Structural biology spin-out
BBSRC

The Biotechnology and Biological Sciences Research Council (BBSRC) is the UK's principal funder of basic and strategic biological research. This covers topics such as:

- genomics, molecular biology, cell biology and bioreactors technology that provide a basis for new technologies in the healthcare, food, safety, plant and livestock breeding, and bio-processing sectors;
- whole organism biology relevant to our understanding of diet and health, ageing, animal health and welfare, infectious diseases and immunity, and crop productivity;
- and biological populations and systems that support agricultural sustainability, biodiversity and novel bio-based processes in manufacturing.

We help to ensure that the UK has the high calibre scientists and the research infrastructure to remain a world leader in the biological sciences. We encourage knowledge transfer from research into business and policy applications and we foster public dialogue about advances in research and their implications.

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Next issue - October 2008

International honour

John Innes Centre scientist

Professor Caroline Dean CBE FRS has been elected as a Foreign Associate of the USA’s National Academy of Sciences for her excellence in original scientific research. This is one of the highest scientific honours given in the USA, with only 18 Foreign Associates elected worldwide each year.

Caroline’s lab has worked on the molecular and genetic basis of vernalisation and the way plants are able to time when they flower. This world-leading research has influenced the whole of biology. She is the sole female UK-based scientist elected this year, and is the third scientist from the institute to receive the honour. “This is a reflection of the international regard for our top research,” commented Professor Chris Lamb FRS, Director of the John Innes Centre.

Nobel Peace Prize winners

Professors Keith Goulding and David Pavlison and Dr Andy Whitmore from Rothamsted Research are three of the Intergovernmental Panel on Climate Change (IPCC) scientists awarded a share of the 2007 Nobel Peace Prize. Their longstanding research to understand soil processes such as carbon cycling, was recognised with certificates acknowledging their significant contributions to the Panel’s work. The Panel shares the 2007 Nobel Peace Prize with former US Deputy President Al Gore.


Andy Whitmore, David Pavlison and Keith Goulding.
Chief Executive’s column

In May, BBSRC held a successful event at HM Treasury called ‘Bioscience: Biomillions’, which showcased the contribution of our research to innovation and the UK economy (see opposite).

We were delighted that Ian Pearson MP, Minister for Science and Innovation, gave two hours from his crowded schedule to meet the researchers and discuss their science. I am grateful to all those from the research and business communities who took part. Everyone is busy; but coming together like this from time to time is important. However many times we say that the continuing strength of UK bioscience depends on coherent and mutually supportive approaches by government, funders, industry and academia, nothing can substitute for face to face communication. It enables us to take stock and ‘see the bigger picture’, and to explore new opportunities for networking and collaborations.

As our Chairman, Dr Peter Ringrose, said in his address, a particularly important feature of the major economic and social impacts showcased is that they derive from world class fundamental science. The researchers whose work we highlighted are those who also attend international science conferences. There need be no conflict between academic excellence and translating outputs into commercial and other outcomes. Over the last decade this message has gained wider acceptance across the research community. However, there are still those who seem reluctant to recognise it. We must continue to demonstrate the mutual benefits that accrue from academics working closely with industry and other end-users of their research.

This mutuality is easy to see. Last month, the Government’s Public Sector Research Exploitation Fund awarded the bioscience community £1.57M, almost a quarter of the total awarded by the Department of Innovation, Universities and Skills (DIUS). I am particularly pleased to record that among these awards was £1.57M to the IP management company, Plant Bioscience Ltd. This will enable them to extend their successful Technology Development Programme and collaboration with Babraham Bioscience Technologies Ltd, the trading arm of the Babraham Institute.

This month, research into the spread of bluetongue disease was presented to farmers at the Royal Show (by the Institute for Animal Health) and by BBSRC at the prestigious Royal Society Summer Science Exhibition (see page 4). This illustrates the contribution that top quality science makes to major challenges facing the UK. Another example is the recent announcement of a LINK award with the Home Grown Cereals Authority. Through this we will support research at the John Innes Centre into substituting mineral oil with rapeseed oil to reduce the lubricants industry’s carbon footprint. I am confident that examples such as these will increase as we expand our collaborative research with industry and the economic and social impact of our research.

