

THE NEW PROFESSOR

Wendy Barnaby

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ENGAGING THE NEXT GENERATION OF SCIENTISTS

Wayne A Mitchell,
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EDITORIAL



You won't have recognized this issue of your magazine. We have a new name and a new design, to coincide with the metamorphosis of the British Association for the Advancement of Science into the British Science Association. It's all change!

We want *People & Science* to be the first-choice magazine for the public engagement in science community. It contains three extra pages of news (not all desperately serious), as well as the usual mix of current developments, debate, opinion and reflection. In short, lots for every PE palate.

We look outwards in this issue. Matthew Nisbet has some advice for President Obama's Administration about how to improve public engagement on science (p19). He considers issues as diverse as climate change, nanotechnology and biomedical research, and urges Obama to 'connect to the specific core values of key segments of the public'. And an engagement workshop organised by the Wellcome Trust in southern Africa, reported by Bella Starling, Marina Joubert and Mbongiseni Buthelezi (p18), shows how engagement in the developing world can be vastly more significant than it is here. As one British delegate said, 'At home we treat it as a philosophical question – but here it matters; it's life and death sometimes.'

The Spat is philosophically-oriented. It debates whether it is useful to invoke evolutionary explanations for morality (p10). Helen Haste asserts that 'evolutionary psychology is a blind alley and scientifically dubious', whereas Emma Cohen maintains that 'evolutionary approaches promise to account for why an organism displays certain behavioural traits and not others.'

To mark Marcus du Sautoy's appointment as the new Simonyi Professor of the Public Understanding of Science at Oxford University, we hear from the man himself, and some of his academic colleagues, about their attitudes to engaging the public in mathematics (p21).

We report consultation and engagement on stem cells (p8), the government's vision for science and society (p5) and the new Living With Climate Change research programme (p20).

We all accept the benefits of public engagement, but Edward Andersson and Karin Gavelin see them going further than most. They report (p29) that dialogue helps community relations and gives people 'a new outlook on science, a new appreciation of scientists and their work and, for some, new confidence to take part in public debates.' They call for the public engagement community to broaden the scope of the impacts it is looking for.

With a nuclear renaissance seemingly upon us, we hear different interpretations of research into the public's attitude towards living near nuclear power plants (pp14 and 15). Nick Pidgeon and his colleagues find a 'complex picture, with a wide range of views representing a diverse set of "publics"'; John McNamara argues that nuclear neighbours are positive.

We always welcome your comments, positive or not. Please be in touch if you have anything you'd like to tell us about our new style, the magazine in general or – of course – public engagement.

Wendy Barnaby, Editor

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**People
& Science**
is the new name
of Science &
Public Affairs.

What's happening at the British Science Association?

Lisa Hendry looks ahead

Our new identity as the British Science Association was unveiled in January, at a House of Commons reception hosted by MPs Ian Gibson, Ian Taylor, and Phil Willis, represented on the day by Evan Harris.

Renamed and reinvigorated

Professor Lord Winston, past President and long-time supporter of the organisation, explained the rationale behind the rebrand – to better reflect and express our vision and purpose, with people at the heart of what we do.

Our vision is of a society in which science advances with the involvement and active support of the public; a society in which people from all walks of life are able to access science, engage with it and feel a sense of ownership about its direction. Our strength is to bring science and people together, helping scientists and science communicators to engage with publics of all ages, primarily through face to face contact.

We achieve this through four increasingly interlinked national programmes which are supported by a regional and branch structure: the British Science Festival, National Science and Engineering Week (NSEW), our CREST Award scheme and the Science in Society programme.

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National Science and Engineering Week starts now!

We coordinate NSEW on behalf of the Department for Innovation, Universities and Skills (DIUS) in partnership with the Engineering and Technology Board. The UK-wide, 10-day celebration of science and engineering will be taking place from 6-15 March 2009.

Now in its sixteenth year, NSEW is an annual event that aims to engage and inspire everyone, from the young to the young-at-heart. It also draws many scientists and engineers into the public domain to discuss their work.

NSEW events

NSEW is growing year on year. Over a million people took part last year, in around 3,500 events. You can find your nearest event this year by searching the online programme at www.nsew.org.uk.

That's also the site to visit to find out about the many other activities taking place: from 'Darwin in Space', a nationwide schools' competition, to the 'Save our Bees' campaign that encourages people across the country to take positive action to help the nation's bees, which are dying out in huge numbers with serious consequences.

Another of our initiatives this year is the Change Exchange blog. It's an opportunity for anyone to share their hopes and concerns for the future directly with some of the UK's scientists and engineers, who will also be sharing their personal and professional thoughts about the future of science and technology.

To join in, visit www.changeexchange.org.uk.



Students having fun in the 2008 Fair's hands-on area.

