MRC announces plans for strengthening UK clinical research

The Spring edition of Network referred to how the MRC’s scientific strategy is shifting in emphasis towards a more translational approach. Now, following publication of the MRC’s Delivery Plan in May and the Government’s 2004 Spending Review allocations, Network is able to report on the practical steps that the MRC is taking to implement its clinical research agenda.

Increased investment
In recent years the MRC has spent around a third of its funds on clinical and public health research and training – around £127m per annum. But from 2005 onwards this amount is set to rise, to about £162m by 2007/08, following the MRC’s allocation in the 2004 Spending Review (see table overleaf). This significantly increased commitment results from £25m new money from the spending review specifically earmarked for clinical and public health research during 2006-08, and from the MRC’s redeployment of a further £37m of its existing funds from 2005 onwards.

When drawing up its Delivery Plan, the MRC took care to listen to the views of the scientific community and other key stakeholders. The plan stresses the need to speed up the rate at which medical science generates health benefits, so clinical and public health research feature strongly, as does the importance of translating basic research findings. For although the MRC funds a vast range of scientific activities, all share one central aim – the need to improve and maintain human health. Achieving this goal relies on clinical research and its related disciplines to translate discoveries from basic research into new and improved treatments, and to feed clinical research findings back to the laboratory. The MRC has funded 10 new clinical trials since November 2004 – evidence that its translational drive was already starting to gather momentum last year.

The importance of partnership
The MRC’s ambitions for clinical research make close partnership working more important than ever. For example, the MRC/Health Departments Joint Health Delivery Group that was set up in 2004 to enhance partnership working across public funders of medical research, and the MRC’s work with government agencies and funders in the charity, public and industrial sectors through the UK Clinical Research Collaboration (UKCRC). These initiatives will help to ensure that all the UK’s public funders of clinical and translational research achieve maximum synergy in the science they support.

MRC objectives for clinical research
• Increased support for clinical trials and their development, including evaluation of public health interventions.
• Calls for proposals in experimental and translational medicine. For example, as part...
Clinical research

of an initiative with its UKCRC partners, the MRC has allocated £15m for a call for proposals in experimental medicine in September 2005.

- Capacity building, particularly by increasing the numbers of clinical training fellows at pre- and post-doctoral level, and encouraging more applications from allied health professionals and those in underpinning non-clinical disciplines. Also building capacity in population health sciences to strengthen public health research capacity, and developing a cadre of research translators.

- Increased support for large-scale epidemiological studies.

- More focus on co-ordination of existing investments: building methodological networks across MRC units, and establishing an MRC institute for population health sciences to draw together existing MRC investments and create a focus for new research and support for public health elements of the UKCRC.

Translational research

About a third of the MRC’s current expenditure is on research linked to clinical practice or population studies. To help strengthen translation of basic research findings into health benefits for people, the MRC will be increasing its support for experimental medicine, and for clinical trials and other population-level studies – for example, on interactions between environment, behaviour and predisposition to disease. All of these activities will be co-ordinated with the MRC’s plans for other areas of research, including infections, biomarkers, regenerative medicine and translational brain sciences. And in order to promote new and existing approaches to translational research, the MRC will be encouraging the exchange of ideas, methods and people between the basic and clinical areas.

Training

To address the current shortage of clinical researchers, the MRC is working closely with the DoH Research Capacity Building Programme and the implementation group for the UKCRC/Modernising Medical Careers Subcommittee. The additional funds received in SR2004 will enable the MRC to increase the number of clinical

### 2004 Spending Review – MRC allocation

The MRC’s allocation under the 2004 Spending Review (SR2004) rises from a baseline (including non-cash items) of £478.8m in 2005/06 to £546.5m in 2007/08. The 2005/06 financial year is the last year of the previous Spending Review period (SR2002) and is the base year for SR2004. The table below shows the resource (non-capital) allocations for 2005/06, 2006/07 and 2007/08.

<table>
<thead>
<tr>
<th>Resource allocation</th>
<th>£m</th>
<th>2005/06</th>
<th>2006/07</th>
<th>2007/08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource allocation</td>
<td>444.2</td>
<td>465.2</td>
<td>504.6</td>
<td></td>
</tr>
<tr>
<td>Less funds for FECs¹</td>
<td>144.4</td>
<td>14.4</td>
<td>27.9</td>
<td></td>
</tr>
<tr>
<td>Less Roberts funds²</td>
<td>1.5</td>
<td>1.5</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>Less non-cash items</td>
<td>16.1</td>
<td>16.1</td>
<td>22.1</td>
<td></td>
</tr>
<tr>
<td>Net cash funding</td>
<td>428.1</td>
<td>433.1¹</td>
<td>448.1¹</td>
<td></td>
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<tr>
<td>Increase over 2005/06</td>
<td>5.0</td>
<td>20.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ FECs = full economic costs.
³ Totals do not agree due to rounding errors.