Later this year, Professor Nigel Brown moves to the University of Edinburgh to become Vice-Principal and Head of the College of Science and Engineering. And Dr Doug Yarrow retires as BBSRC Director of Corporate Science. On behalf of BBSRC I wish them both well. Each has contributed enormously to the Council’s success and in developing our vision of ever stronger bioscience in the UK. Finally I take this opportunity to welcome the new BBSRC Chief Executive, Professor Douglas Kell, who takes up his post on 1 October. We all very much look forward to working with him as we develop our strategy for 2009-2014.

I have been privileged to serve as Interim Chief Executive since September 2007 and wish to convey my thanks to the many people throughout BBSRC and our wider community who have provided me with excellent support.

Steve Visscher
Interim Chief Executive

Bioscience: Biomillions
showcasing the economic and social impact of our research

In May, around a hundred invited guests, including parliamentarians, officials from HM Treasury and other government departments, and leading figures from the bio-business and research communities, joined us to celebrate the success of UK bioscience research.

The event, ‘Bioscience: Biomillions’ highlighted the research outcomes by around 50 leading UK scientists. Examples ranged from a new screening technology of carbohydrate-protein interactions, relevant to development of novel glycotherapeutics, to environmentally-friendly solvents for bio-processing and to commercial forage and turf grasses.

Ian Pearson MP, Minister of State for Science and Innovation, spent two hours touring the displays and discussing the science. In his address, he emphasised the importance to UK global competitiveness of researchers continuing to maximise the economic and social impacts of their activities. Professor Jackie Hunter, Senior Vice President of GlaxoSmithKline and a member of BBSRC Council described the importance of a strong research base in fundamental bioscience to the pharmaceutical and related business sectors. In his remarks, BBSRC Chairman, Dr Peter Ringrose stressed the synergy in promoting scientific excellence and knowledge transfer, and BBSRC’s commitment to increase its activities to increase the impact of the research it funds.

Speakers at ‘Bioscience: Biomillions’: BBSRC Interim Chief Executive Steve Visscher; Council member and Senior Vice President of GlaxoSmithKline, Professor Jackie Hunter; Ian Pearson MP, Minister of State for Science and Innovation; and BBSRC Chairman Dr Peter Ringrose.

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Mathematics as a tool to defeat plant and animal diseases

At this year’s Royal Society Summer Exhibition, researchers from the University of Cambridge, Institute for Animal Health and Rothamsted Research showed how mathematical modelling can help to predict where and when epidemics will occur, and provide practical advice to regulators and farmers about how best to control them.

"Are epidemics inevitable?", was the question posed at the Exhibition. The answer is ‘almost certainly yes’, according to Professor Chris Gilligan of the Department of Plant Sciences at Cambridge. But he says it is becoming increasingly possible to recognise potential epidemics in advance, and to implement control measures at an early stage, so greatly reducing the impact and spread of the disease.

An example, from Defra-funded research at the Pirbright Laboratory of the Institute for Animal Health, is the accurate prediction of where bluetongue disease would arrive in the UK last year from the continent. “Using models we developed with the Met Office, we were able to advise Defra on the most vulnerable areas,” says Dr Simon Gubbins of IAH. “This meant that surveillance could be targeted to those locations, and that livestock farmers received the earliest possible warnings.”

At an academic level, the challenge is to develop mathematical models that describe the complex interactions between the many variables that determine whether or not an epidemic will occur. In the case of bluetongue these are the temperature, wind speed and direction, humidity, the probability of transmission of virus from an infected animal to the midges that carry it, and the ratio of midges to host animals.

At a practical level, the challenges are about knowing how to apportion resources between spend on surveillance and spend on control, and selecting the most effective method of control. Good predictive models can identify the appropriate level of surveillance, and can show when measures aimed at containment are actually more likely to increase the spread of disease.

“The best control methods, as identified by the models are often counterintuitive,” says Gilligan. “For example, for certain diseases, our models show that, when there are not enough resources to treat all infected individuals in two interconnected regions, you need to control the smaller one first, rather than trying to equalise the level of infection in each region.”

