Cardiff University receiving the Replacement Prize from Phil Willis MP

Opinion gathering and public dialogue

We are continuing to ensure that BBSRC policy is informed by knowledge of public attitudes to bioscience research and its applications. This year we focused on research into ageing, and nanotechnology. An earlier attitudes study of Diet and Health research has informed development of BBSRC's strategy for food research.

BBSRC and other Research Councils fund a broad portfolio of research into ageing, investing a total of around £150M each year. In July 2006, Ipsos MORI published the results of their BBSRC/MRC-funded study of public attitudes on priorities for research into ageing.

Prevention of age-related illness was the single most important priority, ahead of research into cures, and into managing conditions. The report's findings[8] were considered by BBSRC's Bioscience for Society (BSS) and Healthy Organism Strategy Panels.

Michele Corrado of Ipsos MORI reporting on the BBSRC/MRC-funded study of attitudes to future directions in research on ageing

The BSS Panel considered and responded to recommendations from the NanoJury UK project, to which BBSRC contributed to the oversight panel and towards the project costs. Some of these issues were developed further through a BBSRC-led discussion meeting on nanoscience at the 2006 Edinburgh International Science Festival, at which one of the citizen's jury took part.

Speakers at BBSRC's 'Nanotechnology and You' event in Edinburgh

In partnership with EPSRC we contributed to public workshops on nanotechnology research, as part of the DEMOS-led Nanodialogues project, funded by Sciencewise. A preliminary report was considered by the BSS Panel.

With MRC we have successfully applied to run a national programme of public engagement and dialogue activities on stem cell science, and have been awarded a grant of £300k from Sciencewise. The project will commence in 2007-08.

[8] www.ipsos-moricom/polls/2006/rcuk.shtml

Embedding our science in society

Outreach and engagement

To enable public engagement and participation with bioscience research, we have delivered several new activities designed to foster discussion around the wider social issues in areas such as stem cell biology, the use of animals in research, healthier ageing, and the implications of climate change for UK farming and the countryside. For example, we launched a series of brochures that illustrate the role of basic bioscience in helping to address major challenges such as cancer prevention, coping with climate change and tackling obesity; and we have produced a new touring display on climate change that illustrates some of the impacts on crop production, and options for mitigating harmful effects.

With MRC, we produced 'Hope not Hype' – a touring exhibition on stem cell science. This was launched in London in July 2006 by Lord Naren Patel and Health Minister Andy Burnham MP, and subsequently in Scotland by Scottish Minister for Health and Community Care, Andy Kerr MSP. The exhibition has been displayed in Edinburgh, Dundee, Cambridge and has provided a focus for discussion meetings, with further venues planned for 2007. We also contributed to a new public information pack on stem cells, produced by the UK funders of stem cell research.

Health Minister Andy Burnham MP at the launch of 'Hope not Hype'

The BBSRC/NERC touring exhibition on biodiversity has been displayed at the Centre for Life Newcastle, the Botanic Garden in Wales and during the BA Annual Festival in Norwich, and has provided a focus for discussion meetings with members of the public.

We helped to support the presentation of two areas of BBSRC-funded research at the 2006 Royal Society Summer Science Exhibition, which also travelled to the Glasgow Science Centre: Natural born tool-makers (University of Oxford), and Why me? (Rothamsted Research).

We contributed to an RCUK public presentation for National Science Week in Swindon, with a display on age-related changes in muscle and how these may be, at least partially, reversed by exercise.

BBSRC supports the Coalition for Medical Progress, and has contributed to a series of new information sheets about the use of animals in research

Engaging young people in science

We focus our efforts on engaging young people with bioscience through RCUK-coordinated activities (see below). Also through RCUK, we are supporting a review of education-related activities by the Research Councils. We complement these activities through targeted schemes, notably using local schools coordinators and activities at our sponsored institutes. Approximately 50% of BBSRC grantholders have worked with schools and teachers to engage young people with bioscience.

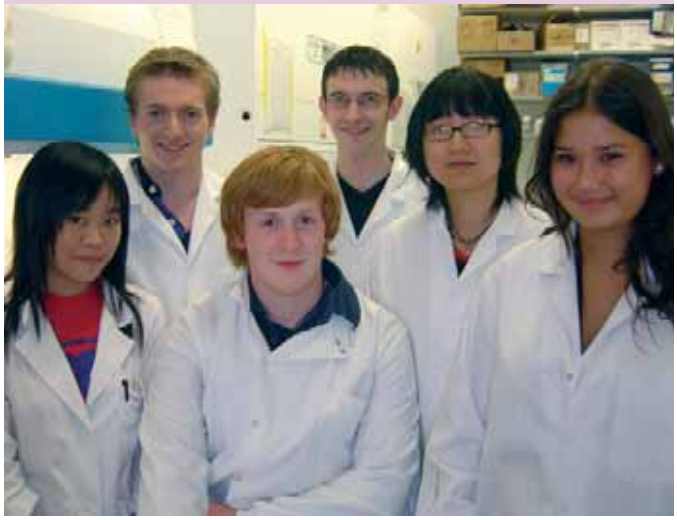
Following the 2005 Institute Assessment Exercise review of public engagement activities, we have made seven awards to BBSRC-sponsored institutes to enable them to develop new activities to engage with school students, particularly those at GCSE level.

BBSRC supports and contributes to the following, which are coordinated through the RCUK Science in Society Unit:

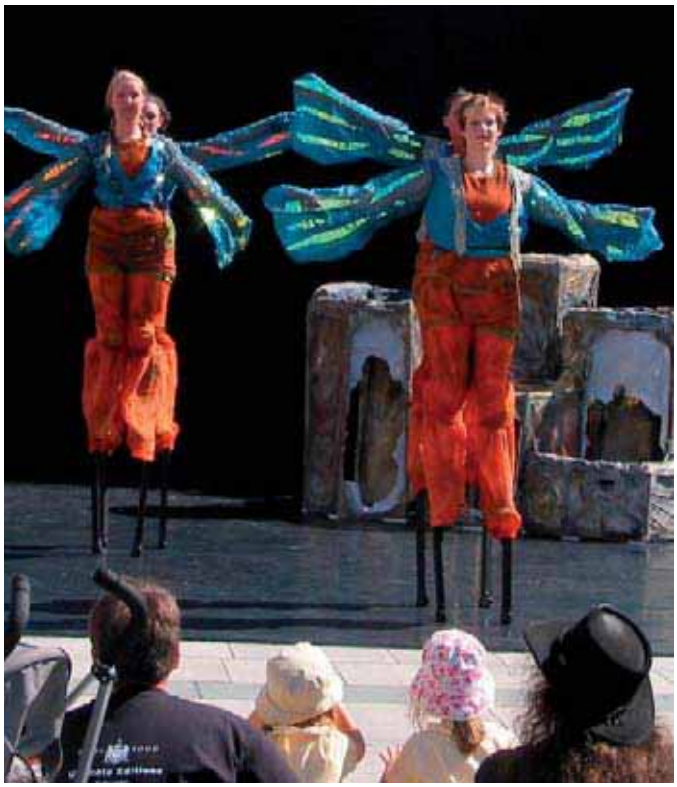
- Beacons for Public Engagement (with HEFCE)
- Researchers in Residence (scientist placements in schools)
- BA CREST Awards (school research projects)
- Nuffield Science Bursary Scheme (school student placements in research laboratories)
- CPD for teachers in Science Learning Centres
- BA Perspectives (public presentations by postgraduates)
- Presentation at the Association for Science Education AGM
- ASE schoolscience website
- Public Engagement on Energy Research
- Awards for National Science Week

Our public engagement small awards scheme, through which we made seven awards for 2007 totalling around £30k, supported a variety of activities for young people and dialogue with hard-to-reach groups. These included hands-on activities for school pupils from scientists at the Universities of Birmingham, Cardiff and Manchester; while researchers from King's College London, and the Universities of Salford and Warwick are reaching out to local community groups.

BBSRC's Vacation Bursary Scheme (page 24) supported four second year undergraduates to undertake eight-week research projects at Babraham Institute during Summer 2006. The Institute also hosted four local sixth formers on 4-6 week projects supported by Nuffield bursaries, and work-experience courses for 19 GCSE students.



Summer students at Babraham Institute



Dancers depicting the emergence of dragonflies from their nymphal cases: part of a BBSRC-funded project with biologists at University of Plymouth and the Barbican Theatre, Plymouth which toured in Devon and Cornwall in 2006 and held numerous workshops in local schools

Corporate information

Council

Council determines BBSRC policies and strategies. It comprises the Chair, the Chief Executive and between 10-18 other members, at least half of whom are appointed for their qualification in science and engineering. Users of research, in Government and industry, are also represented.

All members are appointed by the Secretary of State for Trade and Industry. They are required to abide by a code of practice that covers conflicts of interests and general conduct.

The Council approves the membership of the six Boards that report to it, namely Appointments, Audit, Estates & Equipment, Human Resources, Remuneration, and Strategy Boards. The Chair of each Board is required to report regularly on the work of their respective Boards and to take forward specific tasks as directed by Council.

The Council is also expected to ensure that the position of Clerk to Council, which provides an administrative interface between the Chair, Council and the BBSRC Executive, is of an appropriate standing and experience. The Clerk to the Council is a senior official in BBSRC Swindon Office.

Page 63 contains details of related party transactions. Registers of interest for Council, Boards and Committees can be found at www.bbsrc.ac.uk.

Council Membership
(as at 1 April 2007)

Dr Peter Ringrose
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Professor Julia Goodfellow CBE
Deputy Chair and Chief Executive

Dr David Brightman
Brightman Farms

Professor Sir Howard Dalton FRS
Department for Environment, Food and Rural Affairs

Professor Anne Dell FRS
Imperial College London

Professor David Delpy FRS
University College London

Professor Robert Freedman
University of Warwick

Professor Peter Fryer FREng
University of Birmingham

Professor Chris Gilligan
University of Cambridge

Mrs Sarah Haywood
Department of Trade and Industry

Professor A Jackie Hunter
GlaxoSmithKline plc

Professor Quintin McKellar
Royal Veterinary College

Dr Alistair Penman
Independent

Professor Dame Nancy Rothwell FRS
University of Manchester

Dr Malcolm Weir
Inpharmatica Ltd

Mr John Neilson (observer)
Office of Science and Innovation, Department of Trade and Industry

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(as at 31 March 2007)

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Professor John Coggins
Independent, University of Glasgow

Professor Peter Fryer FREng
Council Member

Professor John Pickett CBE FRS
Institute Representative

Dr Malcolm Skingle
Strategy Board Member and Chair of Bioscience for Industry Strategy Panel

Professor Alison Smith OBE
Chair, Plant & Microbial Sciences Committee

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Council Member

Professor Robert Freedman
Council Member

Professor Quintin McKellar
Council Member

Mr Mike Samuel
Independent

OBSERVER

Professor Julia Goodfellow CBE
BBSRC Chief Executive

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Chair, John Innes Centre Governing Council

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BBSRC Director of Science and Technology

Professor Keith Gull CBE, FRS
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University of Bristol