Clinical research glossary

**Clinical research**
Research based on humans and designed to answer questions about health and disease. In addition to direct examination of individual patients and populations, it includes the study of biological samples and personal data deriving from the individuals concerned. It also includes research on volunteers, or on populations of apparently healthy individuals, where such study relates to a disease process being investigated.

**Experimental medicine**
Investigation undertaken in humans, relating where appropriate to model systems, to identify mechanisms of pathophysiology or disease, or to demonstrate proof-of-concept evidence of the validity and importance of new discoveries or treatments.

**Population sciences**
Investigation undertaken in populations (e.g. descriptive epidemiology, cohorts, randomised trials, and case-control designs involving people) to identify mechanisms of health or disease, or to test the validity and importance of new discoveries, interventions, or treatments.

**Translational research**
The process of the bidirectional transfer of knowledge between basic work (in the laboratory and elsewhere) with that in the whole patient. Translational research ranges from exploring fundamental scientific questions and applying the resulting knowledge to the patient, to bringing insights from studies in the patient back to the laboratory in model systems for further exploration. These efforts will lead to better understanding of the mechanisms of disease and the maintenance of health, as well as to new methods of diagnosing, treating and preventing disease.
The term “medical research” encompasses a broad range of activities within basic and clinical research, all aimed at improving or maintaining human health. In simple terms, “clinical research” involves research on human participants, while “basic research” refers to underpinning research from areas such as animal studies, psychology, statistics, economics, physics, chemistry, etc. Clinical research involves a number of interrelated concepts: “clinical research”, “experimental medicine” and “translational research”. “Experimental medicine” crosses the boundaries between basic and clinical research; there is also the analogous discipline of “population sciences” which likewise draws on basic and clinical research but studies much larger groups of people. The ultimate aim of both disciplines is to apply the knowledge gained to improve healthcare delivery, which itself may be the subject of research – for example, studies of health services and organisation.

Implementing strategy
The MRC has set up two Council subgroups to oversee the implementation of the strategic aims outlined in the Delivery Plan – the Clinical Research Oversight Group, chaired by Professor John Savill, and the Public Health Research Oversight Group, chaired by Dr David Armstrong. Both groups include representatives of the relevant MRC research and training boards and of the academic community, the MRC’s Advisory Group on Public Involvement, the Health Departments and the Academy of Medical Sciences.

Key concepts in medical research

On Friday 3 June the MRC Clinical Sciences Centre brought together over 200 people to celebrate 50 years of research following the installation of the world’s first medical cyclotron at Hammersmith Hospital in 1955. Old friends and collaborators in research, clinicians and policy-makers heard a fascinating series of talks on the history of the MRC Cyclotron Unit, key turning points in positron emission tomography (PET) research and predictions for the future.

Professor Jack Fowler reminded the audience about the vagaries of early computing techniques, the first investigations which meant carrying anaesthetised pigs up to the top of the building, and various ingenious engineering solutions to push forward the frontiers of the new science. The other speakers described the legacy of the pioneering work – Professor Richard Frackowiak explained the developments that have led to increasingly detailed brain imaging; Dr Eric Aboagye described the use of PET techniques in diagnosis and prognosis of cancers, and Dr Anne Lingford-Hughes linked PET’s contribution to brain research on addiction and craving to clinical practice to help addicts change their behaviour.

The event buzzed with an atmosphere of people renewing friendships and identifying new collaborations. It ended with a reception and the unveiling of the Vonberg Suite in the Cyclotron Building, named after Derek Vonberg who guided the MRC Cyclotron Unit through the early years of its pioneering work.

Professor Jack Fowler renewing old friendships outside the Wolfson Conference Centre, Hammersmith Hospital campus.

Find out more online
For full details of talks, including presentations, visit: www.livegroup.co.uk/cyclotron
New MRC funding schemes: review of year one

In February 2004 the MRC introduced major changes to its funding schemes, to provide fewer, simpler and more flexible options for researchers. A year on, *Network* takes a look at the new grant schemes in action.

Response from researchers
The MRC is pleased to report that the new Research and Collaboration Grant schemes have been well received by the scientific community, with the number of applications received increasing significantly with each round of research board meetings in 2004/05. Compared with figures for May 2004, the number of applications, including those for Trial Grants, had risen by 73 per cent by October 2004 and by 126 per cent by May 2005. More grants were awarded – 180 compared with 161 in 2003/04 – and the total value of grants increased from £85.4m to £99.2m.