One of the diseases under study by the Cambridge group is sudden oak death. It is caused by a fungal-like microbe called Phytophthora ramorum, spreading rapidly in coastal California, and reported recently in the UK. Like many diseases, it poses a problem because by the time visible symptoms appear on some trees, others that are apparently healthy will already have been infected.

“Regulatory authorities have a range of control options: do nothing; remove infected trees and those surrounding them; apply chemical pesticides; or use quarantine and movement restriction measures,” explains Gilligan. “Our models show that although even the highest levels of control such as restricting long-distance movements are unlikely to halt eventual spread of the disease in California, different combinations of controls can confine infection for decades.”

Nearer to home, other research by the Cambridge group has shown why attempts to control the viral disease of sugar beet, Rhizomania, are ineffective at the level of field-scale containment. To achieve control, farmers need to respond to the arrival of symptoms in the next-nearest neighbouring farm, so matching the scale of control with the inherent scale of the epidemic.

A common problem in tackling diseases is that the use of disease control can drive the selection of forms of the disease-causing organisms which are more resistant to the controls. Scientists at Rothamsted Research have been modelling the spread of Cassava Mosaic Virus Disease (CMVD) – cassava is a staple food crop in Asia and Africa. They found that some of the disease control methods inadvertently select strains of the virus that grow at higher concentrations inside the plant, which reduces the effectiveness of the control.

The key determinants of CMVD epidemics are: density of the whitefly that transmit the virus, the susceptibility of the variety of cassava, and the frequency with which farmers remove infected plants. Some options that seem sensible, like selecting healthy cuttings or using in vitro propagation of virus-free plants can be useful disease control methods but, if not done with great care, can make the problem worse because they tend to increase the amount of virus in plants once infections starts. However, other control methods such as cultivar resistance, vector control and sanitation do not select for more damaging virus strains and are perfectly sustainable control options.

“Our mathematical models show that growing virus resistant cassava can prevent an epidemic only when whitefly densities are low," says Dr Frank Van den Bosch of Rothamsted Research. “The best solution appears to be growing resistant varieties and having strict sanitation programmes to remove infected plants quickly. With this approach it may even be possible to prevent epidemics from starting at all.”

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The basic idea behind the founding of Asterion Ltd in 2001 came from discussions between clinician Professor Richard Ross, molecular biologist Professor Jon Sayers and structural biologist Professor Peter Artymiuk. Earlier this year, Professor Sayers described the highs and lows of the process by which 'brainstorming sessions', 'the wonderful world of patents', business planning and pitching to venture capitalists led them to today's company with its portfolio of candidate drugs in a pipeline towards clinical trials (The Biochemist 30, (2) 8-12).

The company's approach has been to explore how recombinant DNA technology might be harnessed to produce highly tailored proteins that can intervene and correct faults in cell signalling. A rare disease known as Laron's syndrome provided the catalyst for this new approach. In this condition, a patient's growth is restricted because their cells cannot respond properly to circulating growth hormone. Professor Ross had found that, in Laron's syndrome, the insensitivity to growth hormone results from the membrane-bound receptor molecule for the hormone lacking its normal intracellular portion.

When the team examined the impact of the truncated receptor using Professor Artymiuk's explanation of its critical 3-D interactions with the hormone, they realised that it should be possible to fuse the hormone to soluble (extracellular) domain of the receptor. In effect they would mimic the cause of Laron's syndrome in order to block a contrasting condition, acromegaly, which arises from excessive cell growth in response to elevated growth hormone in the circulation.

“We have now used this overall fusion approach to develop drugs with the potential to treat acromegaly and other growth disorders; as well as conditions such as neutropenia (low levels of some white blood cells) which can be helped by ramping up signalling processes,” says Professor Sayers. “Our approach is applicable to tackling major diseases such as some cancers, anaemia, infertility and diabetes.”

A key advantage of the company’s technology is that it provides a way of prolonging the active life of the therapeutics (Nature Medicine, 13, 1108-1113). This means that frequency of injections can be significantly reduced from the daily treatment needed for most of the drugs in use currently.

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From its patented and versatile therapeutic platform technology, ProFuseTM, Asterion Ltd aims to produce a variety of modulating proteins (both antagonists and agonists) to treat a range of chronic and debilitating diseases. The company developed in part from insights from structural biology and biochemical research funded by BBSRC. It was awarded a further £265k earlier this year, from the University of Sheffield’s IP commercialisation company, to take forward its programme of developing candidate drugs.