Climate diaries

We are also helping the British Natural History Consortium to promote 'The UK Climate Diary'. This project aims to create the biggest record of how individuals in the UK are being affected by climate change by gathering stories, photographs and memories, whether of observations we've made or lifestyle changes we've implemented, that show the impacts that climate change is having on us all.

Big Bang

NSEW itself will start with a major celebration of the science and engineering achievements of young people – The Big Bang: UK Young Scientists and Engineers Fair. This landmark event will be held in London from 4-6 March. Regional finalists of the CREST Awards and Young Engineers for Britain will exhibit their project work and compete for a number of exciting prizes.

On top of this, the two 13-19 year olds who win the new National Science Competition, being coordinated by the British Science Association on behalf of DIUS, will be crowned 'UK Young Scientist of the Year' and 'UK Young Technologist of the Year': a fitting start to a week that promises to inspire the next generation of scientists and engineers.

More information about the activities of the British Science Association can be found at www.britishtscienceassociation.org.



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Government news

Public Perception of Industrial Biotechnology

The project, Assess the Public Perception of Industrial Biotechnology (IB), is now complete. IB is the application of bioscience for the processing and production of chemicals, materials and energy. The project is funded by Sciencewise-ERC.

Two initial citizens' group meetings were delivered in Manchester and London. At each of these, 24 people were introduced to the basic issues surrounding IB and the chemicals-using sector.

A single group of 24 citizens was then re-convened in London. Participants were exposed to a wide range of perspectives on different aspects of IB and chemicals including bio-fuels, genetically modified organisms, bio-plastics, land use, bio-refineries and specialty chemicals.

In addition, 16 expert speakers from government, industry, academia and non-governmental organisations (NGOs) were available to talk to and answer questions from the citizens to inform their deliberations.

Results in spring

The public dialogue project, which was completed in December 2008 and was delivered by Opinion Leader Research and 3KQ, was developed to allow intensive discussion of a range of issues under the wide-ranging umbrella of IB and the chemicals-using sector.

Publication of the results is expected in spring, 2009. The IB-IGT report will outline the strategic view for the future of IB in the UK. It will also report on the innovation and growth challenges for its future competitiveness.

For more information, see <http://sciencewise-erc.org.uk/cms/understanding-the-public-perception-of-industrial-biotechnology/#>

Nanotechnologies: commitment to dialogue

The cross-government group responsible for nanotechnologies made a statement in January which outlined a number of pledges to ensure responsible development of the field.

It identified the need to develop a strategy for the future development and use of nanotechnologies in the UK. This should incorporate the views of a range of stakeholders including academia, industry, NGOs and the public. It also discussed how to address concerns voiced by Which? and others about the safety of cosmetics and sunscreens containing manufactured nanomaterials.

All interested parties

The Ministerial group, including the Department for Innovation, Universities and Skills (DIUS); Business, Enterprise and Regulatory Reform; Work and Pensions; Health and Defra, made seven commitments, which they will take forward. DIUS will lead work to develop a programme of dialogue involving the full spectrum of interested parties (academia, industry, NGOs and the public) in the development of the strategy.

In the statement in January, Lord Drayson, Minister of State for Science and Innovation and Chair of the Ministerial Group, reiterated Government's commitment to nanotechnologies: 'The government is committed to the responsible development of nanotechnologies. We will work with all interested parties – including the public – to develop a suitable strategy that addresses both the exploitation of technologies and the management of potential risks.'

See www.dius.gov.uk

Science and Society

January saw the launch of a new DIUS-led science communications campaign, *Science: [So What? So Everything]*. It began with a high-profile discussion at No.10 Downing Street.

Results from the Science and Society consultation were also published to coincide with the launch. Many of the responses specifically called for greater communication on the benefits of science – from scientists, business and government – to create a scientifically aware society that understands its value and is able to debate scientific developments.

The consultation responses also highlighted how strongly people feel that science in its broadest sense is vital to the country's culture and prosperity.

Two key recommendations from the consultation were to create a British science brand and to demystify science by showing how science is important to everyone. *The Science: [So What? So Everything]* campaign aims to help achieve these two objectives over the coming months. It involves a consortium of partners including government departments, Research Councils, National Academies, the British Science Association, the Technology Strategy Board and the Higher Education Funding Council for England.

Science [So What? So Everything] – www.direct.gov.uk/sciencesowhat

Science and Society – <http://interactive.dius.gov.uk/scienceandsociety/site/>

Stem cell dialogue

The public's strong support for stem cell research comes with conditions, reports **Simon Wilde**

The largest-ever public and stakeholder discussion on stem cells in the UK reported its findings in December, 2008. It was commissioned by the Biotechnology and Biological Sciences Research Council (BBSRC) and the Medical Research Council (MRC), whose aim was to capture the opinions, aspirations and ambitions of 200 members of the public and almost fifty stakeholders on the science and ethics of stem cell research.