Mr Richard Shaw
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Mr Steve Visscher
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Professor Mary Bownes OBE
Chair, Studentships and Fellowships Strategy Panel

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University College London

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Dr Frances Green
Medical Research Council

Professor Martin Shirley
Institute for Animal Health

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Dr Malcolm Weir
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Chair, Studentships and Fellowships Strategy Panel

Dr Ed Dart CBE
Independent

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Professor Russell Foster
Chair, Healthy Organism Strategy Panel

Professor Maggie Gill
Scottish Executive Environment and Rural Affairs Department

Professor Chris Gilligan
Council Member

Revd Professor Michael Reiss
Chair, Bioscience for Society Strategy Panel

Professor Dame Nancy Rothwell FRS
Council Member

Dr Malcolm Skingle
Chair, Bioscience for Industry Strategy Panel

Professor Jeff Waage OBE
Chair, Sustainable Agriculture Strategy Panel

Professor Michael Wakelam
Independent

Corporate information

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Professor John Birch
Lonza Biologics plc

Professor John Coggins
University of Glasgow

Dr Colin Dennis
Campden & Chorleywood Food Research Association

Sir Ben Gill
Hawkhills Consultancy Ltd

Dr David Gillham
University of Reading

Mrs Sarah Haywood
Department of Trade and Industry

Mr Tom Hockaday
Isis Innovation Ltd

Dr Harren Jhoti
Astex Therapeutics Ltd

Professor Douglas Kell
University of Manchester

Professor Peter Lillford CBE
University of York

Dr Linda Magee
North West Development Agency

Dr Fiona Marston
Novacta Biosystems Ltd

Dr C. V. Natraj
Unilever Corporate Research

BIOSCIENCE FOR SOCIETY STRATEGY PANEL

Revd Professor Michael Reiss (Chair)
Institute of Education, University of London

Dr Louise Archer
King's College London

Dr Derek Bell
Association for Science Education

Dr David Boak
Royal Society

Dr Nigel Collins*
King Charles I School, Kidderminster

Professor Robert Dingwall
University of Nottingham

Dr David Hardman
Babraham Bioscience Technologies Ltd

Professor Alan Irwin
University of Liverpool

Dr Brian Johnson
Independent

Dr Mairi Levitt
Centre for Economic and Social Aspects of Genomics

Dr Tom MacMillan
Food Ethics Council

Professor Christine Nicol
University of Bristol

Ms Vivienne Parry
Independent

HEALTHY ORGANISM STRATEGY PANEL

Professor Russell Foster (Chair)
University of Oxford

Professor Diane Berry
University of Reading

Professor Julian Dow
University of Glasgow

Professor Jane Hurst
University of Liverpool

Professor John Mathers
Newcastle University

Professor Peter McNaughton
University of Cambridge

Professor Richard Oreffo
University of Southampton

Professor Linda Partridge FRS
University College London

Dr Jonathan Powell
Unilever Research

Professor Kevin Shakesheff
University of Nottingham

Professor Tim Skerry
University of Sheffield

Dr John Tite
GlaxoSmithKline plc

HUMAN RESOURCES STRATEGY PANEL

Mr Peter Swinburne (Chair)
BBSRC Director of Human Resources

Dr Paul Britton
Institute for Animal Health

Ms Alison Cartwright
Scottish Crop Research Institute

Mr Simon Durbin
Institute of Grassland and Environmental Research

Dr Caroline Edmonds
Babraham Institute

Professor Keith Goulding
Rothamsted Research

Ms Margaret Hamilton
John Innes Centre

Ms Jill Skinner
Babraham Institute

Dr Trevor Wang
John Innes Centre

Dr Mari Williams
BBSRC Swindon Office

INTEGRATIVE & SYSTEMS BIOLOGY STRATEGY PANEL

Professor David Fell (Chair)
Oxford Brookes University

Dr Aileen Allsop
AstraZeneca

Professor David Bogle
University College London

Professor Tim Bugg
University of Warwick

Dr Mark Cobain
Unilever Research

Dr Richard Dyer OBE
The Biosciences Federation

Dr Greg Elgar
Queen Mary, University of London

Professor Jonathon Elliot
Royal Veterinary College

Professor Alistair Hetherington
University of Bristol

Dr Ursula Klingmuller
German Cancer Research Center

*Dr Collins died in May 2007

Professor Martin Kuiper
University of Ghent

Professor Ajit Narayanan
University of Portsmouth

Dr Jens Timmer
Institute of Physics, Freiburg, Germany

Professor Hans Westerhoff
University of Manchester

Professor Michael White
University of Liverpool

Dr Darren Wilkinson
Newcastle University

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Professor Mary Bownes OBE (Chair)
University of Edinburgh

Professor Nick Brewin
John Innes Centre

Dr Michael Carter
University of Surrey

Dr Mike Collis
Physiological Society

Professor Clive Edwards
University of Liverpool

Professor Jonathan Elliott
Royal Veterinary College

Dr Colin Farquharson
Roslin Institute

Dr Sheila Francis
University of Sheffield

Professor Mike Geeves
University of Kent at Canterbury

Dr Jane Memmott
University of Bristol

Professor Ian Roberts
University of Manchester

Mrs Jackie Wilbraham
AstraZeneca

Professor Tony Wilkinson
University of York

Professor Susan Wonnacott
University of Bath

SUSTAINABLE AGRICULTURE STRATEGY PANEL

Professor Jeff Waage OBE (Chair)
Imperial College London

Dr Tina Barsby
National Institute of Agricultural Botany

Dr David Brightman
Brightman Farms

Professor John Crawford
University of Abertay Dundee

Professor Steve Edwards
Veterinary Laboratories Agency

Professor Laura Green
University of Warwick

Professor Graham Jellis
Home-Grown Cereals Authority

Professor Ken Killham
University of Aberdeen

Professor Chris Pollock CBE
Institute of Grassland and Environmental Research

Dr Sarah Rees
Syngenta

Professor Bill Sutherland
University of East Anglia

Mr Chris Warkup
Genesis Faraday Partnership

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Dr C Linda Saunderson
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Professor Anne Dell FRS (Chair)
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Mr Mike Ambrose
John Innes Centre

Professor Alan Archibald
Roslin Institute

Professor Judy Armitage
University of Oxford

Dr Ewan Birney
European Bioinformatics Institute

Dr Julian Burke
Genetix Group plc

Professor Eleanor Dodson
University of York

Professor Simon Gaskell
University of Manchester

Professor Igor Goryanin
University of Edinburgh

Professor Justin Molloy
National Institute for Medical Research

Dr Jerry Lanfear
Pfizer UK

Professor Ernest Laue
University of Cambridge

Professor Chris Rawlings
Rothamsted Research

Professor Paul Smith
Cardiff University

Professor Saul Tendler
University of Nottingham

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Professor John Crawford (Chair)
University of Abertay Dundee

Professor Richard Bardgett
Lancaster University

Dr Steve Beckett
Sporomex Ltd

Dr Kin-Chow Chang
University of Glasgow

Professor Keith Edwards
University of Bristol

Professor Sue Fairweather-Tait
University of East Anglia

Professor Gadi Frankel
Imperial College London

Dr Claire Halpin
University of Dundee

Professor Barry Hirst
Newcastle University

Professor Julian Ketley
University of Leicester

Professor Harry McArdle
Rowett Research Institute

Corporate information

Professor Ian McConnell
University of Cambridge

Professor Simon McQueen-Mason
University of York

Dr Steve Rushton
Newcastle University

Professor Colette Shortt
McNeil Nutritionals Ltd

Professor Mark Tatchell
Consultant

OBSERVERS

Dr Sue Popple
Department for Environment, Food and Rural Affairs

Mr Alisdair Wotherspoon
Food Standards Agency

ANIMAL SCIENCES COMMITTEE

Professor Eleanor Riley (Chair)
London School of Hygiene & Tropical Medicine

Dr Richard Apps
University of Bristol

Professor John Barrett
University Wales, Aberystwyth

Professor Dave Burt
Roslin Institute

Dr David Haig
Moredun Research Institute

Professor Cecilia Heyes
University College London

Dr Jayne Hope
Institute for Animal Health

Professor Glyn Humphreys
University of Birmingham

Dr Declan Jones
GlaxoSmithKline plc

Professor Alex Kacelnik
University of Oxford

Professor Simon Laughlin
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Professor Michael Lomax
University of Aberdeen

Professor Andrew Loudon
University of Manchester

Professor Margaret MacLean
University of Glasgow

Dr John McCauley
National Institute for Medical Research

Dr Amanda Parker
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Dr Lynne Sneddon
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Royal Veterinary College

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Scottish Executive Environment and Rural Affairs Department

Dr Alex Morrow
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Professor Colin Brownlee
Marine Biological Association

Professor S Louise Cosby
Queen's University Belfast

Professor Mark Darlison
Nottingham Trent University

Professor Michael Ehrman
Cardiff University

Professor Vincent Emery
University College London

Professor Rob Field
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Professor David Gilbert
University of Glasgow

Professor Chris Hawes
Oxford Brookes University

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Dr Oliver Rausch
UCB Group

Professor Anne Willis
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Dr Rose Zamoyska
National Institute for Medical Research

CO-OPT

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Professor Paul Barlow
University of Edinburgh

Dr Dave Brown
Pfizer UK

Professor Tom Brown
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Dr Julea Butt
University of East Anglia

Professor Harry Gilbert
Newcastle University

Dr Jane Grasby
University of Sheffield

Professor Bill Hunter
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Dr Marisa Martin-Fernandez
Science and Technology Facilities Council

Professor Michael Overduin
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Dr Martin Packer
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MRC Laboratory of Molecular Biology

Dr David Westhead
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OBSERVER

Mr Paul Thomson
Engineering and Physical Sciences Research Council

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University of Glasgow

Dr Declan Bates
University of Leicester

Professor Helen Byrne
University of Nottingham

Dr Walter Cook
Pfizer Global R&D

Professor Alicia El Haj
Keele University

Professor Chris Hewitt
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University of Southampton

Dr Gill Stephens
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University of Nottingham

Dr Carl Westmoreland
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Dr Martin Anthony
Department of Trade and Industry

Dr Stephen Elsby
Engineering and Physical Sciences Research Council

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Professor Elizabeth Jones (Chair)
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Dr Timothy Allsopp
Stem Cell Sciences Ltd

Dr Mark Blaxter
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Professor Hugh Dickinson
University of Oxford

Professor Ray Dixon
John Innes Centre

Professor Amanda Fisher
Imperial College London

Dr Peter Hollingsworth
Royal Botanic Garden Edinburgh

Professor Malcolm Maden
King's College London

Dr Sarah Newbury
University of Sussex

Dr Mark O'Connor
KuDOS Pharmaceuticals Ltd

Dr Helen Ougham
Institute of Grassland and Environmental Research

Professor Nancy Papalopulu
University of Manchester

Dr Penny Rashbass
University of Sheffield

Professor Michael Stark
University of Dundee

Dr Max Telford
University College London

Dr Robbie Waugh
Scottish Crop Research Institute

PLANT & MICROBIAL SCIENCES COMMITTEE

Professor Alison Smith OBE (Chair)
John Innes Centre

Professor J Beynon
Warwick HRI

Professor Stephen Busby FRS
University of Birmingham

Professor Philip Gilmartin
University of Leeds

Dr Chris Grant
University of Manchester

Dr Julie Gray
University of Sheffield

Professor Jay Hinton
Institute of Food Research

Professor Michael Holdsworth
University of Nottingham

Professor Johnathan Napier
Rothamsted Research

Professor Anthony O'Donnell
Newcastle University

Professor Tracy Palmer
University of Dundee

Professor Margaret Smith
University of Aberdeen

Professor Nicholas Talbot
University of Exeter

Dr Helena Thomaides
Prolysis Ltd

Dr Lesley Torrance
Scottish Crop Research Institute

Professor Simon Turner
University of Manchester

Dr Jeroen Wilmer
Biogemma UK Ltd

Organisational developments

Efficiency

This year BBSRC delivered efficiency savings worth £22.5M against a target of £22.2M. We did this by reducing the proportion that we spend on administration; reprioritising programme spend; through more co-funding of research with industrial and other partners; and by increasing efficiency at our sponsored institutes. Our savings target for 2007-08 is £38.2M. This will be delivered through:

- **Re-prioritisation of funded programmes, including training (£16M)**
- **Proportional reduction of administration costs (£1.2M)**
- **Increased efficiency of our sponsored institutes, including better use of capital infrastructure (£18M)**
- **More co-funding (£3M)**

We are planning for these savings to continue into the next comprehensive spending review period, beginning in 2008-09.