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Anne Corcoran
Anne is a relatively shy person who, despite her strong academic qualifications, didn’t always enjoy male-dominated scientific meetings. She says the supportive environment at the Babraham Institute, along with an acting course, helped her to build her confidence. Moreover, the family-friendly practices helped her to balance her research with spending time with her two children. Following a five-year tenure track position in 1999, and then an MRC Career Development Fellowship, Anne was awarded a Permanent Group Leader position in 2005.

Dennis Prickett
American Dennis Prickett left the USA after his PhD in Veterinary Parasitology – including a period as a BBSRC-funded postdoc, at the University of York, where he met his wife. After a time at the European Institute of Oncology in Milan, he intended to move to a BBSRC-funded position at the Scottish Crop Research Institute. But a serious spinal injury left him in hospital for six months and requiring rehabilitation. After easing back into science part-time at York, he now works at the Institute for Animal Health.

Raghu Padinjat
Raghu set out to study medicine in India, but after completing his degree he switched to scientific research. He first came to the UK after his PhD, on a short-term fellowship through the Human Frontiers Science Program. He worked for three years as a postdoctoral researcher on a project funded by the Wellcome Trust, before winning a BBSRC-David Phillips Fellowship at the University of Cambridge, which he took with him when he moved to the Babraham Institute. He is now Group Leader at Babraham.

Smita Kurup
At school Smita couldn’t decide between being a geneticist or an architect. She eventually chose degrees in plant science and plant molecular biology before seeking to move from India to a western lab to focus on molecular biology. After postdoctoral research Smita chose to focus full-time on research in an institute environment and is now at Rothamsted Research. Smita feels the small number of women in senior posts is rather disheartening, but recognises and welcomes the action being taken nationally to address this. “The Centre has been very accommodating of my needs. I feel that my disability does not really affect my ability to do my job as a research scientist.”

Neil McKenzie
Teachers at Neil’s comprehensive school sparked his enthusiasm for biology. Despite being left profoundly deaf after a near fatal attack of meningitis whilst a student, Neil completed his degree at Imperial College, London. But his planned PhD was replaced by time spent coming to terms with his disability and learning lab techniques as a research assistant (RA) at St Mary’s medical school. He moved back to East Anglia as an RA at the John Innes Centre, where he has been supported by a promise of equipment and a typing tutor when needed to help with training sessions or meetings. Neil successfully completed an 18-month Certificate in Management course, paid for by the Institute, where his dissertation focused on disability awareness, the law and implications for the research institute.

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Charlotte Armah
Charlotte went on to do a PhD at the Institute of Food Research, which she completed in 2000. A job in the Institute followed, where she is now a research scientist managing Food Standards Agency funded projects.

Kathy Hadfield-Moorhouse
The first in her family to go into higher education, Kathy left school at 16 to work in a process control laboratory. After three years as an RAF policewoman, she returned to science; first at the John Innes Centre, which registered her for an Open University degree, and now in a more senior post at the Babraham Institute.

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“This is an exciting job... I am part of a team investigating diseases that threaten economies worldwide.”

Lydia Kgosana

Research Assistant at the Institute for Animal Health

UK-Brazil year of science and innovation

Tim Willis reports on BBSRC’s role

Brazil is investing heavily in science to sustainably exploit the latent natural wealth that makes agribusiness a pillar of its economy. There is a good fit between the UK’s bioscience strengths and Brazil’s applied strengths in raising agricultural productivity. As Brazil is also the UK’s most important Latin American trading partner, in 2007 the Foreign and Commonwealth Office launched a Year of Science between the UK and Brazil.

This aimed to: promote mutual awareness of excellence in science and innovation; strengthen and increase collaboration between the two countries and their academic communities; and maintain interaction in 2008.

BBSRC’s role in meeting these objectives centred on global warming and food and energy supply. It began with a launch at which a delegation from Rothamsted Research, led by Professor John Lucas, joined Sir David King, the then Chief Scientific Advisor to the UK Government, and Embrapa, the Brazilian Agricultural Research Corporation, signed a Memorandum of Understanding. The year was officially launched in March 2007. This followed a visit to the UK from Brazil’s President Luiz Inacio Lula da Silva, during which he and UK government ministers signed a science, technology and innovation action plan.