Funded by the government's Sciencewise programme, the project was part of a coordinated response to a recommendation in the 2005 UK Stem Cell Initiative Report (the Pattison Review)¹ which called for a 'sustained dialogue with the public on stem cell research'.

Public engagement in science and medicine has never been so important. With recent headline-grabbing stories on designer babies, stem cell therapies and nanotechnology, it is critical that there is two-way communication between scientists and the public to create a society that appreciates the rationale, aims and outputs of research, and enables scientists and policy makers to understand and respond to public aspirations and concerns.

At the launch of the results, Lord Drayson, Minister for Science and Innovation, said: 'The government takes public dialogue extremely seriously. In areas such as stem cell research – which are so important to this country's future – it is vital that any public concerns are listened to and acted upon.'

The study

The BBSRC and MRC commissioned a consortium, led by the British Market Research Bureau (BMRB), to carry out the research over the course of 2008.

Forty-nine stakeholders were assigned into one of nine groups comprising research scientists; clinicians; church and faith groups; pro-life groups; funders of research; medical research charities; regulators and government; private sector organisations; and social scientists and ethicists. As well as

this, 200 members of the public were selected to reflect the socio-economic profile of each location studied and the range of UK attitudes to stem cell research.

Stakeholders were interviewed during in-depth telephone conversations which lasted around 45 minutes. This provided both primary data for the research itself and also helped to shape the content of the deliberative public workshops.

The series of workshops in the summer of 2008 in London, Cardiff, Bristol, Newcastle and Edinburgh took the form of structured conversations between experts, non-experts and policymakers. The first workshop introduced stem cell research and explored general aspirations and concerns for the science and clinical treatments. The second looked in-depth at the social and ethical issues related to the sources of stem cells. The third focused on future applications of stem cells and the wider social implications of stem cell banks, therapies and clinical trials.

Fifty members of the public also took part in an exercise which ranked a series of statements made about stem cells relative to how much they agreed or disagreed with them.

Conditional support

The results revealed high levels of public support for stem cell science and technology, although this was conditional on ensuring that government funding is focused on 'serious' medical conditions rather than cosmetic uses. However there was considerable debate about what constitutes a 'serious' condition.

Several participants felt, for example, that conditions such as baldness, and even major medical conditions such as diabetes could be managed effectively using existing interventions. There was general acceptance of using in vitro fertilisation (IVF) procedures to provide embryonic stem cells, as long as consent was gained and the process regulated. However, there were a significant number of participants who held a strong ethical conviction that the creation of embryos for research was wrong.