BBSRC's administration costs represented 2.67% of the Science Budget Income (resource and capital – including non-cash) for 2006-07. This continues the downward trend previously achieved (2.78% in 2005-06, 2.95% in 2004-05), and provides greater confidence that the 2007-08 target, of 2.64%, will be met.

The introduction of Microsoft Sharepoint, along with a formal electronic file plan, has enabled BBSRC to manage documents electronically throughout Swindon Office. This has produced operational efficiencies and also reduced the amount of hard copy storage required.

Research Council harmonisation

BBSRC is playing a leading role in the Shared Services Centre project. This project will deliver shared transactional services in the areas of Finance, Grants, HR, IS/IT and Procurement to all Research Councils. The project is planned to reach full implementation by the end of 2009 and in the run-up to the project BBSRC has deployed more than 40 people to work across BBSRC on the project. In addition we have seconded a number of staff to the central team responsible for delivering the project.

Risk management

BBSRC utilises a range of techniques to ensure that risk is managed in a manner that ensures a proper balance is struck between prudent management and innovative approaches to issues. We use a formal structure of operational risk registers, longer term strategic risks and business critical projects and this year have been supported by a review of risk appetite. These are regularly reviewed by the executive management of BBSRC and the BBSRC Audit Board, and annually by internal and external auditors. Our procedures are supported by Statements of Internal Control from the Chief Executive, and Group and Institute Directors. In addition, for significant programmes such as the Pirbright Development, the Office of Government Commerce's Gateway process is used.

Staff report

On 1 April 2007, 2,075 staff were employed on indefinite contracts in institutes sponsored by BBSRC and in Swindon Office. Of the indefinite contract staff, 898 were in the science category, of which 95% were graduate or equivalent level. A further 288 members of staff, mainly scientists, held period appointments in BBSRC directly. Women now occupy 22% of senior posts in BBSRC (Bands 1 to 4). The comparable figure for 2005-06 was 20%. We are reducing the number and proportion of researchers on fixed-term contracts (often funded externally, for example by Defra). This peaked at almost 1,300 in 2001-02 and has decreased by 81% in five years.

Environmental policy

BBSRC continues to seek to reduce the environmental impact of its operations, including those of its sponsored institutes. We have set institutes key energy and environment objectives to measure and reduce their CO_2 emissions, energy consumption, water consumption and waste. These are reported on annually.

We have formalised and strengthened our commitment to promoting environmental best practice in connection with our operations. This has included environmental reviews for all our sponsored institutes with benchmarking against ISO 14001.

Energy efficiency and the minimising of waste are important elements of our policy. Figures for waste disposal on the site of the Swindon-based Research Councils show that the number of general waste collections has decreased from 2,600 to 1,560 cubic metres in 2006 as we increase the amount of waste that is recycled.

Health and Safety

The number of accidents reportable under RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations, 1995) in the year 1 April 2006 to 31 March 2007 was 14; this compares with 16 in the previous year. We are on target to reduce the numbers of RIDDOR incidents by 30% by 2010: in 2000-01 the number of RIDDOR incidents in BBSRC was 22 or 6.7 per 1,000 employees. In 2006-07 the number of RIDDOR incidents was 14 or 5.1 per 1,000 employees.

Reportable incident category
(defined as in RIDDOR 1995)

	2005-06	2006-07
Contact with moving machinery or material being machined	0	1
Hit by a moving, flying or falling object	0	0
Hit by a moving vehicle	0	0
Hit something fixed or stationary	0	0
Injured while handling, lifting or carrying	5	3
Slipped, tripped or fell on the same level	2	4
Fell from a height	1	0
Trapped by something collapsing	0	0
Drowned or asphyxiated	0	0
Exposed to, or in contact with, a harmful substance	3	0
Exposed to fire/heat/extreme cold or other physical agent	0	0
Exposed to an explosion	0	0
Contact with electricity or electrical discharge	0	0
Injured by an animal	3	1
Physically assaulted by a person	0	0
Another kind of accident	2	2
Total accidents	**16**	**11**
Cases of occupational disease	0	1
Dangerous occurrences	0	2
Overall total	**16**	**14**

Diversity

BBSRC's policy in relation to the employment of disabled persons is, where practicable, to continue to employ employees who become temporarily or permanently disabled. As with all members of staff, full regard is given to their training needs, career development and promotional potential. Full and fair consideration is also given to the recruitment of applicants who are disabled, taking into account their aptitudes and abilities. BBSRC has requested that all sponsored institutes obtain the 'two ticks' disability symbol during 2007 to demonstrate their commitment to good practice in employing disabled people.

In 2006 BBSRC received a Gold Award from Opportunity Now for encouraging inclusiveness for women. We are further embedding workplace diversity through the recommendations that came out of our 2006 Diversity Audit. These included a review of merit promotion criteria, identifying any obstacles to career progression for women researchers and minority groups. Our support for Daphne Jackson Fellowships for returners to science continues, and we have rolled out Diversity Awareness training to all staff and managers.

We have published our Disability, Gender and Race Equality Schemes and Action Plans, which detail how we will meet our statutory duties and work towards mainstreaming diversity. We will review our new and existing areas of service and policy through Equality Impact Assessments. We are also working to improve the gathering and use of diversity data.

We utilise a range of practices to communicate with employees locally and nationally. Negotiating Consultative Committees are held locally and nationally between senior management and Trade Union representatives, to discuss issues of mutual concern. In addition to direct letters to employees, BBSRC uses bulletins, circulars, briefings and corporate publications to communicate with staff.

Corporate information

Financial review

Financial highlights

- Following the Spending Review 2004 allocation, grant-in-aid rose by £44M to £365.9M. In addition to this, a further £11.1M was received for the capital redevelopment of IAH Pirbright.
- The increase in grant-in-aid contributed towards a 16% rise in research and capital grant expenditure of £41.5M to £306.4M and a 14% increase in training and fellowship awards of £5.4M to £44.5M.
- Net expenditure for the year was £62M higher than 2005-06 at £394.5M, whilst the General Reserve carried forward rose by £3.3M to £57.5M.
- Forward commitment on approved research grants rose by £47M (12%) to £434.7M. Capital commitments rose by £49.7M to £87.3M, which pre-dominantly related to BBSRC's contributions to the EBRC and IAH Pirbright developments.
- Other operating costs rose by £4.2M largely due to consultancy expenditure associated with the governance and sustainability of BBSRC sponsored institutes, the inclusion of BBSRC's share of joint electronic submission running costs, and a rise in Human Resources' legal costs. Other operating costs also include an increase in central purchasing by BITS that is offset by a rise in recovery of IT services to institutes.
- Staff employed in Swindon Office, BITS and joint research council services increased by 6.1 full-time equivalents and, coupled with a standard pay rise of 3%, led to an increase in staff costs of £0.5M.
- There was further staff restructuring of BBSRC sponsored institutes during 2006-07, with provisions increased for new restructuring programmes at RRES and IGER. A £2M provision was also added during the year for accommodation costs relating to restructuring programmes.
- A rise of £13.2M in BBSRC's fixed asset base was largely associated with the revaluation based on HM Treasury supplied indices. Milk quotas with an opening value of £0.2M were disposed of and there was a further impairment of £0.8M to investments. The final instalment of £0.5M in Plant Biosciences Ltd was paid during 2006-07.

Pensions

BBSRC has responsibility for the Research Councils' Pension Schemes (RCPS) and BBSRC's Chief Executive is the Accounting Officer for the pension schemes. BBSRC employees are eligible to join either the RCPS or open a partnership pension account, which is a stakeholder pension with an employer contribution. The RCPS are funded on a pay-as-you-go basis principally through employer and employee contributions and annual grant-in-aid. The schemes provide retirement and related benefits on final emoluments by analogy to the Principal Civil Service Pension Scheme. The RCPS are administered by the Research Councils' Joint Superannuation Services, a unit within BBSRC. Separate RCPS Accounts are published and contain the further disclosure of information required under the relevant accounting standards.

As the RCPS are unfunded multi-employer defined benefit schemes, BBSRC is unable to identify its share of the underlying assets and liabilities. Details can be found in the accounts of the Research Councils' Pension Scheme at www.bbsrc.ac.uk.

Employer contributions are to be reviewed every four years, following a full scheme valuation by the Government Actuary's Department (GAD). The report of the full actuarial valuation as at 31 March 2006 is expected to be available from GAD during August 2007. The contribution rate reflects benefits as they are accrued, not when the costs are actually incurred, and reflect the past experience of the scheme.

Creditor payment policy

BBSRC adheres to the principles of the Prompt Payers' Code, and makes every effort to ensure compliance with the agreed terms of payment of creditors' invoices and endeavours to pay them within 30 days of receipt of goods or services. During 2006-07 93% of payments were made within 30 days (2005-06: 92%).

The Late Payment of Commercial Debts Regulations (2002) provides all businesses, irrespective of size, with the right to claim statutory interest for the late payment of commercial debts. No such claims were received during the reporting year.

Audit information

The Chair and at least three non-executive committee members of BBSRC's Audit Board are appointed by Council, being members independent of management and free of any relationship that, in the opinion of Council, would interfere with the exercise of independent judgement as Board members. Audit Board meets three times a year to monitor standards of risk management, corporate governance, internal control reports from the Research Councils' Internal Audit Service, external audit reports and to review BBSRC's Accounts.