As the MRC anticipated, the Research Grant scheme was the most popular choice for applicants (see Figure 1). It was introduced to enable applicants to tailor the length of support they request to the actual needs of the proposed research, rather than them being restricted to the traditional model of focused three-year projects or longer-term five-year programmes. However, the vast majority of applications in the first year of the Research Grant scheme were for lower cost, short-term proposals. The MRC hopes that in the future scientists will start to take fuller advantage of the flexibility that the scheme offers, to maintain a balance of short- and long-term grants. Of course, this may sometimes result in a short-term grant of one or two years, but only where it is the scientifically appropriate option for the research in question.

Impact on peer reviewers
Network readers will not be surprised to learn that the dramatic increase in the number of applications presents some major challenges, both for the MRC and for its expert reviewers (see Figure 2). Before introducing the new schemes in 2004 the MRC had anticipated a fairly modest increase in volume. Given that the review community was already at full stretch, the MRC introduced measures to help manage this increase – an online intention-to-apply form and use of triage to hasten decisions about proposals with the lowest scores. However, the very substantial increase experienced meant these measures had a limited impact.

The need to develop effective strategies for managing demand, including encouraging higher-quality applications, is clearly a key priority for the MRC. It will therefore be monitoring the volume and quality of applications closely during the next year and publishing figures for success rates and quality of applications by university.

One solution to the problem lies with the scientific community. The overriding determinant of an application’s success will always be its core scientific quality and importance, particularly in view of the fierce competition for funds. This means that the MRC is unlikely to fund applications that are not of an internationally competitive standard. So
researchers can avoid placing an unnecessary burden on their colleagues in the peer review system by only submitting high-quality proposals that request an appropriate amount of money for the research described.

In 2005/06, the MRC received extra money to maintain the current volume of new awards at full economic cost. However, if the resources requested within applications increase significantly, then the number of awards that the MRC can make at full economic cost will fall.

A word about timing
Before submitting applications, the MRC recommends that applicants look at the funding section of the MRC website to gauge the level of competition for funds in their scientific area. They can then decide whether or not to postpone their application until a future research board cycle. Other useful information available on the site includes success rates by research board and university, total annual number and value of awards, and average size of grant. As these trend data show, cheaper short-term applications are not more likely to be funded than more expensive, longer-term proposals — the decisive factor is always scientific quality.

As the MRC’s Director of Research Management, Dr Diana Dunstan, told Network, “We want to be fair to applicants and to ensure that the best science continues to get funded. But we also want to avoid over-burdening reviewers. Our increased transparency about trends in applications and awards will help to achieve this.” When asked to comment on the increase in applications in 2004/05, Diana said “We welcome the very positive response to the new Research Grant scheme. But as many of the applications were for shorter-term grants, I would like to stress that we are keen to maintain a balance of high-quality long-term and short-term programmes within the scheme.”

More data about 2004/05 applications
- The overall success rate for internationally competitive applications for the new funding schemes was 68 per cent and the success rates for internationally competitive applications for each of the research boards ranged from...
51 per cent to 88 per cent. The success rate of longer-term applications was higher than for short-term applications.

- There has been a significant shift in the proportion of short-term (three years or less) and longer-term applications submitted. Short-term applications increased from 51 per cent in May 2004 to 84 per cent in January 2005, but were generally of a lower quality than the longer-term applications (see Figures 3-5).

- The average value of awards was £320k for proposals of three years or less and £963k for proposals of more than three years. However, many proposals received costs that could not be justified and these grants needed to be pruned at the peer review stage (see Figures 4 and 5).

- There was no significant change in the proportion of applications received and awarded within clinical/non-clinical, principal investigator aged 40 or under, and gender. However, the introduction of the New Investigator Award competition has led to a significant increase in awards to early career scientists.

Budgets for 2005/06
The MRC received increased funding in the 2004 Spending Review, but still has some challenging decisions to make about allocation given the growing strategic importance of clinical and translational research – see article on page 1. The table below shows the MRC’s proposed budgets for its research boards and its strategic budget; the actual distribution across MRC units and grants will depend on peer review. The strategic budget, which funds strategic initiatives, cross-board research and MRC institutes and centres, is £67.2m for 2005/06. This money will be targeted at experimental medicine, health services research and public health research. Also, the strategic budget may be allocated to the research boards following response to calls for proposals in strategic areas, e.g. experimental medicine.