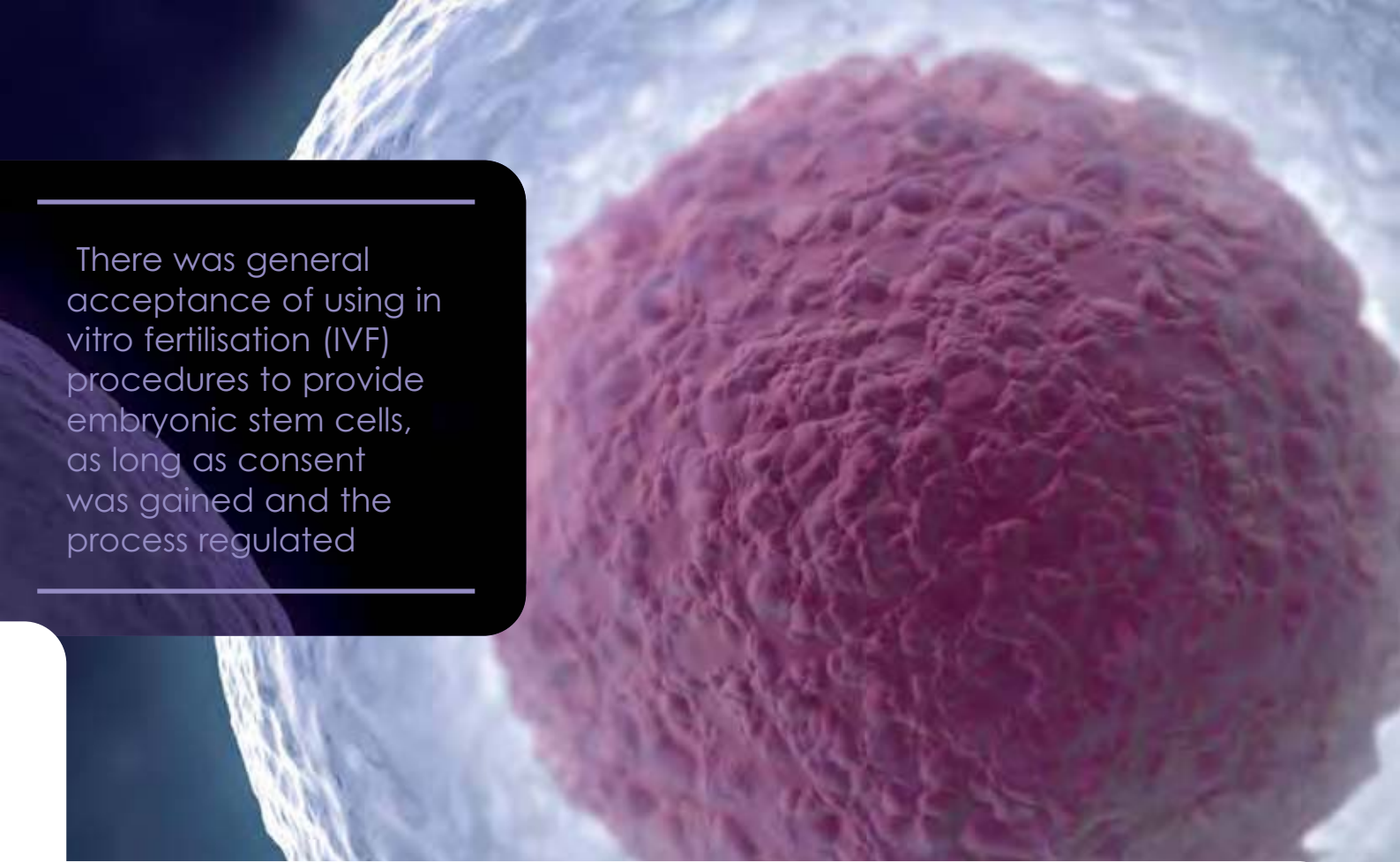
Confidence and concern

The dialogue showed that, if the public receive clear and sober information, they have no problem understanding and digesting complex science.

The outcomes indicate that the public is keen for the UK to maintain its technological and regulatory lead in stem cell research. Both the public and stakeholders valued investment in basic research. The public would also like to see more emphasis on preventive medicine, through actual cures as a result of research and through individuals taking control of their own health.

Academic scientists were perceived in general as being open, honest, and working for the public good. There was also felt to be an opportunity for funders, including research charities and government, to work together to further raise the profile and resources for stem cell research.

One of the key public concerns was the involvement of the private sector. The report spells out the view that for public trust to be maintained it is important that future treatments should reflect



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public rather than solely commercial interests. At the launch, Sir Leszek Borysiewicz, Chief Executive of the MRC, responded to audience questions on this subject, stressing that the involvement of the private sector is essential for translation of basic science to clinical results for patients.

Cumbersome regulation

A range of groups including researchers, clinicians and the public commended the supportive legislation of UK stem cells research, but also viewed the number of relevant regulatory authorities as cumbersome. It was felt that coordination between regulators needed to be improved to ensure the seamless transition of research into routine clinical practice, which takes account of the novel aspects of cell-based therapies.

Ultimately this study is an example of the importance of enabling people to engage with scientific research and the issues it raises. Uncertainties in stem cell science should be communicated openly if the public debate is to avoid being dominated by hype. Substantive areas of public interest include the private banking

of cord blood and the potential of induced pluripotent stem (IPS) cells, adult cells which are reprogrammed to produce stem cells.

Informing decisions

The report will help to inform decisions that research councils and others will make as stem cell research matures and treatments move closer to clinical application. Policymakers from the research councils and government departments have already had the opportunity to explore some of the areas covered in the dialogue and use the results in decision-making, for example in developing guidelines for consent and in forming policy on cord blood banking.

The BBSRC and MRC are committed to incorporating public views into policy and strategy development. Sir Leszek used the Human Fertilisation and Embryology (HFE) Act's passage through Parliament last year as an example of the importance of ensuring that research takes the concerns and aspirations of UK society into account. After public consultations revealed moral unease surrounding

the creation of human-animal hybrids, the government initially issued a draft HFE bill that would have made this practice illegal. However, following extensive engagement between scientists and the public to increase understanding of the therapeutic potential of chimeras, parliamentarians voted for the inclusion of hybrid creation in the HFE Act.

Although large structured dialogue events are important, it is fundamental that everyday practice and discussion of science takes into account societal views. Public engagement should be an ongoing process.

To download a copy of the BBSRC and MRC *Stem cell dialogue*, please visit

[www.mrc.ac.uk/Sciencesociety/
Publicinvolvement/Consultations/
Stemcelldialogue/index.htm](http://www.mrc.ac.uk/Sciencesociety/Publicinvolvement/Consultations/Stemcelldialogue/index.htm)

¹ See [www.advisorybodies.doh.gov.uk/
uksci/uksci-reportnov05.pdf](http://www.advisorybodies.doh.gov.uk/uksci/uksci-reportnov05.pdf)



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