BBSRC's accounts are audited by the Comptroller and Auditor General in accordance with Section 2(2) of the Science and Technology Act 1965. The audit fee for the year was £48,000. No non-audit work was performed by the Auditors during the year. In so far as the Accounting Officer is aware, there is no relevant audit information of which BBSRC's auditors are unaware, and the Accounting Officer has taken all the steps that she ought to have taken to make herself aware of any relevant audit information and to establish that BBSRC's auditors are aware of that information.

Renumeration report

Council Chair and Council members except Chief Executive

Policy

Remuneration rates are the same across the Research Councils. The rates are reviewed each year by the Department of Trade and Industry. In considering the new rates, the Department may take into account the increase given to the senior civil service. The Department consults with the Research Councils and the agreed change is implemented in October.

Appointments are non-pensionable and there is no entitlement to compensation for loss of office. No fee is payable in respect of Civil Servants, employees of Research Councils and their institutes and other Non-Departmental Public Bodies and Agencies.

Remuneration

The standard fee paid to Council members was:

	From 1 October 2006 £	Until 30 September 2006 £	
Council Chair	15,410	15,100	per annum
Council Members who also chair Committees	8,540	8,370	per annum
Council Members	6,410	6,280	per annum

	Appointments		Remuneration £000s	
	From	To	2006-07	2005-06
Chair and Deputy Chair				
Chair - Dr Peter Ringrose	01/05/2003	30/04/2009	15	15
Deputy Chair and CE - Professor Julia Goodfellow CBE	01/01/2002	31/08/2007	131	124
Council Members				
Professor Simon Bright	20/04/2004	31/03/2007	7	6
Mr David Brightman	01/08/2003	31/03/2009	6	6
Professor Howard Dalton FRS	01/04/2002	31/03/2010	0	0
Professor David Delpy FRS	01/04/2004	31/03/2010	6	6
Professor Robert Freedman	01/04/2002	31/03/2008	10	6
Professor Peter Fryer FREng	01/05/2006	30/04/2009	6	0
Professor Chris Gilligan	01/04/2003	31/03/2009	6	6
Mrs Sarah Haywood	24/10/2005	23/10/2009	0	0
Professor A Jackie Hunter	01/04/2004	31/03/2010	6	6
Professor Quintin McKellar	01/04/2005	31/03/2008	6	6
Dr Alistair Penman	01/04/2002	31/03/2008	8	8
Professor Dame Nancy Rothwell FRS	01/04/2005	31/03/2008	6	6
Professor Cheryll Tickle CBE FRS	01/04/2001	31/03/2007	6	6
Dr Malcolm Weir	01/04/2005	31/03/2008	6	6

The total emoluments of the Chairman were honoraria of £15,255 (2005-06: £14,900). The Chairman's appointment is non-pensionable and there is no entitlement to compensation for loss of office. Dr Peter Ringrose was appointed Chairman of BBSRC for a period of four years from 1 May 2003, which was extended for a further two-year period.

Committee Chairs and Members

The remuneration of Committee Chairs and Members is set by the Financial Management Group of the Research Councils.

	2006-07	2005-06	
Committee Chairs	£215	£215	per day
Committee Members	£160	£160	per day

The attendance fees have been reviewed for Committee Chairs and Members and will be increasing to £230 and £170 respectively from 1 April 2007.

Directors of Sponsored Research Institutes

Details of sponsored research institute Directors' emoluments are published in the statutory company and charity accounts prepared by each institute.

Chief Executive and BBSRC Directors

Remuneration Committee

The Chief Executive's remuneration is determined by the Permanent Secretary of the Department of Trade and Industry. The Permanent Secretary is advised by a Remuneration Committee chaired by the Director General of Science and Innovation. The Chair of BBSRC Council is consulted.

BBSRC Remuneration Board

The remuneration of BBSRC Directors and Directors of sponsored institutes is reviewed and adjusted annually by BBSRC Council's Remuneration Board. The Board is chaired by the BBSRC Chairman and other membership comprises the Chief Executive and three Council Members, at least one of whom must have an industry background. Members of the Remuneration Board are listed on page 33.

Policy

Subject to successful performance, the Chief Executive's salary rises by a cost of living increase and a pre-determined incremental increase up to a salary ceiling. In addition, a non-consolidated, non-pensionable annual bonus may be awarded for performance towards objectives agreed by BBSRC and the Chief Executive.

BBSRC Remuneration Board reviews performance against a series of objectives, categorised between fundamental, value-added or breakthrough, in determining each Director's annual salary level and any bonus. The Board will also take account of public sector pay constraints, relativities, job weight and any special factors. Increases are normally awarded from 1 July annually.

Remuneration

Professor Julia Goodfellow CBE was appointed Chief Executive on 1 January 2002. Following a two-year extension, her fixed-term period appointment will terminate on 31 August 2007. Her total emoluments are detailed overleaf. There were no receipts or benefits in kind.

BBSRC Directors are members of the BBSRC Executive. Directors are on indefinite contracts, similar to the majority of BBSRC staff, with notice periods between one and three months. Directors' remuneration for 2006-07 are detailed overleaf. No Director is in receipt of benefits in kind. The average increase in Directors' total remuneration was 8% for 2006-07.

Audited information

	Chief Executive	Director of Science and Technology Group	Director of Human Resources Group	Executive Director	Director of Corporate Science Group
	Professor Julia Goodfellow	Professor Nigel Brown	Mr Peter Swinburne	Mr Steve Visscher	Dr Doug Yarrow
Salary and allowances paid in 2006-07	£131,406	£95,337	£77,910	£103,987	£80,450
Salary and allowances paid in 2005-06	£123,503	£89,100	£70,000	£95,401	£72,282
Real increase in pension and lump sum at age 60	£5,000-7,500	£0-2,500	£2,500-5,000	£12,500-15,000	£12,500-15,000
Total accrued pension and lump sum at age 60 as at 31 March 2007	£20,000-25,000	£0-5,000	£30,000-35,000	£160,000-165,000	£140,000-145,000
Cash equivalent transfer value as at 1 April 2006	£91,000	£45,000	£349,000	£694,000	£706,000
Cash equivalent transfer value as at 31 March 2007	£128,000	£80,000	£421,000	£777,000	£819,000
Real increase in cash equivalent transfer value 2006-07	£37,000	£35,000	£72,000	£83,000	£113,000

Salary and Allowances

Salary and allowances covers both pensionable and non-pensionable amounts and includes: gross salaries; performance pay or bonuses; over-time; allowances and any *ex-gratia* payments. It does not include amounts which are a reimbursement of expenses directly incurred in the performance of an individual's duties.

Cash Equivalent Transfer Value (CETV)

A Cash Equivalent Transfer Value (CETV) is the actuarially assessed capitalised value of the pension scheme benefits accrued by a member at a particular point in time. The benefits valued are the member's accrued benefits and any contingent spouse's pension payable from the scheme. A CETV is a payment made by a pension scheme or arrangement when the member leaves a scheme and chooses to transfer the benefits accrued in the former scheme. The pension figures shown relate to the benefits that the individual has accrued as a consequence of their total membership of the pension scheme, not just their service in a senior capacity to which disclosure applies. The CETV figures include the value of any pension benefit in another scheme or arrangement which the individual has transferred to the Research Councils' pension arrangement and for which the CS Vote has received a transfer payment commensurate with the additional pension liabilities being assumed. They also include any additional pension benefit accrued to the member as a result of their purchasing additional years of pension service in the scheme at their own cost.

Real increase in the value of the CETV

The real increase in the value of the CETV reflects the increase effectively funded by the employer. It takes account of the increase in accrued pension due to inflation, contributions paid by the employee (including the value of any benefits transferred from another pension scheme or arrangement) and uses common market valuation factors for the start and end of the period.

Professor Julia Goodfellow CBE Date: 29 June 2007
Chief Executive and Accounting Officer

Statement of Responsibilities of Council and Chief Executive as Accounting Officer

Under Section 2(2) of the Science and Technology Act 1965, the Secretary of State for Trade and Industry with the consent of the Treasury has directed BBSRC to prepare for each financial year a statement of accounts in the form and on the basis set out in the Accounts Direction. The accounts are prepared on an accruals basis and must give a true and fair view of the state of affairs of BBSRC and of its net expenditure, recognised gains and losses and cash flows for the financial year.

In preparing the accounts, the Accounting Officer is required to comply with the requirements of the Government Financial Reporting Manual (www.financial-reporting.gov.uk) and in particular to:

- observe the Accounts Direction issued by the Secretary of State for Trade and Industry, including the relevant accounting and disclosure requirements, and apply suitable accounting policies on a consistent basis;
- make judgements and estimates on a reasonable basis;
- state whether applicable accounting standards as set out in the Government Financial Reporting Manual have been followed, and disclose and explain any material departures in the financial statements; and
- prepare the financial statements on a going concern basis.

The Secretary of State for Trade and Industry has designated the Chief Executive as Accounting Officer of BBSRC. The responsibilities of an Accounting Officer, including responsibility for the propriety and regularity of the public finances for which the Accounting Officer is answerable, for keeping proper records and for safeguarding BBSRC's assets, are set out in the NDPB Accounting Officer Memorandum issued by HM Treasury and published at www.government–accounting.gov.uk

Statement by Chief Executive on Internal Control

1. Scope of Responsibility

As Accounting Officer, I have responsibility for maintaining a sound system of internal control that supports the achievement of BBSRC's policies, aims and objectives, whilst safeguarding the public funds and department assets for which I am personally responsible, in accordance with the responsibilities assigned to me in Government Accounting.

The DTI Accounting Officer has designated me as the Accounting Officer of BBSRC, responsible for the effective, safe and efficient operation of the Council in accordance with the Management Statement.

2. The Purpose of the System of Internal Control

The system of internal control is designed to manage risk to a reasonable level rather than eliminate all risk of failure to achieve policies, aims and objectives; it can therefore only provide reasonable and not absolute assurance of effectiveness. The system of internal control is based on an ongoing process designed to identify and prioritise the risks to the achievement of BBSRC's policies, aims and objectives, to evaluate the likelihood of those risks being realised and the impact should they be realised, and to manage them efficiently, effectively and economically. The system of internal control has been in place in BBSRC for the year ended 31 March 2007 and up to the date of approval of the Annual Report and Accounts, and accords with HM Treasury guidance.

3. Capacity to Handle Risk

BBSRC gives leadership to the process by a number of means, including:

i) setting out a risk management policy and strategy;
ii) signing up to risk management assurance statements at the most senior levels within BBSRC and its sponsored institutes;
iii) updating and reviewing the register of key risks at least quarterly;
iv) reinforcing risk management at staff level through the development and implementation of group-level risk registers in support of those at corporate level;
v) a formal PRINCE 2 based project management approach with embedded risk management is used for major activities, including the business critical projects listed below;
vi) hosting the RCUK project for transparent approach to costing (TRAC) methodology and the funding assurance programme (FAP).

The interests of key stakeholders and operational partners are also considered.