<table>
<thead>
<tr>
<th>Research board/strategic budget</th>
<th>2005/06* £m</th>
<th>2004/05 £m</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSPHRB</td>
<td>28.2</td>
<td>16.4</td>
</tr>
<tr>
<td>IIB</td>
<td>20.4</td>
<td>15.5</td>
</tr>
<tr>
<td>MCMB</td>
<td>31.4</td>
<td>23.8</td>
</tr>
<tr>
<td>NMHb</td>
<td>31.9</td>
<td>26.1</td>
</tr>
<tr>
<td>PSCSB</td>
<td>19.8</td>
<td>14.2</td>
</tr>
<tr>
<td>Strategic including 2004 Spending Review</td>
<td>67.2</td>
<td>67.0</td>
</tr>
<tr>
<td>New Investigator Awards (NIA)**</td>
<td>11.0</td>
<td>5.0</td>
</tr>
<tr>
<td>**TOTAL</td>
<td>209.9</td>
<td>168.0</td>
</tr>
</tbody>
</table>

* Including an uplift to account for the introduction of full economic costs during 2005/06.

** Merged with Career Establishment Grant scheme for the annual NIA competition, from September 2005.

Find out more online
For information on the MRC’s overall funding allocation and funding opportunities including calls for proposals, visit www.mrc.ac.uk/funding.htm

MRC Research Boards

Health Services & Public Health Research
Development and evaluation of healthcare interventions (with particular emphasis on Phase III trials); population-based studies of the aetiology of disease (with particular emphasis on the role of psychosocial factors); research methodologies in health services and public health research; translating research into practice; studies of public understanding/involvement in health research.

Infections & Immunity
Transmission and control of infectious agents and their interaction with the immune system, pathogenesis, development and control of the immune system, parasitology, virology, bacteriology and tropical medicine.

Molecular & Cellular Medicine
All aspects of molecular and cellular research including: cancer biology, genetic mechanisms, methodology development for gene therapy, bioinformatics, biotechnology and structural studies, nanotechnology, cell biology, and developmental and stem cell biology excluding neurobiology.

Neurosciences & Mental Health
All aspects of research into the neurosciences and mental health. Including basic neurobiology (e.g. molecular and cell biology, developmental neurobiology); systems based research; senses and cognition; behavioural neuroscience; medically relevant psychology; neuroimaging; dementia, neurodegenerative disease, transmissible spongiform encephalopathies and other areas of neurology; and mental health and psychiatry.

Physiological Systems & Clinical Sciences
Function and pathophysiology of the major organ systems, molecular medicine, genetics of disease and genomic epidemiology, inflammation, pharmacology, human reproduction, fetal and infant development, nutrition and energy metabolism, toxicology, environment and health. PSCSB has a lead role in promoting translational and clinical research.
New Institute for Radiation Biology Research at Oxford

A new centre for research in radiation biology and oncology is planned at Oxford University, under the leadership of Professor Gillies McKenna. Jointly funded by the MRC, Cancer Research UK and the University of Oxford, the Institute for Radiation Biology Research will be an amalgamation of the MRC Radiation and Genome Stability Unit, Harwell, and the Gray Cancer Institute, London. Professor McKenna returned from the USA in April to take up the post of Professor of Radiation Oncology and Biology at the University of Oxford. For the past 16 years, while at the University of Pennsylvania, his main research interest has been how to make cells more sensitive to radiation by blocking mechanisms that control cell survival. Areas of research at what promises to be a world-class centre include delivering radiation in more sophisticated and precise ways, using new imaging techniques to restrict radiotherapy to tumours and finding new ways to make tumours more sensitive to radiation. Professor McKenna said, “The new centre is designed to foster collaboration between scientists from quite distinct areas of expertise, and I’m confident it will be the source of many groundbreaking discoveries.”

NIMR update

As reported in the Spring edition of Network, in February 2005 the MRC’s Council chose University College London (UCL) as the preferred partner for the renewal of the MRC National Institute for Medical Research (NIMR). Since then, the project group has been preparing the full science and business case for the NIMR’s re-location.

The project group has been supported by eight workstream groups with members drawn from MRC head office, the NIMR and UCL. The groups covered the following areas, five of which relate to research and three to more general requirements: genetics and development; infections and immunity; neuroscience; structural biology; translational opportunities and training; building and facilities requirements; the provision of biological research facilities; and the new site’s scope for enhancing public engagement by the NIMR and the wider MRC.

The workstream groups provided important information for inclusion in the business plan for the renewal of the NIMR in partnership with UCL, including examples of potential research collaborations within the partnership. The plan was presented to the MRC’s Council on 18 May and approved, although the Council recognised that further work needed to be done on the biological research facility. In June, the UCL’s Council also approved the business plan. The MRC will now present its case to the Office of Science and Technology and seek financial support from the Large Facilities Capital Fund. It will also be considering ways in which the enthusiasm and momentum that the workstream groups have generated can be continued over the coming months.

