



BIOS

The BIOS Centre for the Study of Bioscience, Biomedicine, Biotechnology and Society was set up in 2002, with an official launch in June 2003 by

Nobel Prize winner Dr Sydney Brenner (a transcript is available at www.lse.ac.uk/collections/BIOS).

Postdoctoral fellows and research students

The BIOS research community includes postdoctoral research fellows and doctoral research students from many countries, working together in our dedicated research facilities.

New MSc

An MSc in Biomedicine, Bioscience and Society welcomes its first students in October 2004. This new master's is for students intending to do advanced research. It aims to equip those planning to work in this growing policy area with the intellectual skills necessary to confront debates over issues from the regulation of pre-implantation genetic diagnosis to the problematic status of dual use facilities in bio weapon control.

New journal

BioSocieties: an interdisciplinary journal for social studies of neuroscience, genomics, and the life sciences (Cambridge University Press), co-edited by Professors Nikolas Rose and Anne Harrington, is planned for launch in 2005. The journal will be the first integrated periodical specifically devoted to original research and debate in the social studies of biotechnology, biomedicine and life sciences.

Links

BIOS is working with a number of biomedical institutions, notably the Institute of Psychiatry in London, and with cognate research centres in Europe, the United States and Canada.

Past events

A major conference, Vital Politics: health, medicine and bioeconomics into the 21st century, was held in September 2003, and the GM Debate in November 2003 looked at GM technology. Regular BIOS network research seminars and London Public Understanding of Science seminars have been hosted by the Centre. See www.lse.ac.uk/collections/BIOS

Welcome to the bio age

When a new drug comes on the market, or a scientific breakthrough is announced, who monitors the impact on society? What are the ethical, legal, political and economic drivers of these and other developments in the life sciences, biomedicine and biotechnology? The School's new research centre BIOS aims to address just such questions. BIOS director **Nikolas Rose** explains more.

In Europe, prescribing of all anti-depressants doubled from around 3.5 million standard dosage units in 1990 to almost 7 million standard dosage units in 2000, with a very significant proportion of this increase from the take up of newer anti-depressant medications. The global pharmaceutical market is now worth over \$450 billion, and grew by over nine per cent in 2003, and anti-depressants were the third most significant drug class. We seem to be becoming 'pharmaceutical societies'. This is just one indicator of the changes in our ways of understanding and addressing our individual and collective troubles brought about by developments in neuroscience and pharmacology – and an example of the kinds of issues that BIOS is investigating.

Within BIOS, we are developing a number of research projects, one in the field known as 'pharmacogenetics' – the development and prescription of drugs based on genomic information about disease mechanisms and treatability. I was a member of the Nuffield Council Working Party on Pharmacogenetics, and have been involved in consultations with the Wellcome Trust and the Department of Health on the topic.

Pharmacogenomics promises to transform efficacy and safety of medications but will lead to a great increase in genetic testing, perhaps in the GP's surgery, and also to a micro dissection of disease categories and drug types. It is a major area of pharmaceutical investment and health service development. Nowhere are the implications greater than in drugs used for mental health problems, especially the very widely used SSRI (selective serotonin reuptake inhibitor) type drugs now used to treat everything from mild depression to 'pre-menstrual dysphoric disorder'. Recent data show quite remarkable increases in prescribing SSRI type anti-depressants across Europe and North America, and depression is a priority concern for the EU, as it is a leading cause of days lost through disability and of death by suicide, and points up a lack of health service resources to deal with the condition.

Since the sequencing of the human genome, pharmacogenomic research holds the promise of

tailoring the right drug at the right dose for a particular patient, based on knowledge of their genotype. But those who might benefit may have strong views about requirements for genetic testing prior to treatment, and may not accept the distinction which medicine is making between genetic tests for treatment purposes and genetic tests which might predict susceptibility to mental illnesses. The development of more effective drugs with less adverse effects, to enhance the efficacy of and adherence to drug regimes, is seen as crucial by national Departments of Health and international bodies such as the World Health Organisation, as are combating the stigma of the disorder and encouraging early treatment.

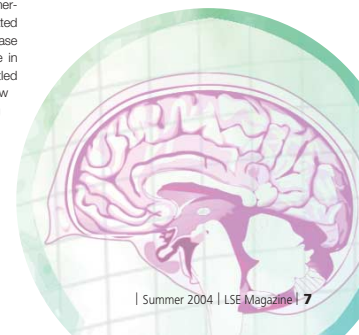
One of our major goals at BIOS is to look at the social, economic and ethical aspects of this, as part of a team led by the UK's Institute of Psychiatry, BIOS is a key partner in a large grant to the Institute under the European Union 6th Framework Programme for a multicentre research programme on genome-based therapeutic drugs for depression. Our part of the research, funded with approximately 0.5 million euros, will explore the questions raised by such developments, in close collaboration with the scientific research effort. In this way, the social sciences are working much more closely with and alongside the biological sciences than perhaps ever before.

At the same time, we are also developing a programme of research on an issue arising, in part, out of these developments – the re-emergence of biological notions of race, now related to questions of population differences in disease susceptibility and treatability, but also an issue in their own right. A BBC documentary entitled *Motherland: a genetic journey* looked at how genomic techniques for lineage tracing are already underway, and at their use by individuals in Britain's African Caribbean community to trace their ancestral 'roots' in Africa. In May we were funded from the Wellcome Trust Biomedical Ethics Programme for a one day international symposium Race in the Age of Genomics. The aim of the symposium was to evaluate the

current state of debate within genomics on the biological status of racial and ethnic categories and to lay the groundwork for international collaboration in a programme of future research. Up to now, this debate has been most vociferous in the US, where it focuses primarily on whether, in a genomic age, racial or ethnic categories have any biological meaning or are 'purely' social and cultural. At the same time, the first drugs specifically marketed for African Americans by large mainstream pharmaceuticals companies are already on the market.