4. The Risk and Control Framework

Risk management and internal control are considered on a regular basis by BBSRC Executive and Audit Board during the year. The Audit Board plays an important role in overseeing the internal control arrangements for BBSRC and its sponsored institutes. The Board reviews the external audit management letters arising from BBSRC and from BBSRC sponsored institutes, and approves the internal audit programme plan for the year in the light of the key risks identified as part of the risk management framework. In particular Business Critical projects are picked out for special assessment by the BBSRC Executive and Audit Board on an ongoing basis. The activities of the Research Councils' Internal Audit Service (RCIAS) in respect of BBSRC and its sponsored institutes are reviewed by Audit Board and the scope of the internal audit plan for the coming year, which is based on the overall assessment of risk, is agreed. With this overarching view of audit activities, Audit Board plays a pivotal role in evaluating and reviewing the evidence supporting the Chief Executive's assurance statement on internal control. The Council's role, in terms of risk management, is to oversee the work of Audit Board through review of Audit Board minutes and key risks highlighted by the Audit Board Chair.

BBSRC Executive Group and Audit Board regularly review the strategic and operational risk management registers and framework and receive reports on Business Critical projects pertaining through the year.

Business Critical projects in progress at 31 March 2007 were:

i) IAH Pirbright Redevelopment. The project is planned to replace the current very mixed facilities with state-of -the-art flexible facilities including areas with the higher level of bio-security. This is allied to the relocation of the Virology Department of the Veterinary Laboratories Agency of Defra.

ii) IAH long-term sustainability. Ensure the institute is sustainable for the long-term taking account of the impact of full economic costing and changes to Defra funding.

iii) EBRC. The creation of a new international centre of bioscience research. Bringing together researchers currently at Roslin Institute, Royal (Dick) School of Veterinary Studies at the University of Edinburgh, the Neuropathogenesis Unit and TSE programme of the IAH, and the Scottish Agricultural College.

iv) Institute restructuring programme. Managing the successful delivery of redundancy programmes at BBSRC sponsored Institutes caused by scientific restructuring, funding cuts and/or by economies and efficiencies.

v) Impact of Defra funding changes on institute sustainability. To focus investment on protecting key capabilities and strategic areas of science.

On behalf of RCUK, BBSRC host the Research Councils' funding assurance programme (FAP), previously Dipstick Testing, which reviews the regularity of expenditure on Research Council grants at universities and other research organisations. The programme examines the control environment and is an important element of the risk management framework. BBSRC also hosts the quality assurance and validation of the TRAC methodology for determining the full economic cost of research in universities. This has been agreed as an additional assurance requirement for all Councils following the introduction of Dual Support reform and the implementation of full economic costing by research organisations.

5. Review of Effectiveness

As Accounting Officer, I have responsibility for reviewing the effectiveness of the system of internal control. My review of the effectiveness of the system of internal control is informed by the work of the internal auditors, and the Executive Directors within BBSRC who have responsibility for the development and maintenance of the internal control framework, and comments made by the external auditors in their management letter and other reports. I have been advised on the implications of the result of my review of the effectiveness of the system of internal control by Council and Audit Board and a plan to address weaknesses and ensure continuous improvement of the system is in place.

The principal elements of support for the Accounting Officer's assurance statement are the work of Audit Board and BBSRC Executive including the review of Business Critical projects, the annual report from the Head of RCIAS, the risk management frameworks developed by BBSRC and its sponsored institutes, and responses to external management letters which identify where control gaps exist.

BBSRC sponsored institutes have their own Risk Management Assurance Framework as part of the accounting requirements within the charity sector and to underpin BBSRC's approach.

In general, controls are in place which can provide a reasonable degree of assurance that operational, financial and reputational risks are managed appropriately. This is not based on a culture of risk aversion but one where risks are considered as part of the decision making process.

Professor Julia Goodfellow CBE Date: 29 June 2007
Chief Executive and Accounting Officer

The Certificate and Report of the Comptroller and Auditor General to the Houses of Parliament

I certify that I have audited the financial statements of Biotechnology and Biological Sciences Research Council for the year ended 31 March 2007 under the Science and Technology Act 1965. These comprise the Statement of Net Expenditure, the Balance Sheet, the Cashflow Statement and Statement of Total Recognised Gains and Losses and the related notes. These financial statements have been prepared under the accounting policies set out within them. I have also audited the information on the Remuneration Report that is described in that report as having been audited.

Respective responsibilities of the Council, Chief Executive and Auditor

The Council and Chief Executive as Accounting Officer are responsible for preparing the Annual Report, the Remuneration Report and the financial statements in accordance with the Science and Technology Act 1965 and Secretary of State for Trade and Industry directions made thereunder and for ensuring the regularity of financial transactions. These responsibilities are set out in the Statement of Council and Chief Executive's Responsibilities.

My responsibility is to audit the financial statements and the part of the remuneration report to be audited in accordance with relevant legal and regulatory requirements, and with International Standards on Auditing (UK and Ireland).

I report to you my opinion as to whether the financial statements give a true and fair view and whether the financial statements and the part of the Remuneration Report to be audited have been properly prepared in accordance with the Science and Technology Act 1965 and Secretary of State for Trade and Industry directions made thereunder. I report to you whether, in my opinion, certain information given in the Annual Report, which comprises the Corporate Information, is consistent with the financial statements. I also report whether in all material respects the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them.

In addition, I report to you if the Biotechnology and Biological Sciences Research Council has not kept proper accounting records, if I have received all the information and explanations I require for my audit, or if information specified by HM Treasury regarding remuneration and other transactions is not disclosed.

I review whether the statement on Internal Control reflects the Biotechnology and Biological Sciences Research Council compliance with HM Treasury's guidance, and I report if it does not. I am not required to consider whether this statement covers all risks and controls, or form an opinion on the effectiveness of the Biotechnology and Biological Sciences Research Council's corporate governance procedures or its risk and control procedures.

I read the other information contained in the Annual Report and consider whether it is consistent with the audited financial statements. I consider the implications for my report if I become aware of any apparent misstatements or material inconsistencies with the financial statements. My responsibilities do not extend to any other information.

Basis of audit opinion

I conducted my audit in accordance with International Standards on Auditing (UK and Ireland) issued by the Auditing Practices Board. My audit includes examination, on a test basis, of evidence relevant to the amounts, disclosures and regularity of financial transactions included in the financial statements and the part of the Remuneration Report to be audited. It also includes an assessment of the significant estimates and judgments made by the Council and Chief Executive in the preparation of the financial statements, and of whether the accounting policies are most appropriate to the BBSRC's circumstances, consistently applied and adequately disclosed.

I planned and performed my audit so as to obtain all the information and explanations which I considered necessary in order to provide me with sufficient evidence to give reasonable assurance that the financial statements and the part of the Remuneration Report to be audited are free from material misstatement, whether caused by fraud or error and that in all material respects the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them. In forming my opinion I also evaluated the overall adequacy of the presentation of information in the financial statements and the part of the Remuneration Report to be audited.

Opinions

Audit Opinion

In my opinion:

- the financial statements give a true and fair view, in accordance with the Science and Technology Act 1965 and directions made thereunder by the Secretary of State for Trade and Industry, of the state of the BBSRC's affairs as at 31 March 2007 and of its Net Expenditure for the year then ended;
- the financial statements and the part of the Remuneration Report to be audited have been properly prepared in accordance with the Science and Technology Act 1965 and Secretary of State for Trade and Industry directions made thereunder; and
- information given within the Annual Report, which comprises the Corporate Information is consistent with the financial statements.

Audit Opinion on Regularity

In my opinion, in all material respects the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them.

Report

I have no observations to make on these financial statements.

John Bourn
Comptroller and Auditor General
Date: 4 July 2007

National Audit Office
157-197 Buckingham Palace Road
Victoria
London SW1W 9SP

Statement of Net Expenditure for the year ended 31 March 2007

	NOTE	2006-07 £'000	2006-07 £'000	2005-06 £'000 (as restated)
EXPENDITURE				
Research and Capital Grants	2	**306,349**		264,861
Training Awards and Fellowships	2	**44,542**		39,129
Staff costs	3	**9,089**		8,586
Other operating costs	4	**11,190**		6,965
Research institute staff restructuring	6	**11,608**		3,325
Depreciation and impairment	9	**7,606**		7,463
Notional Interest	5	**7,673**		7,268
TOTAL OPERATING COST FOR THE YEAR			**398,057**	337,597
INCOME AND OTHER ADJUSTMENTS				
Other Operating Income		**551**		609
Recovery of IT service to institutes		**2,750**		1,659
Other recoveries		**672**		166
(Loss)/Gain on disposals and demolition of fixed assets	8	**(375)**		2,660
			(3,598)	(5,094)
NET EXPENDITURE FOR THE YEAR			**394,459**	332,503
General Reserve Surplus Brought Forward			**54,246**	42,619
Net Expenditure for the year		**(394,459)**		(332,503)
Net Parliamentary Funding from OSI	14a	**377,070**		326,469
Net Parliamentary Funding from other Research Councils	14b	**4,777**		4,975
Net Parliamentary Funding from other Government Departments	14b	**2,703**		974
Net Parliamentary Funding from other bodies	14b	**463**		45
Reversal of Notional Interest	5	**7,673**		7,268
Transfer to match depreciation	15	**4,921**		4,383
Transfer to match net book value of disposals	15	**99**		16
CHANGE IN GENERAL RESERVE SURPLUS FOR THE YEAR			**3,247**	11,627
GENERAL RESERVE SURPLUS CARRIED FORWARD			**57,493**	54,246

All activities are regarded as continuing.

The Notes on page 53 to 65 form part of these accounts.

Balance Sheet as at 31 March 2007

	NOTE	31 March 2007 £'000	£'000	31 March 2006 £'000 (as restated)
FIXED ASSETS				
Intangible	9	**-**		220
Tangible	11	**209,546**		195,786
Investments	10	**666**		1,000
			210,212	197,006
CURRENT ASSETS				
Debtors:				
- due within one year	12i	**28,310**		21,578
- due after one year	12ii	**16,750**		10,585
		45,060		32,163
Cash at bank and in hand	16ii	**1,565**		6,005
		46,625		38,168
CURRENT LIABILITIES				
Creditors falling due within one year	13	**(18,544)**		(13,219)
NET CURRENT ASSETS			**28,081**	24,949
TOTAL ASSETS LESS CURRENT LIABILITIES			**238,293**	221,955
LONG TERM LIABILITIES				
Provisions for liabilities and charges	7		**(11,416)**	(9,339)
NET ASSETS			**226,877**	212,616
Financed by:				
RESERVES				
Revaluation reserve	15		**169,384**	158,370
General reserve	15		**57,493**	54,246
TOTAL GOVERNMENT FUNDS			**226,877**	212,616

Professor Julia Goodfellow CBE Date: 29 June 2007
Chief Executive and Accounting Officer

The Notes on pages 53 to 65 form part of these accounts.