The project group also provided MRC, UCL and NIMR input into the process for recruiting the new Director of the NIMR in anticipation of Sir John Skehel’s retirement next year. A paper setting out the principles for the recruitment process and the implementation plan was approved by the MRC’s Council at its May meeting.

Upstate building honours grandfather of protein phosphorylation

On 8 March US life sciences company Upstate opened a new building in Dundee to house its European operations, including work stemming from a pioneering collaboration with the MRC Protein Phosphorylation Unit. More than eight per cent of Upstate’s products, which are used to develop therapies for cancer, diabetes and other critical diseases, originate from reagents developed at the MRC Unit directed by Sir Philip Cohen. The new building is named the Fischer Building after Professor Edmond Fischer, who with Edwin Krebs won a Nobel prize for his discovery of reversible protein phosphorylation in the 1950s. Professor Fischer – who celebrates his 85th birthday in 2005 – was the guest of honour at the opening and the keynote speaker at a symposium held two days later by the Protein Phosphorylation Unit to celebrate the 50th anniversary of his discovery.

Find out more online

The science case for the renewal of the NIMR and the final papers of the five research workstream groups are available at www.mrc.ac.uk.
MRC policy on research regulation

The MRC’s recently published position statement acknowledges the challenge of balancing ethical requirements with the public’s need for speedy research delivery.

Over the last couple of years MRC-funded scientists have been voicing concerns about the amount of regulation surrounding their work. This growing concern reflects the impact of recent major developments in regulation: the incorporation of the EU Clinical Trials Directive into UK law, the passing of the Human Tissue Act (2004), the increasing requirements of Research Ethics Committees (RECs) – arising in part from new legislation, and the wide variation in implementation of regulations by RECs, universities, NHS Trusts and R&D departments and other bodies.

The MRC has responded by developing a position statement on research regulation and ethics, which summarises the MRC’s views about the need for such regulation. It also acknowledges how this ethical need must be balanced with scientists’ desire to proceed quickly and efficiently with research to benefit human health, and outlines what the MRC is doing to help achieve this balance.

The MRC’s role in research regulation

The MRC is a leading national source of guidance and advice on medical research regulation. It was the first research organisation to publish ethical guidelines concerning investigations on human participants. Produced in the early 1960s, these pre-dated the first version of the Declaration of Helsinki (1964). The MRC continues to set standards of good practice in all aspects of medical research, including patient safety and the use of animals, personal information and human tissue.

The need for regulation

Regulation protects both participant – human or animal – and researcher. It sets out clearly what is acceptable and what is not, providing a protective framework that is appropriate to the level of risk involved. In addition, effective regulation helps to ensure that the reputation of funding bodies and employing organisations is not damaged by misjudged or unethical experimental work. The MRC expects the scientists it funds to comply with the regulations relevant to their areas of research. Some of these will be contained in primary legislation, which can however be a blunt instrument for guiding human behaviour and difficult for non-lawyers to understand. This is why the MRC provides additional, publicly available guidance for researchers to help them put their daily work into the appropriate legal context.

Challenges for researchers

Despite the clear benefits of regulation, the MRC is well aware that it presents challenges for researchers. Compliance involves additional bureaucracy, costs and time. In theory – and in practice – it could create so many difficulties as to discourage an important programme of research from taking place, or it could lead to barriers to participation that introduce bias. Unfortunately, there is no easy answer to finding the right balance between regulation and researchers’ wishes. Obstacles to progress here include the fact that aspects of the regulatory process may not be well controlled, as with EU legislation, or the balance may need to be very different for apparently similar situations, or it will need to change over time to reflect public attitudes or significant events.

Working to achieve a balance

Dr Tony Peatfield, the MRC’s Head of Corporate Governance and Policy, told Network: “Although a key part of the MRC’s mission is to promote and safeguard good practice in medical research, we realise that implementing regulation can present very real challenges for hard-pressed researchers. Understandably, scientists are keen to progress their science as quickly and cost-effectively as possible and increasing levels of regulation can sometimes frustrate this aim. The trust of the public and media is a key factor in preventing excessive regulation and the MRC is continuing to increase its work to promote such trust.”

Tony went on to describe current MRC activities to address the problem, starting with more dialogue with the public and media to understand public concerns about areas of medical science and to explain the rationale for such research. Secondly, the MRC keeps in touch with active researchers to learn about the issues that concern them, and ensures that scientists have clear, up-to-date information about regulation and ethics. The internet is an increasingly useful medium for disseminating such information. For example, in October 2004 the MRC and the DoH launched a ‘clinical trials toolkit’ website, which uses a routemap approach to help researchers negotiate complex new EU clinical trials legislation and attracts around 3,000 visitors a month. The MRC also keeps abreast of developments in broader aspects of regulation, including law and political science. Thirdly, the MRC maintains the highest standards of peer review to ensure reliable research findings, which helps to prevent unnecessary duplication of research – a potential cause of public concern.