The Year of Science aimed to: promote mutual awareness of excellence in science and innovation; strengthen and increase collaboration between the two countries; foster collaboration between our academic communities; and, maintain levels of interaction through a high-level follow-up programme in 2008.

BBSRC’s role in meeting these objectives centred on global warming and food and energy supply. Our work began with a delegation from Rothamsted Research, led by Professor John Lucas, joining Sir David King, the then UK Government’s Chief Scientific Advisor, at the launch of the Year of Science, at which Embrapa, the Brazilian Agricultural Research Corporation, and Rothamsted Research signed a Memorandum of Understanding.

Opportunities for collaboration are being pursued in:

- chemical ecology: can natural chemical signals be used to alter the behaviour or development of major insect and nematode pests, to reduce reliance on pesticides?
- ‘biochar’: can charred biomass from industrial processes, charcoal production and natural forest fires be used to treat soils, improve crop growth, retain nutrients and decrease emissions of trace greenhouse gases?
- can we predict changes in the incidence of plant diseases by combining information on plant diseases with meteorological data and future climate scenarios?

BBSRC and DIUS funded the workshop, with support and help from DFID and the UK’s International Agri-Technology Centre.

“Research careers are intellectually stimulating. But we recognise they can involve challenges, for example, in terms of work/family balance and geographical mobility. We do all that we can to meet individual’s needs on a case-by-case basis.”

Geoff Peebles,

Diversity Manager, BBSRC

For further details see: www.bbsrc.ac.uk/organisation/policies/employment/code/dignity/index.html

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Lydia Kgosana

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Sushila Maaan

Sushila Maaan grew up in rural India, where animals play an important role in the economy. School sparked a keen interest in science and led her to pursue a career in veterinary virology. Sushila’s outstanding academic and work record brought her to Britain, and a PhD at the Royal Veterinary College and to the Institute for Animal Health, Pinnington to work on bluetongue virus.

She returned to India, but lack of facilities and funding for veterinary research meant she could not apply her knowledge. Sushila decided to come back to Britain and IAH. She is now a Senior Post Doctoral Scientist at IAH.

Claire Cockcroft

Claire became hooked on chemistry at school and read biochemistry at Oxford University. An ESPGMUS project in Germany inspired her to pursue a PhD, funded by BBSRC at Cambridge’s Institute of Biotechnology. After a postdoc and Media Fellowship at The Guardian, she pioneered the Masters’ in Bioscience Enterprise at the University of Cambridge. She joined the Babraham Institute as Deputy, Corporate Affairs attracted by the entrepreneurial culture, academic-commercial collaborations and opportunity to develop a Science & Society Programme to inspire young scientists.

Nadia Alkaff

After schooling in the Yemen and Aden, Nadia followed her degree by working as a researcher in the Yemen. She won a British Council MSc Scholarship, which she pursued at the University of Bath from 1990. A PhD student at the John Innes Centre followed, and Nadia is now a postdoctoral researcher at the Centre.

Postdoctoral researcher at the John Innes Centre

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Flying in the face of change

Milder winters means aphids are flying earlier. Dr Richard Harrington reports on evidence from a network of suction traps across Europe.

There are around 500 species of aphid in the UK. Many are quite benign and one or two are even of conservation concern, but aphids are best known because of those which are front line economically important pests of agriculture, horticulture and forestry. Twenty years ago, a conservative estimate put the annual damage bill at £70M, with severe, widespread infestations causing losses of £100M in wheat alone (Crop Protection 8, 25-29). Aphids can cause damage in many ways. They have to imbibe huge quantities of sap because it is low in amino acids. This weakens plants, especially if they are also stressed in other ways. Sap is rich in sugars, and aphids excrete most of these in the form of honeydew, which encourages growth of sooty moulds on leaves, reducing their photosynthetic capacity. Never park your car under a lime tree. Aphids can also transmit a range of plant viruses and this is often their most devastating economic impact.