Cash Flow Statement for the year ended 31 March 2007

	NOTE	2006-07 £'000	2006-07 £'000	2005-06 £'000
NET CASH OUTFLOW FROM OPERATING ACTIVITIES	16(i)		**(384,265)**	(330,012)
CAPITAL EXPENDITURE				
Payments to acquire tangible fixed assets	16(v)	**(4,741)**		(863)
Purchase of investments	16(v)	**(500)**		(500)
Receipts from sale of fixed assets	16(vi)	**53**		1,813
NET CASH (OUTFLOW)/INFLOW FROM CAPITAL EXPENDITURE AND RECEIPTS			**(5,188)**	450
NET CASH OUTFLOW BEFORE FINANCING			**(389,453)**	(329,562)
FINANCING	14		**385,013**	332,463
NET CASH INFLOW FROM FINANCING			**385,013**	332,463
(DECREASE)/INCREASE IN CASH	16(ii)		**(4,440)**	2,901

Statement of Total Recognised Gains and Losses for year ended 31 March 2007

		2006-07 £'000	2005-06 £'000
Net Expenditure for the Year		**(394,459)**	(332,503)
Net Parliamentary Funding from OSI	14a	**377,070**	326,469
Net Parliamentary Funding from other bodies	14b	**7,943**	5,994
Reversal of Notional Interest	5	**7,673**	7,268
Valuation additions	11	**1,750**	1,300
Revaluation by indexation	9	**14,284**	(587)
TOTAL RECOGNISED GAINS AND LOSSES FOR THE YEAR		**14,261**	7,941

Notes to the Accounts

1. ACCOUNTING POLICIES

a) Basis of Accounting

These accounts have been prepared in accordance with the Accounts Direction issued by the Secretary of State for Trade and Industry, pursuant to Section 2(2) of the Science and Technology Act 1965 and follow the 2006-07 Government Financial Reporting Manual (FReM) www.financial-reporting.gov.uk. The accounting policies contained in the FReM follow UK generally accepted accounting practice for companies (UK GAAP) to the extent that it is meaningful and appropriate to the public sector. BBSRC's accounting policies have been applied consistently in dealing with items considered material in relation to the accounts except for the change in treatment of grant-in-aid and certain other income (see Note F) which has been dealt with by a prior year adjustment.

b) Accounting Convention

These accounts have been prepared under the historical cost convention modified to account for the revaluation of fixed assets.

c) Tangible and Intangible Fixed Assets

i) Capital expenditure includes the purchase of equipment valued at £3,000 or more, milk quotas, land and buildings.

ii) Tangible and intangible fixed assets are included at cost or valuation in existing use. The Council owns land and buildings, which are leased to a number of grant-aided institutes, all of whom are constituted as companies limited by guarantee and as registered charities and who prepare separate audited accounts. Additions to these assets may be funded wholly or in part from sources other than the BBSRC. Any funding contribution made by the BBSRC, in the form of capital grants, is included within Research Grants in the Statement of Net Expenditure.

Where institutes carry out developments that result in a material change in the value of the Council's owned assets, this is disclosed as a fixed asset valuation addition within these accounts based on a professional valuation at the Balance Sheet date.

iii) The basis of valuation is depreciated replacement cost in the case of specialised scientific buildings or open market value for non-specialised buildings. Valuations are adjusted annually to the Balance Sheet date by using appropriate published indices and statistics. A full revaluation of land and buildings is carried out at least every five years except for buildings under construction or sites being prepared for sale.

Some buildings with similar remaining lives have been grouped for valuation and depreciation purposes.

iv) Increased depreciation charges arising from the revaluation are matched by annual transfers from the revaluation reserve to the general reserve. On disposal of a revalued asset, that element of the revaluation reserve that becomes realised as a result is also transferred to the general reserve.

v) In the opinion of BBSRC, there is no material difference between the historic cost of equipment, fixtures and fittings and their current cost. Accordingly these assets have not been revalued and this position is kept under review.

vi) Provision is made for depreciation on all tangible fixed assets at rates calculated to write off the cost or the valuation of each asset (or group of assets) to its estimated residual value evenly over its expected useful life. An expected useful life is assessed at each location by the valuer. Buildings are not depreciated in the year of acquisition whilst a full year's depreciation is charged in the year of disposal. Expected useful lives are as follows:

Freehold Land	-	not depreciated
Depreciated replacement cost buildings	-	up to 60 years
Agricultural buildings	-	up to 60 years
Dwellings	-	up to 60 years
Office and Computing Equipment	-	3 to 5 years
System Software	-	5 years
Motor Vehicles	-	up to 4 years
Assets Under Construction	-	not depreciated until brought into use

Milk Quota are rights gained by using land for milk production in the past. They are tradable on established markets and have a listed market price - www.mdcdatum.org.uk/farmdata/quotaprices. They are not amortised but revalued each year using the published year end price.

d) Investments

Investments are stated at cost less provision for any impairment in value.

e) Ownership of Equipment Purchased with BBSRC Research Grants

Equipment purchased by an institution with research grant funds supplied by the Council belong to the institution and are not therefore tangible fixed assets of the Council. Through the Conditions of Grant applied to funded institutions, the Council reserves the right to determine how such equipment shall be disposed of and how any disposal proceeds are to be utilised.

f) Grant-in-aid

Grant-in-aid for revenue purposes is credited to the General Reserve in the year in which it is received. In accordance with the FReM, for use in accounts from 2006-07 onward, grant-in-aid for revenue purposes is recognised as a financing flow and thus credited to the General Reserve. Grant-in-aid applied for the purchase of general fixed assets is credited to the General Reserve. Grant-in-aid applied for the finance of specific assets is credited to the Government Grant Reserve and is released to income over the estimated useful lives of the related assets. BBSRC also treat receipts from other bodies who are grant-in-aid funded as financing. This is shown as Net Parliamentary Funding from other bodies and is credited to the General Reserve.

The prior year results have been restated in respect of this (see Note 15 and 23).

g) Research Grants

Research grants are charged to the Statement of Net Expenditure in the period to which it relates.

h) Foreign Currencies

Assets and Liabilities denominated in foreign currencies are translated at the rates of exchange ruling at the balance sheet date. Transactions in foreign currencies are recorded at the rate ruling at the time of the transaction. All exchange differences are taken to the Statement of Net Expenditure.

i) Value Added Tax

As the Council is partially exempt for VAT purposes, all expenditure and fixed asset additions are shown inclusive of VAT where applicable. Residual input tax reclaimable by the application of the partial exemption formula is taken to the Statement of Net Expenditure as miscellaneous sundry income. Income is shown net of VAT.

j) Retirement Costs

Contributions to pension schemes (currently 21.3%) are recorded as expenditure. Payments by the Council of early retirement lump sums are recoverable from the Research Councils' Pension Schemes when recipients reach normal retirement age. Recoverable amounts are recognised as debtors in these accounts and set off against annual staff restructuring costs.

k) Notional Interest

A charge, reflecting the cost of capital utilised by the Council, is included in operating costs. The charge is calculated at the real rate set by HM Treasury (currently 3.5%) on the average of opening and closing assets less liabilities, except for balances with HM Paymaster General.

l) Provisions

When BBSRC has taken a decision to fund a programme of redundancies, then the associated costs are provided for. The provision for the on-going Annual Compensation Payments is transferred from the Major Institute Restructuring and any remaining balance released once the redundancies are complete.

2. RESEARCH & CAPITAL GRANTS AND TRAINING AWARDS

	2006-07	2005-06
	£'000	£'000
Responsive Research Grants	**126,313**	115,384
Core Strategic Grants	**73,641**	66,574
Research Initiatives	**52,168**	45,246
Equipment and Facilities	**11,736**	12,962
Capital and Buildings	**42,491**	24,695
	306,349	264,861
Training Awards and Fellowships	**44,542**	39,129
	350,891	303,990
Beneficiaries:		
Universities	**199,976**	182,502
Research Institutes (See Note 20)	**132,205**	104,622
Other Research Councils and other organisations	**18,710**	16,866
	350,891	303,990

3. STAFF COSTS

For BBSRC Office, Bioscience IT Services (BITS) and hosted Research Councils' Joint Services.

	2006-07	2005-06
	£'000	£'000
Salaries and wages	**8,400**	7,848
Social Security costs	**673**	624
Pension costs	**1,670**	1,578
Other fees and honoraria	**344**	331
	11,087	10,381
Less Joint Services staff	**(2,144)**	(2,006)
Administrative and BITS staff on payroll	**8,943**	8,375
Temporary Administration and BITS agency staff	**146**	211
TOTAL	**9,089**	8,586

AVERAGE STAFF NUMBERS

	Full Time Equivalents (FTE)	
	2006-07	2005-06
	No.	No.
Administrative	**184.8**	178.4
BITS	**41.2**	41.8
Administrative and BITS staff on payroll	**226.0**	220.2
Joint Services	**60.7**	60.0
Staff on payroll	**286.7**	280.2
Temporary agency staff	**4.0**	4.4
	290.7	284.6

Further information on staff numbers and pensions are contained in the management commentary and remuneration report. Details of the pensions scheme are on page 40.

THE FOLLOWING NUMBER OF EMPLOYEES EXCLUDING THE CHIEF EXECUTIVE RECEIVED REMUNERATION FALLING WITHIN THE FOLLOWING RANGES:

	2006-07	2005-06
	No.	No.
£130,000 to £139,999	1	-
£120,000 to £129,999	1	1
£110,000 to £119,999	-	1
£100,000 to £109,999	2	-
£90,000 to £99,999	-	1
£80,000 to £89,999	2	2
£70,000 to £79,999	3	3
£60,000 to £69,999	9	5

Remuneration includes Employers' Pension Scheme Contributions of 21.3% (2005-06: 21.3%).

4. OTHER OPERATING COSTS

	2006-07	2005-06
	£'000	£'000
Maintenance, repairs and cleaning	**583**	460
Rent, rates and insurance	**399**	278
External audit	**48**	44
Internal audit	**208**	216
Office supplies	**377**	547
Computing expenses	**980**	620
Travel, subsistence and hospitality	**972**	857
Professional fees and management consultancy	**3,317**	1,064
Central Purchasing by BITS	**3,055**	1,915
Other	**1,251**	964
	11,190	6,965

5. NOTIONAL INTEREST

	2006-07	2005-06
	£'000	£'000
	7,673	7,268

This notional cost is included in the accounts to reflect a cost for the use of capital in the business in the year, as the Council has no specific interest bearing debt. In accordance with Treasury guidance, the calculation is based on a 3.5% (2005-06: 3.5%) rate of return on average net assets employed at cost or valuation.The net assets were £219.2M (2005-06: £207.7M) excluding the average cash balance with the Paymaster General of £0.5M (2005-06: £1.0M).

The reported notional cost is subsequently reversed in the Statement of Net Expenditure in accordance with Government Financial Reporting Manual. Notional Interest as Cost of Capital is, however, reported in the Council's Departmental Expenditure Limit (DEL) under Resource Accounting and Budgeting where it forms part of Council's resource control envelope account to Treasury.

6. RESEARCH INSTITUTE STAFF RESTRUCTURING

	2006-07	2005-06
	£'000	£'000
Annual Compensation Payments (ACP)	**2,583**	2,340
Redundancy payments	**6,599**	11,571
Early Retirement Lump Sums (ERLS)	**1,933**	2,991
Other costs	**4,701**	547
	15,816	17,449
Recoverable ACP and redundancy payments	**(4,243)**	(3,808)
Recoverable ERLS	**(2,042)**	(2,977)
Provided for (See Note 7)	**(4,234)**	(10,194)
	5,297	470
Increase provision for ACP and restructuring cost (See Note 7)	6,327	4,094
Release from existing restructuring provisions (See Note 7)	(16)	(1,239)
Net Cost	**11,608**	3,325

The total number of redundancies during 2006-07 was 171 (2005-06: 274).