Equally importantly, the MRC continues to engage with the Government and other regulators over problems presented by existing and proposed regulation. As a preliminary to this, it will be working with the UK Clinical Research Collaboration (UKCRC) to review regulation that involves unnecessary bureaucratic procedures and other counterproductive elements. The MRC and its UKCRC partners will then develop proposals for new regulation in the context of existing regulation, taking account of the likely level of risk to participants.

Find out more online

MRC position statement on research regulation and ethics
www.mrc.ac.uk/pdf-mrc_statement_regulations_ethics_may_2005.pdf
MRC/DoH EU Clinical Trials Directive website: www.ct-toolkit.ac.uk
Exploring practical solutions to regulatory challenges

An MRC unit-led working group is pooling experience and ideas to develop a resource base of ‘tried-and-tested’ good practice...

As shown in this edition’s article on the MRC’s policy on research regulation, an important aspect of the MRC Council’s work is the support and guidance it gives scientists over implementing research governance legislation and guidance. To help involve scientific staff more directly in this area, the MRC has recently set up a unit-led working group to look at governance of research involving human participants, their tissues or data. The group are identifying, documenting and sharing the good practice they follow, with the aim of developing good practice documents, illustrated with working examples, for publication on the MRC portal.

Encouraging in-depth discussion
Each MRC unit that carries out research involving human participants has nominated a representative for the working group. To ensure that all the relevant issues are discussed in sufficient depth, the group’s remit has been split into three main areas, each led by unit representatives:

- Collection and management of human tissues and biological samples.
- Risk assessment, management and monitoring.
- Sponsorship and agreements.

The project is led by Dr Sarah Dickson, who is on secondment from her role as Clinical Studies Manager at the MRC Human Reproductive Sciences Unit at Edinburgh. Sarah told Network, “The changing legislative environment poses challenges for researchers and we feel it is important that unit staff have the opportunity to share problems and work together to develop effective, reliable solutions that work on the ground. What’s more, this will enable the MRC to develop a resource base of practical, ‘tried-and-tested’ approaches to meeting governance standards, to complement the formal guidance produced at a corporate level.”

Interested in joining the group?
If you work in research that involves human participation in any way, and are interested in joining one of the subgroups or in contributing advice or ideas, please email the relevant contact below:

- Collection and management of human tissues and biological samples: patient or volunteer recruitment (information and consent); management of sample storage and tracking through databases. Catherine Elliott, c.elliott@prion.ucl.ac.uk
- Risk assessment, management and monitoring
  Randomised controlled trials: Jane Armitage, jane.armitage@ctsu.ox.ac.uk
  Social, public health, observational or questionnaire-based studies: Catherine Ferrell, catherine@msoc.mrc.gla.ac.uk
  Studies involving human tissue or sample collection: Sarah Dickson, sarah.dickson@headoffice.mrc.ac.uk
- Sponsorship and agreements: roles and responsibilities of sponsors under Research Governance Framework; production of generic agreements for collaborative studies and transfer of human material. Tony Hodge, tph@mrc-centre.cam.ac.uk
- All other enquiries: Sarah Dickson, sarah.dickson@headoffice.mrc.ac.uk

In conversation with Dr James Watson

A lively public discussion between DNA discoverer Dr James Watson and Professor Colin Blakemore...

On 18 May Dr James Watson treated an audience of 150 people to candid and enthralling reflections on his life in science. The eminent biologist, who with Francis Crick won a Nobel prize for unravelling the secrets of DNA in 1953, was the guest of Colin Blakemore at an ‘In Conversation With…’ event at the Dana Centre in London’s Science Museum. The wide-ranging conversation touched on the difference between science now and 50 years ago. James Watson welcomed the huge increase in the pace of discovery but regretted that this means less time for scientists to stop and think – he remembered how in 1952 he had been able to take off the whole of the summer to do so. On a more personal note he talked about the impact of his son’s mental illness and how it drives his continuing interest in neuroscience, and offered some controversial opinions on the UK’s role in stem cell research following recent announcements from Newcastle University.

Dr James Watson and Professor Colin Blakemore discussing scientific issues at the Dana Centre.

You can follow the whole conversation on the webcast archive for “DNA, Genes and the Brain” at www.danacentre.org.uk/Default.aspx?DanaMenu=_WEBCASTARCHIVE
Science for public health

In this edition of Network we expand our regular Unit Profile to include a number of MRC units united by their work in public health science...