All aphid species reproduce without the need for fertilisation (parthenogenesis) for at least part of the year; some all year round. They have phenomenal population growth potential and can produce 18 or so generations per year. Under crowded conditions and poor nutrition, more winged aphids are produced to fly off and seek new sources of food. Few may find the correct host plant, but those that do can quickly make up for losses.

These winged forms have been monitored for more than 40 years using a network of suction traps designed and run from Rothamsted (Outlooks on Pest Management February 2007, 9-14). In England there are 12 traps. Daily samples are sent to Rothamsted where researchers separate the aphids from other insects and identify their species. Colleagues at SASA (formerly the Scottish Agricultural Science Agency), Edinburgh, do the same with samples from four traps in Scotland and send the data to Rothamsted for inclusion in weekly bulletins written for industry sponsors. The bulletins help reduce prophylactic pesticide spraying, an important objective bearing in mind the environmental impact of excessive insecticide usage and the increased risk of selecting for resistant aphids. Researchers throughout Europe operate similar traps, and data from all of the traps are collated at Rothamsted.

The long time series available from the trap network provide the means to assess relationships between aphid dynamics and temperature, and to predict the impacts of climate change. They are dramatic. An analysis of 29 species throughout Europe showed most of them start flying significantly earlier following mild winters. One of the UK’s most damaging aphids, the peach-potato aphid (Myzus persicae) flies two weeks earlier for every °C rise in mean temperature for January and February combined. Indeed, this temperature index accounts for 80% of the variance in the date of first record, allowing accurate forecasts to be given in early March that are used to determine the likely need for prophylactic pesticide spraying, an important objective bearing in mind the environmental impact of excessive insecticide usage and the increased risk of selecting for resistant aphids. Researchers throughout Europe operate similar traps, and data from all of the traps are collated at Rothamsted.

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Aphid damage (false top rot in potatoes)

These aphids can cause severe damage to potatoes, especially through virus transmission, and later planting means that aphids build up when crops are younger still. More aphids early in the season do not necessarily mean that high numbers continue. Density dependent feedback mechanisms, probably mediated by natural enemies, often play a role here. Some aphid species pass the winter in the inactive nymphal stage, while others pass the winter as diapausing eggs. Surprisingly, both types are killed by low temperatures in the active phase, while those which pass the winter in the inactive phase are partly dependent on aphid life-cycle strategy. Those species which interrupt parthenogenesis in autumn with production of sexual morphs and a hardy egg stage are less affected by temperature than those which pass the winter in the active phase. The latter are killed off by low temperature but can take advantage of warm spells by continuing development and reproduction. A Europe-wide analysis showed that the variables best explaining the timing of the start of spring flights (a combination of geographic, climatic and land use) differ according to life-cycle type, raising the prospect of using a traits-based approach to predict the impacts of climate change on aphid dynamics (Global Change Biology 13, 1550-1564). Some aphid species have both life-cycle types open to them, and the proportion that continue parthenogenesis year round increases in areas and years with warmer winters. This has important consequences for the transmission of barley yellow dwarf virus in autumn-sown cereals.

The long-term aphid data are put to work in many ways, but their value in preparing the industry for the season ahead and for the long term impacts of climate change is especially crucial. Other pest species are heading our way, and we can monitor their progress through the wider European network.

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We store all the insects caught in UK suction traps, and there is increasing interest in using them to look at the dynamics of vectors of human and animal diseases, and at wider biodiversity issues.
Raising the media profile of the biosciences

Matt Goode, Deputy Head of BBSRC External Relations, explains how we support researchers in talking with the media.

Every year BBSRC spends around £420M of taxpayers’ money to support bioscience. The public has a right to know what scientists do with this money and how their work benefits society. And the quickest, most effective way to reach the public is through the media.

Talking to the media can be daunting. Knowing how to talk well makes a huge difference to the final story, and how a person comes across to the public.

In the BBSRC Media Office, we provide support and advice in dealing with the media and use our strong relationships with many national and science trade journalists to achieve positive and accurate coverage.

We also run free, one-day media training courses for BBSRC-supported researchers and students, and scientists at BBSRC-sponsored institutes. BBSRC also funds travel and, where appropriate, accommodation costs.