In the context of the accelerating developments in genomic medicine, many are starting to argue that there are medically salient differences between races, ethnic groups or geographically defined populations at the SNP level among population groups that must be addressed. A SNP (Single Nucleotide Polymorphism), pronounced 'snip', is a small genetic variation that occurs within a person's DNA sequence. It is in the six million or so SNP differences between any two randomly chosen individuals that much human variability is now thought to lie. Others argue that race and ethnicity are not biologically meaningful and do not individuate homogeneous groups at the genomic level – in other words, that while there are racial or ethnic genetic differences, these are only superficial and that such moves towards racial or ethnic classification prestage the re-awakening of a dangerous racial science.

ILLUSTRATION: ROBY KOPPELSON



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The issues are debated less outside the US, despite their relevance to the UK, Europe and beyond. Those concerned with health policy and therapeutic developments are inescapably working in a global context with populations drawn from across the world. BIOS has identified this issue as one where collaborative research between the sciences and the social sciences can make a real contribution to public and science policy at an early stage. Our symposium in May explored the extent to which we are witnessing the emergence of a new biological understanding of 'race' in the era of genomics and in particular of genomic medicine. We are also collaborating with the MRC Gene Service in Cambridge on issues relating to DNA banking and biobanking, including those of confidentiality and consent. What ties these scientific efforts together is the focus in medical research on large population sample collections and databanks of genetic information.

What else is BIOS developing? Professor Anne Harrington is joining LSE for a year from her role as Professor of the History of Science at Harvard. She and Professor Derek Bolton of the Institute of Psychiatry will also be taking part with others in a seminar series this year on values and conflicts in psychiatry, for example, the status of 'problematic' diagnoses such as Gulf War Syndrome, Post Traumatic Stress Disorder and Attention Deficit Hyperactivity Disorder. And, together with neuroscientists, anthropologists and philosophers we are approaching some of the basic questions raised by developments in our understanding of the mind and brain – for example the implications for that elusive but fundamental notion of free will, and the differences between therapy and enhancement in our 'emergent form of life'.

What about one of the most prominent issues of biomedicine of the last few years – cloning and stem cell research? BIOS colleagues are working with London-based Professor Jack Price, a developmental neurobiologist, and Dr Chris Shaw, a clinical geneticist working on the genetics and neuroscience of neurodegenerative diseases, especially Motor Neurone Disease. Key issues include the problem of the uncertainty of the promise of stem cell therapies, the point at which stem cell interventions on humans are justified, issues of informed consent in stem cell treatment of severe neurodegenerative diseases, commercial applications of neural stem cell technology, and the views and attitudes of patient groups and organisations with regard to experimental technology for the implantation of neural stem cells in human subjects. Professor Sarah Franklin joins BIOS in September 2004. She is one of the UK's leading empirical researchers in this area, having conducted path breaking research on new reproductive technologies and cloning, and now engaged in an exciting programme of research on stem cells.

And last but not least, there is SciArt. The purpose of the *Science and Art* programme at BIOS is to promote discussion of visual culture as it

relates to the issues which BIOS addresses. SciArt will bring together sociologists, historians, television producers, scientists, artists, curators, art critics and art historians to promote an in depth debate about the role that art, and more broadly visual culture, plays or could play in influencing and communicating ideas about biotechnology. This will be an open forum to bring the issues to a wider LSE and London audience.

The first project is on Images of the Mind. Why and how is the mind equated with the brain as matter or body? Is the mind beyond the body? Is the mind the instrument of 'self-fashioning' or an object to be manipulated and transformed? What about the mind as a metaphor for social activities? All these have rich visual histories, and the subject here is the changing relations between these ideas of the mind, scientific advances in imaging and explaining the activities of the brain, and the contemporary interpretation of these ideas, in science, art, philosophy, sociology, the media and politics.

Images of the Mind will consist of a series of cross-disciplinary talks at LSE, each involving an artist, a scientist and a social scientist, and an exhibition of new and existing art works. This activity will link in with the School's regional London policy and links it is making with other cultural and educational institutions in the capital. It is hoped we can work again with artist Ruth MacLennan (LSE Magazine, winter 2002), funding permitting.

To develop further links with the bioscience economy in London, we are working with the School's commercial arm, Enterprise LSE. *BioLondon: London life sciences strategy and action plan July 2003-2007* has been published by the London Development Agency. The objective of this life sciences support strategy is to develop a commercial life sciences cluster around London's world class knowledge base. This approach will be delivered by focusing on therapeutics – growing entrepreneurial start-ups into major players; on contract research organisations – extending the value chain and supporting therapeutics; and on biomedical engineering – extending the value chain and broadening the cluster.

It is crucial that LSE plays a part in all these endeavours. Social scientists should be passionate and engaged with their bioscience, biotechnology and life science colleagues on these issues, all fundamental for the future of our global society. ■



Professor Nikolas Rose

is BIOS director and convenor of the Department of Sociology. © Nikolas Rose