Providing the scientific foundation for public health action is an important part of the MRC's mission, and one which involves the work of a variety of Cambridge-based units. All share an interest and expertise in population science and an ambition to harness the full potential of collaborative effort to tackle some of today's major health problems. For example, the current epidemic of obesity and its metabolic consequences, particularly type 2 diabetes, which the World Bank and the World Health Organization say are now global public health challenges.

Cutting complications

Type 2 diabetes is not only a major cause of premature death – including through associated conditions such as cardiovascular disease – but it is also the leading single cause of preventable blindness, amputation and kidney disease. To reduce the occurrence of these devastating complications, public health scientists focus on prevention at different levels. Secondary prevention aims to diminish the likelihood of people with diabetes going on to develop complications, and tertiary prevention helps to reduce the impact of any such complications by improving the effectiveness of treatments. Evidence from studies such as the MRC Epidemiology Unit's Ely Study suggests that up to half of all current cases of type 2 diabetes are still undiagnosed, which opens up the possibility of earlier detection and treatment through screening to help minimise the risk of complications at a later stage.

The National Screening Committee is currently considering whether or not screening for diabetes should be introduced as a public health intervention. But until now there has been uncertainty about its cost-effectiveness, principally because of the difficulty of measuring the reduction of heart disease risk after intensive combined treatment to reduce glucose levels, lipids and blood pressure in people with screen-detected diabetes. Most trials have assessed the effects of single agents rather than the real-life situation of combined therapy. To provide a more reliable indication of the value of screening, researchers from the MRC Epidemiology Unit, MRC Biostatistics Unit and the University of Cambridge General Practice Research Unit (GPRU) recently modelled its impact on heart disease risk. As a result, they have estimated the combined risk reduction for heart disease, which can now be probed by research such as the ADDITION trial, a large multi-centre study that is being conducted by the Epidemiology Unit and the GPRU. Within the intensively treated group, the team is also assessing ways of helping people make key changes to their lifestyles, including increasing physical activity, stopping smoking, changing their diet and taking medication as prescribed. Trials such as ADDITION will contribute directly to decisions made about public policy in the future.

Focus on prevention

It is becoming increasingly evident that primary or even primordial prevention is also possible. Primary interventions are aimed at high-risk individuals to reduce the likelihood of them developing diabetes, while primordial interventions are designed to reduce the likelihood of an individual becoming high-risk in the first place. Studies in the USA, Finland and India have shown that primary prevention can be effective, but have focused on groups with the pre-diabetic state of impaired glucose tolerance (IGT). Detecting IGT in the wider population is difficult so researchers from the MRC Epidemiology Unit have been investigating more practical ways of identifying people who are at high risk. Using data from the large MRC-funded population-based study EPIC, undertaken in collaboration with the MRC Dunn Human Nutrition Unit and University of Cambridge, the team has demonstrated that people with a family history of diabetes were more likely to develop diabetes if overweight or sedentary. This group is a good target for preventive efforts because they are relatively easy to identify and stand to benefit considerably if they can avoid weight gain. A key question for the team was whether there was evidence that physical activity could help to prevent weight gain and what could be done to help people change their activity patterns. The team went on to develop an intervention (see box) that has been trialled in the ProActive study, the results of which are expected later this year.

All in the genes?

So what is it about the interaction between family history and obesity that gives rise to increased risk? Well firstly, families share genes and environments. Understanding how genes, early life development and lifestyle behaviours interact to affect risk is a major part of the MRC Epidemiology Unit's programme. Using data from individuals with extreme phenotypes, together with case-control studies and cohorts, the Unit is collaborating with Professor Steve O'Rahilly of the University of Cambridge and Dr Ines Barosso of the Wellcome Trust Sanger Institute in the Genetics of Energy...
Metabolism Collaborative. This programme has detected rare gene mutations that give rise to early-onset obesity or extreme insulin resistance, one of the main factors leading to type 2 diabetes. The team is now investigating whether variation in these genes causes less severe and more common forms of disease. They have shown that polymorphisms in genes impacting on beta-cell function are associated with type 2 diabetes and that some rare gene variants interact to cause disease. The next step, to move beyond testing genes we already know about to finding new ones, will come about through new developments in typing whole areas of chromosomes and the entire genome. This area of work is particularly important because understanding how genes impact on disease risk can have implications for prognosis. For example, some patients with rare mutations in a beta-cell gene have a relatively indolent form of hyperglycaemia, which means that they can be reassured about long-term risks and targeting of pharmacological treatment. On the other hand, some patients respond better to a particular glucose-lowering therapy.