During this intensive, highly interactive day, experienced broadcasters and journalists, such as Wendy Barnaby, Ruth Crossman (pictured below), Sue Nelson and Richard Hollingham, give participants hands-on practice in talking to print and broadcast media.

The course covers:
- How the media works and the place of science within it
- What journalists look for in a story
- How designers work – and how this differs from how scientists write
- Science on the radio – real interview practice
- Inside hints from the Media Office and support from BBSRC.

BBSRC Media Training sessions will be held in London on 14 October and 19 November 2008. There will also be sessions in Manchester: 16 September, Introduction to the Media; 17 September, Advanced media training, both at the University of Manchester. For more information see: www.bbsrc.ac.uk/media/media_training.html

To attend a course or to register your interest in future courses please complete the form at: www.bbsrc.ac.uk/media/media_training_application.pdf

I publicise my work as much as possible and am often asked to comment as an expert on other scientists’ work. Every time I interact with the media I use something I learned from the BBSRC media course.

“I found the course very informative and the interactive elements were great fun. The course helped me understand the importance of ‘selling’ a story, and the need for informative, factual content. There’s no point in writing a story so full of science that it becomes too boring to read, but there’s also no point in writing a science story without scientific facts!”

With science communication now being recognised (by the government, institutions and individual scientists) as an important part of our job, it’s vital that we work with the media. The BBSRC media training course is a unique opportunity to learn from the horse’s mouth."

Dr James Logan, Rothamsted Research

Major UK funders publish common rules for animal research

Researchers applying for grants with us are expected to comply with the new guidelines for the use of animals in research.

BBSRC, the Medical Research Council, the Natural Environment Research Council, the Wellcome Trust and the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs) have collaborated to produce a common set of principles for using animals in research and applying the 3Rs. Compliance with the guidelines is now a condition of funding for new grants involving the use of animals.

One requirement is that, when collaborating with laboratories outside the UK, researchers and their local ethics committees must check that welfare standards are consistent with the principles in UK legislation and the new guidelines. Any significant deviations will need prior approval from the funding body.

The guidelines reflect the growing multidisciplinarity of bioscience research, in which scientists are often funded by several different bodies. The guidelines outline the legal controls on using animals in research in the UK and fill in the details on how to apply the 3Rs.

Steve Visscher, BBSRC’s Interim Chief Executive, said: “Basic science often reveals new options for replacing, refining and reducing the number of animals used in research, but that use remains necessary in many key areas of biomedical science. We welcome this opportunity to re-emphasise our commitment to ensure that scientists continue to work at the very high standards demanded by UK funders.”

The guidance covers:
- a summary of the legal controls on animal use
- the responsibilities of the relevant parties
- the principles and procedures of the funding bodies
- the requirements for research or collaborations outside the UK.

The funding bodies only support work involving the use of animals on the basis that researchers and those administering the funding comply with legal provisions, plus any related codes of conduct or guidance issued by government departments and the specific conditions of licence and certificates.

Researchers (grant holders and staff) and associated veterinary and animal care staff are primarily responsible for implementing the principles in the guidance, with support from their host establishments and local ethics committees. Peer reviewers and Panel/Committee/Board members also have a key role in applying the principles consistently across the research spectrum.

Researchers are expected to give appropriate consideration to the 3Rs in any research involving animals which has the potential to cause the animals harm, and to explain in their research proposals both in grant proposals to funding bodies and in research proposals and other information provided to ethics committees how the 3Rs have been taken into account.
A major initiative is underway to bring together the life and physical sciences in one building, and to create and encourage a vibrant world-class multidisciplinary research community near the major facilities at Rutherford Appleton Laboratory.

**Construction** has started on the new Research Complex at Harwell (RCaH), aimed at fostering interdisciplinary working between life and physical sciences research groups. RCaH is being built at the Rutherford Appleton Laboratory (RAL), adjacent to DIAMOND, the new third generation Synchrotron Radiation source, in order to encourage a vibrant world-class multidisciplinary research community.

