

Professor Colin Blakemore: An interview with the new chief executive of the MRC



Professor Colin Blakemore took over as the new Chief executive of the MRC in October last year. Professor Blakemore is well known to most neuroscientists throughout the world with an impressive list of prizes and awards for his research over the years, including his pioneering work during the 1970s and 1980s on the visual system and its development. He has been the Waynflete Professor of Physiology in Oxford since 1979 and is a great communicator and advocate of the public understanding of science, achieved through regular appearances on the television and radio. In this interview Professor Blakemore answers some of the questions we posed about research in the UK and how it relates to clinical training and medicine. We look forward to seeing how well these will be realised through the MRC in the next few years.

1) Do you think there is enough investment in British science?

As the Chief Executive of a research council, how could I say "Yes"? I would be lynched by the substantial number of researchers whose applications have been turned down by the Medical Research Council over the past three years despite being rated Alpha-A (world-class research). The fact that all the research councils have difficulty in funding even their internationally competitive applications is surely a signal that more investment is needed. Britain still continues to "punch above its weight", and, in most areas of science, is second only to the United States in its international impact. But present performance reflects investment 20 years ago or more. I really worry about the standing of British science 10 years from now if the science budget doesn't keep up with demand.

2) Do you think that the government fully supports animal research in the UK? Are there ways this could be better supported by the government?

Over the past 4 years, the Government has been increasingly robust in its support for essential research involving animals. This is a big change from the position of new Labour before the 1997 election. Although the Government did not set up a Royal Commission on the use of animals in research, which they had suggested in a pre-manifesto statement, their attitude initially seemed quite hostile. Introduction of a new tier of local ethical review, and increased bureaucracy in the Home Office, led to unacceptably long delays in the approval of project licenses. The discontent of the research community and protests from the pharmaceutical and biotech industry, as well as the rise of extreme animal rights activism, led the Government to reassess its position. The strong support of the Science Minister, Lord Sainsbury, was crucial in this change of stance. The campaign against Huntingdon Life Sciences, involving secondary terrorism and threats against shareholders, banks, insurance companies and stock dealers, finally persuaded the government to go very public in its support for animal research and its determination not to allow a tiny group of terrorists to damage research and the economy. It has been vindicated in this policy by the steady shift in public opinion. The latest polls show that fully 90% of the population now support the use of animals in research, as long as there is no alternative and suffering is minimised.

This is not to say that the problem is solved. The recent decision of Cambridge University not to go ahead with the long-delayed construction of a major new centre for primate neuroscience, because of escalating costs and threats from activists, has put new pressure on the Government to act against undemocratic extremism. I

believe that the Government is determined not to allow the terrorist fringe to win but is still uncertain about how to achieve this. Personally, I have become convinced that industry's proposal for a focused, separate piece of legislation, along the line of that directed against football hooliganism is the right way forward. Also, in my opinion, the operation of the 1986 Animal Act needs to be further reviewed, with the intention of easing the unjustified bureaucratic burden on UK researchers.

3) Do you believe that "clinical science" is a distinct form of research? Is it sufficiently encouraged and funded?

There isn't a sharp boundary between basic biomedical research and clinical research, but there is certainly a range and style of research, with a direct mission to tackle problems of human health, which is appropriately called "clinical". I am thinking of the latter stages of proof-of-concept, clinical trials, epidemiological research, health service research and public health research. In my opinion, this important area of science needs and deserves more encouragement and funding. We have had 50 years of fantastic basic biomedical research, which has delivered extraordinary advances in our understanding of genetics, molecular mechanisms and cell biology. It is right that we should now shift the emphasis a little, to nurture research aimed at translating this basic knowledge into the improvement of human health, as recommended in a recent report from the Academy of Medical Sciences. However, to achieve this will require substantial new funds, and will also need cooperation and action by many organisations, including the Medical Royal Colleges, the General Medical Council and the Health Departments. The MRC stands ready to play its part, but cannot do the job alone.

4) Have the Calman reforms of medical training been helpful or not in promoting clinical science?

"Calmanisation", as it is commonly referred to, was aimed principally at streamlining conventional clinical training, and answering the demand for more doctors. It has done a good job of helping to fulfil that remit. But it has created problems for clinical research. The system of training numbers and training records has constrained the freedom of young clinicians and has discouraged them from taking time out for proper research training. This problem is very widely recognised (although it must be said that all developed countries are experiencing similar problems in attracting and training first-class clinical researchers). We, the biomedical funders, need to work with the GMC, the Medical Royal Colleges, the Academy of Medical Sciences and other interested parties to argue for modification of the present training regime and of the

professional structure of medicine, so as to make it easier for young doctors to train in research and to establish their own research laboratories.

5) What do you think will be the major research areas in the next 10 years?