7. PROVISIONS FOR LIABILITIES AND CHARGES

Provisions for:	**Annual Compensation Payments**	**Major Institute Restructuring (See Note 20)**	**Total 2006-07**	Total 2005-06
	£'000	**£'000**	**£'000**	£'000
At 1 April 2006	**2,802**	**6,537**	**9,339**	16,678
Amount provided in year	**1,179**	**5,148**	**6,327**	4,094
Amount released in year	**-**	**(16)**	**(16)**	(1,239)
Transfers between provisions	**2,811**	**(2,811)**	**-**	-
Amount expended in year	**(1,119)**	**(3,115)**	**(4,234)**	(10,194)
Total Provisions at 31 March 2007	**5,673**	**5,743**	**11,416**	9,339

Annual Compensation Payments (ACP) are payments to early retirees in advance of their pension entitlements under the Research Councils' Pension Schemes. Major institute restructuring includes provisions for redundancies due to the implementation of revised scientific strategies and the redeployment of Core Strategic Grant funding (£3.8M at 31 March 2007) and provision for associated accomodation expenditure (£1.9M at 31 March 2007).

8. GAIN ON DISPOSALS OR DEMOLITION OF FIXED ASSETS

	2006-07	2005-06
	£'000	£'000
(Payments)/Receipts on disposals of fixed assets	**(47)**	2,713
Less: Net Book Value of assets sold/demolished	**(328)**	(53)
(Loss)/gain on disposals and demolition of fixed assets	**(375)**	2,660

9. FIXED ASSETS

	INTANGIBLE Milk Quota £'000	TANGIBLE (See Note 11) £'000	INVESTMENTS (See Note 10) £'000	Total £'000
At 1 April 2006				
At cost or valuation	599	292,004	1,500	294,103
Depreciation and impairment	(379)	(96,218)	(500)	(97,097)
Net Book Value	220	195,786	1,000	197,006
Additions including valuation additions*	-	6,356	500	6,856
Depreciation and impairment	-	(6,772)	(834)	(7,606)
Disposals	(220)	(108)	-	(328)
Revaluation by indexation	-	14,284	-	14,284
Net Book Value at 31 March 2007	-	209,546	666	210,212
Comprising:				
At cost or valuation	-	311,980	2,000	313,980
Depreciation and impairment	-	(102,434)	(1,334)	(103,768)
	-	209,546	666	210,212

* See Accounting Policies (c) (ii)

10. INVESTMENTS

	At 1 April 2006 £'000	Movements in year £'000	At 31 March 2007 £'000
Cost or Valuation			
Plant Bioscience Ltd (PBL)			
110 Ordinary Shares at 10p each, representing one third of the issued share capital of PBL at a total subscription price of £2,000,000 payable in four instalments of:			
- At Completion of Agreement to Purchase £250,000	250	-	250
- On 1st June 2004 £750,000	750	-	750
- On 1st June 2005 £500,000	500	-	500
- On 1st June 2006 £500,000	-	500	500
Impairment	(500)	(834)	(1,334)
Plant Bioscience Ltd is incorporated in England and Wales. The shares were 33% part paid at 31 March 2007.			
Roslin BioCentre Ltd (RBL)			
49 Ordinary Shares at 100p each representing 49% of the issued share capital of Roslin BioCentre Ltd fully paid. RBL is incorporated in Scotland.	-	-	-
Rainbow Seed Fund			
Partner's capital fund investment of £92.	-	-	-
	1,000	(334)	666

The impairment follows BBSRC Executive's assessment of the current carrying value of the investment based on independent consultants forecast of the PBL Balance Sheet as at 31 March 2012.

11. TANGIBLE FIXED ASSETS

	Land and Completed Buildings £'000	Buildings Under Construction £'000	Plant & Equipment £'000	Total £'000
Cost or Valuation				
At 1 April 2006	**286,475**	**1,300**	**4,229**	**292,004**
Additions	**4,033**	**-**	**573**	**4,606**
Valuation additions*	**-**	**1,750**	**-**	**1,750**
Reclassification	**500**	**(500)**	**-**	**-**
Disposals	**(1,112)**	**-**	**(505)**	**(1,617)**
Revaluation	**15,237**	**-**	**-**	**15,237**
At 31 March 2007	**305,133**	**2,550**	**4,297**	**311,980**
Depreciation and Impairment				
At 1 April 2006	**93,539**	**-**	**2,679**	**96,218**
Provided during the year	**6,145**	**-**	**627**	**6,772**
Disposals	**(1,005)**	**-**	**(504)**	**(1,509)**
Revaluation	**953**	**-**	**-**	**953**
At 31 March 2007	**99,632**	**-**	**2,802**	**102,434**
Net Book Value				
At 31 March 2007	**205,501**	**2,550**	**1,495**	**209,546**
At 1 April 2006	192,936	1,300	1,550	195,786

Except for two sites that were being prepared for sale, the land and buildings were professionally valued as at 31 March 2006 by external valuers, Powis Hughes Chartered Surveyors, in accordance with SAVP and RICS guidance notes.

Analysis of Land and Buildings

	2006-07 £'000	2005-06 £'000
Land and Completed Buildings:		
Research and Administration Buildings at institutes	**174,850**	164,412
Dwellings at institutes	**26,497**	24,642
Institute Occupied Land and Buildings	**201,347**	189,054
Swindon Office	**4,154**	3,882
	205,501	192,936
Buildings Under Construction	**2,550**	1,300
Total Land and Buildings	**208,051**	194,236
Comprising:		
Freehold	**208,018**	194,201
Long Leasehold	**33**	35
	208,051	194,236

* See Accounting Policies (c) (ii)

12. DEBTORS

	2006-07		2005-06
	£'000	£'000	£'000
i) Due within one year:			
Trade debtors		**8,131**	903
Other debtors		**4,210**	4,626
Repayment of Early Retirement Lump Sums*		**1,556**	1,584
		13,897	7,113
Prepayments and accrued income:			
Research grants	**4,008**		2,848
Training awards	**7,473**		4,621
Other	**2,932**		6,996
		14,413	14,465
		28,310	21,578
ii) Due after one year:			
Repayment of Early Retirement Lump Sums*	**5,515**		5,061
Other**	**11,235**		5,524
		16,750	10,585
		45,060	32,163

* Cash received from Research Councils' Pension Scheme (RCPS) in 2006-07 in repayment of Early Retirement Lump Sums (ERLS) was £963,615 (2005-06: £1,155,000).

** Other debtors due after one year include a £10.3M loan to Babraham Bioscience Technologies for the development of Babraham Research Campus.

13. CREDITORS: Amounts falling due within one year

	2006-07		2005-06
	£'000	£'000	£'000
Trade creditors	**4**		98
Deferred income	**1,017**		2
Purchase of tangible fixed assets	**30**		165
Other creditors	**1,033**		357
		2,084	622
Accruals:			
Research grants	**14,362**		11,115
Other	**2,098**		1,482
		16,460	12,597
		18,544	13,219

14a. NET PARLIAMENTARY FUNDING FROM OSI

	2006-07 £'000	2005-06 £'000
Amount provided by the Office of Science and Innovation under Request for Resources (RfR) 2 Subhead O	**365,818**	321,805
Grant-in-aid RfR 2 Subhead W	**106**	102
Pirbright Redevelopment Funding	**11,146**	4,562
Net Parliamentary Funding from OSI	**377,070**	326,469

14b. NET PARLIAMENTARY FUNDING FROM OTHER BODIES

From other Research Councils	**4,777**	4,975
From other Government Departments	**2,703**	974
From other bodies	**463**	45
	7,943	5,994

14c. TOTAL FINANCING

	385,013	332,463

15. RECONCILIATION OF MOVEMENTS IN GOVERNMENT FUNDS

	Government Grant Reserve	Revaluation Reserve	General Reserve	Total Government Funds
	£'000	£'000	£'000	£'000
At 1 April 2005	**40,517**	**162,056**	**2,102**	**204,675**
Amalgamation of Government Grant into General Reserve - see Note 1f	**(40,517)**	**-**	**40,517**	**-**
Restated balances at 1 April 2005	**-**	**162,056**	**42,619**	**204,675**
Net Expenditure for year		**-**	**(332,503)**	**(332,503)**
Net Parliamentary Funding from OSI - see Note 14a		**-**	**326,469**	**326,469**
Net Parliamentary Funding from other bodies - see Note 14b		**-**	**5,994**	**5,994**
Reversal of Notional Interest		**-**	**7,268**	**7,268**
Valuation additions*		**1,300**	**-**	**1,300**
Transfer re depreciation		**(4,383)**	**4,383**	**-**
Transfer re disposals		**(16)**	**16**	**-**
Professional revaluation		**(587)**	**-**	**(587)**
At 1 April 2006	**-**	**158,370**	**54,246**	**212,616**
Net Expenditure for year	**-**	**-**	**(394,459)**	**(394,459)**
Net Parliamentary Funding from OSI - see Note 14a	**-**	**-**	**377,070**	**377,070**
Net Parliamentary Funding from other bodies - see Note 14b	**-**	**-**	**7,943**	**7,943**
Reversal of Notional Interest	**-**	**-**	**7,673**	**7,673**
Valuation additions*	**-**	**1,750**	**-**	**1,750**
Transfer re depreciation	**-**	**(4,921)**	**4,921**	**-**
Transfer re disposals	**-**	**(99)**	**99**	**-**
Professional revaluation	**-**	**14,284**	**-**	**14,284**
At 31 March 2007	**-**	**169,384**	**57,493**	**226,877**

In accordance with the Government Financial Reporting Manual, financing classed as Government Grant Reserve in 2005-06 has been amalgamated into the General Reserve.