Newly-appointed director Professor Simon Philips, currently Professor of Biophysics at the University of Leeds, explained the thinking behind the new £20M complex: “This is a major initiative to bring together the life and physical sciences in one building. Many of the most important advances in science happen at the interfaces between traditional disciplines, and are increasingly dependent on traditional boundaries. The location at RAL will not only provide opportunities for DIAMOND users, but also of ISIS laboratories for physical scientists on the ground floor, and for life scientists on the first floor. There will be common areas to encourage them to interact and work as an interdisciplinary community undertaking cutting-edge research across traditional boundaries. The location at RAL will not only provide opportunities for DIAMOND users, but also of ISIS and the Central Laser Facility.

“The scientists will not remain at the Research Complex permanently. Instead, they will come in to carry out specific research projects, and when those projects are completed they will leave, and make room for new project teams. They could be at the Complex for as little as one or two days, or for as long as five years or more. For example, BBSRC intends to fund two Professorial Fellowships that will each last five years. “Along with these groups, and facilities for a range of techniques, the Complex will house three national research facilities. First, MRC’s Oxford Protein Production Facility-Uk (OFFP-Uk), aimed at providing a national service for production of proteins, for X-ray crystallography and other structural analyses, will move here.

“Also moving in will be the core group of Collaborative Computational Project Number 4 (CCP4) in Protein Crystallography. CCP4 maintains a software suite that allows researchers to process X-ray crystallographic data to produce the atomic resolution protein structures that are key to modern molecular biology in industry and academia, and is probably used in the majority of structural biology laboratories in the world. Finally, part of the STFC Lasers for Sciences Facility (LFS) will also relocate to the Complex.”

The Complex is being funded with £26.5M from the Government’s Large Facilities Capital Fund. The Medical Research Council is leading the project on behalf of RCUK, in partnership with BBSRC, EPSRC, NERC and STFC. Diamond Light Source Ltd is also a key stakeholder. The building is scheduled for completion in September 2009, and for opening at the end of that year.

**New Research Complex at Harwell**

**and finally...**

**New tests for farm animal diseases**

**Drs Damer Blake and Adrian Smith and colleagues at the Institute for Animal Health (IAH) Compton Laboratory have developed a test that can detect and distinguish several species of the protozoan parasite *Eimeria* in chickens. They have also developed a quantitative polymerase chain reaction (PCR) assay that counts the total number of *Eimeria* parasites in a sample. The tests are being trialed at the Veterinary Laboratories Agency (VLA) with a view to VLA offering a service. Schering Plough Animal Health, which makes the Eimeria vaccine Paracox at IAH Compton, are partners in this development.”

A rapid on-farm, pen-side test for Foot-and-Mouth Disease Virus (FMDV) is now available commercially. Dr Nigel Ferris of the IAH’s Pirbright Laboratory has been collaborating with Svanova Biotech AB (Sweden) since 2002 to develop the test, which was launched in April this year.

The small, hand-held ‘lateral flow’ device uses the same underpinning technology as home pregnancy tests. An extract of a small sample of tissue taken from an animal suspected of having FMD is spotted onto the bottom of the device. This then flows up the device. If FMDV is present in the sample, a line forms within ten minutes. In effect,” said Dr Ferris, “we are taking the laboratory to the farm, for on-the-spot testing to support clinical diagnosis.”

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**BBSRC-sponsored research institutes**

**Sustainable Agriculture and Land Use**
- John Innes Centre www.jic.ac.uk
- Rothamsted Research www.rothamsted.ac.uk

**Animal Health and Welfare**
- Institute for Animal Health www.iah.ac.uk

**Biomedical and Food Sciences**
- Babraham Institute www.babraham.ac.uk
- Institute of Food Research www.ifr.ac.uk

**Systems Biology centres**
- Centre for Integrated Systems Biology of Ageing and Nutrition (CISBAN) (University of Newcastle)
- Centre for Integrative Systems Biology at Imperial College (CISBIC) (Imperial College London)
- Manchester Centre for Integrative Systems Biology (MCISB) (University of Manchester)
- Centre for Systems Biology at Edinburgh (CSBE) (University of Edinburgh)
- Centre for Plant Integrative Biology (CPIB) (University of Nottingham)
- Oxford Centre for Integrative Systems Biology (OCSIB) (University of Oxford)
Further information on the work of BBSRC, including details of funded research, can be found at www.bbsrc.ac.uk.

Contact: external.relations@bbsrc.ac.uk

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