In the biomedical sciences, much of the research in the coming decade will be devoted to translation of genomic information into greater understanding of normal organic function and of genetic contributions to disease. This will involve a rebirth of systems biology, extending genetic information from the cellular level to the whole organism. Genetic manipulation will be an essential tool, as will increasingly sophisticated techniques for visualising and selectively modifying genetic expression *in vivo*. The knowledge derived from massive epidemiological studies, including the UK's Biobank, will provide information about interactions between genes and environment in health and disease, and this will lead to the growth of "personalised medicine". Chemistry will be crucial for the future of the biological sciences, especially in the area of nanobiotechnology and in the design of compounds to interact with identified endogenous molecules in organisms. This approach will be important in genomic and proteomic manipulation, providing new tools for basic research and medical application. As for other fields of science, I guess that research on sustainable and/or more efficient energy production will be important. There will be ever more sophisticated battery design, new, more efficient solar power devices, and perhaps, energy for nuclear fusion. Optical computing will forge ahead, as will nanotechnology of all kinds.

6) How could the MRC grant system be improved?

I hope that it has been! At the time of writing, the MRC has just announced a raft of changes in its committee structures, its methods of strategic development, the empowerment of its research boards, and the introduction of new funding schemes. These changes have been based on the wide consultation that I have carried out over the past 4 months, through "roadshow" visits to 17 universities and a large number of meetings with unit and institute directors, MRC Board members, the MRC Advisory Board, the Council, and other stakeholders. The philosophy behind the changes in grant schemes is a desire to simplify the system and to introduce much greater flexibility. 12 grant schemes have been replaced by 5, including a single form of "Research Grant" to replace programme grants, pilot grants, discipline-hopping awards, etc, and to cover needs met in the past by 3-year project grants. The principle of the new Research Grants is that applicants will simply apply for what they need to accomplish the research proposed, specifying not only the level of support but also the preferred duration – from 2 years to 5 or more. The Cooperative Group Grant scheme, which was not popular, will be replaced by new, simpler Collaboration Grants, held as supplements to Research Grants. Linked to these schemes are other fundamental changes in the MRC. Research Boards will have their own budgets and will be responsible for developing a "portfolio" of activity in their area of science – from training to institute support. Strategy will be developed "bottom-up" by means of new committee structures and new mechanisms for consulting the research community. The refereeing system will be altered, with more targeted reviewing, using "Colleges of Experts", associated with each research Board, as well as overseas referees.

Numerical scoring systems will be introduced, and referees and Boards will be asked to put somewhat more emphasis on track records than on the minute details of future proposals for research, when judging applications from established researchers. I don't want the MRC to fall into what one might call the NIH trap – encouraging applicants to describe in detail their present research as if it were what they intend to do in the future! We are also piloting a new form of support for younger investigators ("New Investigator Awards"), which, if successful, will be part of a revised set of forms of support for young researchers that I hope to introduce early next year.

7) How do you feel the MRC is perceived by researchers?

There is no doubt that the image of the MRC was somewhat tarnished because of the dramatic fall in funds available for response-mode funding over the past 5 years. I am convinced that this decline was not due to financial mismanagement at the MRC, as suggested by the House of Commons Science & Technology Select Committee in its report on the MRC last year. Rather it was caused by unfulfilled expectation of substantial increased income from government in the first Comprehensive Spending Review, coupled with an inability to carry forward more than 5% of the annual budget. We now have much more sophisticated financial modelling and a 10% carry-forward limit, which will, I am sure, enable us to avoid such disheartening fluctuations in grant funding in future years. I hope that the modest increase in response-mode funds available this year and next, together with the MRC's commitment to transparency and consultation, will raise the confidence of researchers in the organisation.

8) Do you feel there is sufficient public understanding in science? How would you encourage more?

It all depends on what one means by "understanding". There is, contrary to received wisdom, remarkably strong enthusiasm for science amongst the general public, and considerable confidence in scientists. In a recent opinion poll, three-quarters of the population said they were "amazed" by the achievements of science. Another poll found that people admired Einstein more than David Beckham! And an annual Mori poll shows an unchanging two-thirds of the public who say that they trust scientists to tell the truth. On the other hand, the near-hysteria about such topics as GM foods and MMR vaccination and autism reveals that the public are not well informed about the processes of science. Understanding of risk and how to assess it is poor. The public expect infallible pronouncements from scientists and are confused when they hear researchers expressing differences of opinion in areas of genuine uncertainty. In my opinion, we, the researchers who benefit from public funds, have a responsibility to keep the people informed about how we spend their money. Even more important, we must trust the public to guide us in areas of ethical concern. But if we are to have confidence in the public's rightful role in determining how far science can go, they must understand how science and scientists work. Of course, busy researchers will ask why they should bother to give their precious time to public communication, when there is no professional recognition for that effort. I think that the universities, the research councils and other funders, and the organisers of the RAE should acknowledge that public communication is a legitimate professional activity. I am thinking about ways in which the MRC could offer small incentives for this kind of work.