* See Accounting Policies (c) (ii)

16. NOTES TO THE CASHFLOW STATEMENT

i) Reconciliation of operating deficit to net cash outflow from operating activities

	2006-07 £'000	2005-06 £'000
Net Expenditure for year	**(394,459)**	(332,503)
Reversal of depreciation and impairment charge	**7,606**	7,463
Reversal of notional interest	**7,673**	7,268
Reversal of net loss/(Gain) on disposals and demolition of fixed assets	**375**	(2,660)
Increase/(decrease) in provision for liabilities and charges	**2,077**	(7,339)
Increase in debtors excluding those for fixed assets	**(12,997)**	(407)
Increase/(decrease) in creditors excluding those for fixed assets	**5,460**	(1,834)
Net cash outflow from operating activities	**(384,265)**	(330,012)

ii) Reconciliation of movement in cash to movement in net funds

	2006-07 £'000	2005-06 £'000
Cash as at 1 April	**6,005**	3,104
(Decrease)/increase from operating activities	**(4,440)**	2,901
Cash as at 31 March	**1,565**	6,005

iii) Breakdown of Balances

	2006-07 £'000	2005-06 £'000
HM Paymaster General	**493**	558
Barclays Bank plc	**1,525**	5,670
Less Held for third parties	**(453)**	(223)
	1,565	6,005

iv) Third Party Assets: Cash held on behalf of Institutes to cover unforeseen losses

	2006-07 £'000	2005-06 £'000
At 1 April	**223**	-
Gross Inflow	**230**	223
At 31 March	**453**	223

v) Movement in creditors and payments for fixed assets

	2006-07 £'000	2005-06 £'000
Tangible fixed asset additions	**4,606**	736
Purchases of investments	**500**	500
Add decrease in fixed asset creditors	**135**	127
Payments to acquire fixed assets	**5,241**	1,363

vi) Movement in debtors and receipts for fixed assets

	2006-07 £'000	2005-06 £'000
Fixed asset debtors	**800**	900
Other debtors	**44,260**	31,263
Total debtors (see Note 12)	**45,060**	32,163
(Payments)/Receipts on disposals of fixed assets (see Note 8)	**(47)**	2,713
Decrease in fixed asset debtors	**100**	(900)
Cash received from sale of fixed assets	**53**	1,813

17. FORWARD COMMITMENTS ON APPROVED RESEARCH GRANTS

	2006-07 £M	2005-06 £M
2006-07	**-**	183.9
2007-08	**203.0**	115.4
2008-09	**128.3**	65.9
2009-10	**76.6**	17.1
2010-11	**18.8**	5.4
After 2010-11	**8.0**	-
	434.7	387.7

18. CAPITAL COMMITMENTS

The majority of capital expenditure funded by BBSRC is on contracts let by sponsored institutes. The following capital commitments have been authorised as at 31 March:

	2006-07 £'000	2005-06 £'000
Authorised for contracts to be let	**15,200**	4,300
Funding approved in principle:		
- BBSRC contribution to Pirbright redevelopment	**16,700**	10,486
- BBSRC contribution to EBRC	**34,300**	-
- Other	**21,100**	22,812
	87,300	37,598

19. CONTINGENT LIABILITIES

BBSRC had no contingent liabilities as at 31 March 2007 (2005-06: Nil).

20. RELATED PARTY TRANSACTIONS

BBSRC is a Non-Departmental Public Body sponsored by the Office of Science and Innovation (OSI) within the Department of Trade and Industry (DTI).

For the purposes of Financial Reporting Standard 8, OSI/DTI are regarded as related parties. During the year, the BBSRC has had various material transactions with OSI/DTI and entities for which OSI/DTI is regarded as the parent department, viz.: Arts and Humanities Research Council, Economic and Social Research Council, Engineering and Physical Sciences Research Council, Medical Research Council, Natural Environment Research Council, Particle Physics and Astronomy Research Council, Council for the Central Laboratory of the Research Councils.

Debtors include balances with other central government bodies within the boundary set for the whole of Government accounts (WGA) of £5.2M (2005-06: £2.2M). The £5.2M consists of £3.8M owed by other Research Councils and £1.4M by other Government Departments. Debtors with non-WGA bodies include £10.3M with Babraham Bioscience Technologies Limited (BBT) for the development of the Babraham Research Campus.

During the year, the following material payments in respect of research grants funded by BBSRC took place in relation to the following Council members:

	Awards	**£**
Professor David Delpy FRS	**1**	73,151
Professor Robert Freedman	**1**	58,663
Professor Peter Fryer FREng	**1**	77,696
Professor Chris Gilligan	**1**	95,006
Professor Cheryl Tickle CBE FRS	**1**	42,799

The following Council members held positions on the Governing Bodies of sponsored research institutes:

Dr David Brightman	Rothamsted Research
Professor Quintin McKellar	Institute for Animal Health
Professor Cheryl Tickle CBE FRS	Roslin Institute

Registers of interest for Council, Boards and Committees can be found at www.bbsrc.ac.uk

Related Party Transactions	**Grants** (See Note 2)		**Debtors (including loans)**		**Major Provision In Year** (See Note 7)	
	2006-07	2005-06	**2006-07**	2005-06	**2006-07**	2005-06
	£M	£M	**£M**	£M	**£M**	£M
Transactions with BBSRC Sponsored Institutes:						
Babraham Institute*	**23.4**	15.4	**0.5**	0.3	**-**	-
Institute for Animal Health*	**33.8**	20.2	**1.9**	4.1	**-**	0.2
Institute of Food Research*	**14.7**	11.9	**1.0**	0.2	**0.2**	1.3
Institute of Grassland and Environmental Research*	**7.6**	7.2	**-**	0.1	**1.1**	-
John Innes Centre	**23.7**	21.8	**3.1**	1.8	**-**	0.8
Roslin Institute*	**7.8**	7.1	**0.8**	0.8	**-**	-
Rothamsted Research	**21.2**	18.0	**3.5**	3.8	**1.7**	1.5
Total	**132.2**	101.6	**10.8**	11.1	**3.0**	3.8
Silsoe Research Insitute**	**-**	3.0	**-**	-	**2.1**	-
	132.2	104.6	**10.8**	11.1	**5.1**	3.8

* Institutes occupying BBSRC-owned estate at peppercorn rents.

** Former BBSRC sponsored institute

	2006-07	2005-06
Non-Institute Debtors:	**£M**	£M
BBT	**10.3**	-
Other Research Councils	**3.8**	1.9
Other Government Organisations	**1.4**	0.3
Reseach Councils Pensions Schemes	**7.1**	6.6
	22.6	8.8

21. DERIVATIVES AND OTHER FINANCIAL INSTRUMENTS

FRS 13, Derivatives and Other Financial Instruments, requires disclosure of the role which financial instruments have had during the period in creating or changing the risks an entity faces in undertaking its activities. Because of the non-trading nature of its activities and the way in which Government bodies are financed, BBSRC is not exposed to the degree of financial risk faced by business entities. Moreover, financial instruments play no role in creating or changing risk as would be typical of the listed companies to which FRS 13 mainly applies. BBSRC has very limited powers to borrow or invest surplus funds and financial assets and liabilities are generated by day-to-day operational activities and are not held to change the risks facing the Council in undertaking its activities.

Liquidity risk

BBSRC's net revenue resource requirements are financed by resources voted annually by Parliament, and administered as grant-in-aid through the Office of Science and Innovation, just as its capital expenditure largely is. BBSRC is not therefore exposed to significant liquidity risks.

Interest-rate risk

BBSRC's exposure to interest rate risk is insignficant.

Foreign currency risk

BBSRC's exposure to foreign currency risk is insignificant. Foreign currency income is nil and foreign currency expenditure at less than 0.1% of total expenditure is also negligible.

22. POST BALANCE SHEET EVENTS

There were no post balance sheet events between the balance sheet date and 6 July 2007, the date when the Accounting Officer despatched the accounts to the Office of Science and Innovation. The financial statements do not reflect events after this date. The governance of the BBSRC sponsored institutes is under review, further details are noted in the Chief Excutive's report on page 2.

23. RESTATEMENT OF ACCOUNTS

Following changes to the Financial Reporting Manual (FReM) produced by HM Treasury, the Income and Expenditure Statement is now replaced with a Statement of Net Expenditure. Non-Departmental bodies are to regard grant-in-aid for revenue purpose as a financing flow and not income, and therefore it is credited directly to the General Reserve.

A further change in accounting treatment from the FReM states that capital grant-in-aid to fund general (rather than specific) fixed assets should also be credited directly to the General Reserve and no longer be released to the Income and Expenditure Statement/Statement of Net Expenditure. The Government Grant Reserve is thus amalgamated with the General Reserve.

The table below shows the movement of grant-in-aid income from the old Income and Expenditure Statement. Note 15 provides further details of the movement and the amalgamation of Government Grant Reserve with General Reserve.

For the year ended 31 March 2006

	Income & Expenditure as Originally Reported	Statement of Net Expenditure	General Reserve (See Note 15)
Income			
Revenue grant-in-aid	**320,569**	**-**	**320,569**
Government grant transfer	**3,117**	**-**	**3,117**
Other Income:			
Grant-in-aid RfR 2 Subhead W	**102**	**-**	**102**
Pirbright Redevelopment Funding	**4,562**	**-**	**4,562**
Other Research Councils and Government Departments	**5,949**	**-**	**5,949**
Other Operating Income	**654**	**609**	**45**
Recovery of IT services to Institutes	**1,659**	**1,659**	**-**
Other recoveries	**166**	**166**	**-**
(Loss)/Gain on disposal and demolition of fixed assets*	**-**	**2,660**	**-**
	336,778	**5,094**	**334,344**
Expenditure	**(330,329)**	**(330,329)**	
Notional Interest**	**-**	**(7,268)**	
	(330,329)	**(337,597)**	
Notional Interest**	**(7,268)**	**-**	
Net Gain on disposal and demolition of fixed assets*	**2,660**	**-**	
Surplus for the year/Net Expenditure for the year	**1,841**	**(332,503)**	

* Net Gain on disposal and demolition of fixed assets moved from below operating surplus/(deficit) for the year to be included within Income.

** Notional Interest moved from below operating surplus/(deficit) for the year to be included within Expenditure.

ACCOUNTS DIRECTION GIVEN BY THE SECRETARY OF STATE FOR TRADE AND INDUSTRY (WITH THE APPROVAL OF HM TREASURY) IN ACCORDANCE WITH SECTION 2 (2) OF THE SCIENCE AND TECHNOLOGY ACT 1965

This direction applies to the Biotechnology and Biological Sciences Research Council (BBSRC).

BBSRC shall prepare accounts for the financial year ended 31 March 2007 and subsequent financial years in compliance with the accounting principles and disclosure requirement of the edition of the Government Financial Reporting Manual issued HM Treasury ('the FReM') which is in force for the financial year for which the accounts are being prepared.

The accounts shall be prepared so as to:

a) give a true and fair view of the state of affairs at 31 March 2007 and subsequent financial year-ends, and of the income and expenditure, recognised gains and losses, and cash flows for the financial year then ended; and

b) provide disclosure of any material expenditure or income that has not been applied to the purposes intended by Parliament or material transactions that have not conformed to the authorities which govern them; and

c) treat grants and grant-in-aid from the Department of Trade and Industry as financing (as require by FReM) i.e. credited to reserves and not treated as income.

Compliance with the requirements of the FReM will, in all but exceptional circumstances, be necessary for the accounts to give a true and fair view. If, in these exceptional circumstances, compliance with the requirements of the FReM is inconsistent with the requirement to give a true and fair view, the requirement of the FReM should be departed from only to the extent necessary to give a true and fair view. In such cases, informed and unbiased judgement should be used to devise an appropriate alternative treatment which should be consistent with both the economic characteristics of the circumstances concerned and the spirit of the FReM. Any material departure from the FReM should be discussed with the Department of Trade and Industry and with HM Treasury.

This direction supersedes the direction dated 27 November 2001.

Signed for and on behalf of the Secretary of State for Trade and Industry.

R Louth

Dated 5 April 2007

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