In the future, genetic risk prediction may improve to the extent that it surpasses the relatively crude information, such as family history, that is currently being used in trials. But before we can reach that point, researchers need substantial, long-term evidence of an interaction between genes and lifestyle behaviours. Collecting such data is the aim of the UK Biobank project which the MRC co-funds. It is a formidable task because of the scale of the project and the time required before results are available – subjects are followed from the age of 40 to 69. The Epidemiology Unit is therefore using resources currently available and a modified scientific approach (see box overleaf), to research how genes and lifestyle influence the incidence of diabetes.

Tracking pathways to diabetes
The links between dietary patterns, specific food groups and nutrients with obesity and diabetes have yet to be well established. MRC Human Nutrition Research (HNR) conducts intervention studies to determine the effects that changes in nutrients, foods or dietary habits have on obesity, insulin resistance and related cardiovascular risk factors. One such study, RISCK, is the UK’s largest ever dietary intervention study. Funded by the Food Standards Agency, it involves manipulating the proportion of mono-unsaturated fat in the diet and the glycaemic index of participants. RISCK also includes the first community-based trial of the effect of wholegrain consumption on risk of cardiovascular disease, in collaboration with the University of Newcastle. These intervention studies are closely linked into the Government’s public health nutrition agenda, and the scientists involved are actively engaged in policy discussions related to the government White Paper Choosing Health.

The link between physical activity and metabolic disease is also much less certain than is generally realised, largely because of the difficulty of measuring physical activity precisely in population-based studies. HNR has an international reputation in measuring energy expenditure using stable isotopes, though these methods are too expensive to be used in large cohorts. To help tackle this problem, the MRC Epidemiology Unit has been developing expertise in less expensive, more practicable population measures such as objective monitoring instruments. The Epidemiology Unit’s Fenland Study, for example, uses a newly designed combined heart rate and movement sensor to provide detailed energy expenditure and physical activity data. In collaboration with HNR, they have been evaluating how well these sensors compare with the stable isotope method, with all age groups including children.

Ultimately, the greatest impact on the growing public health burden of obesity and diabetes may well come from collective interventions that impact on the very infrastructure of society, rather than constantly focusing on individuals at high risk and targeting them for intensified intervention.

Getting society on the move
Obesity and inactivity are now so prevalent that public health scientists are starting to think in terms of sick populations rather than sick individuals. This is likely to lead to a movement away from focusing on intensified intervention for high-risk individuals towards collective interventions that impact on the very infrastructure of society, rather than starting to think in terms of sick populations towards collective interventions that impact on the whole. An important part of the Epidemiology Unit’s work is to identify what determines lifestyle behaviours. For example, declining physical activity – in part influenced by the changing nature of work and transport – and its association with ill-health. More research is needed into the variation of physical activity between individuals and other social and environmental determinants, which is one reason why the unit’s researchers often collaborate with sociologists, psychologists, geographers and environmental scientists. The unit is...
currently working with the London School of Hygiene and Tropical Medicine and the University of East Anglia School of Environmental Science to investigate the extent to which physical activity, including access to sports and recreational facilities and public transport, is geographically determined.

The MRC’s contribution to public health science in Cambridge and beyond continues to evolve with a range of new research projects and partnerships. For example, the establishment of the Cambridge Institute of Public Health, which includes the MRC’s Epidemiology Unit and Biostatistics Unit, the NHS Public Health Observatory and the University of Cambridge Department of Public Health and Primary Care. The Epidemiology Unit is collaborating increasingly with other MRC groups involved in population science, such as the new MRC Epidemiology Resource Centre in Southampton. From 2007 the unit will be located within the new Cambridge Institute for Diabetes, Endocrinology and Metabolism, which will also house groups undertaking basic cellular and molecular research. These burgeoning links between epidemiology, basic science and public health have a vital role to play in providing the scientific base needed to underpin UK public policy and practice.

One way of pinpointing the genes that cause diabetes is through cross-sectional case-control studies, such as the Norfolk Diabetes Study involving 10,000 patients with type 2 diabetes and 20,000 controls. The EPIC-Norfolk study of 25,000 participants is another example and part of a larger EPIC study involving 500,000 people in 10 European countries. The MRC Epidemiology Unit is leading efforts to find new onset cases of diabetes in this cohort and to investigate how genes, physical activity and diet interact.

Dr Lefkos T Middleton has been appointed to the MRC’s Council as an industry member. He will join in August for a term of just under four years until 31 March 2009. Dr Middleton is Head of Translational Medicine and Genetics at GlaxoSmithKline R&D, where his role is to support drug discovery and development through genetic, biomarker and imaging research initiatives, and experimental medicine. A graduate in medicine at the University of Strasbourg, Dr Middleton completed his training in neurology in France and at Columbia University, New York. He became a Fellow of the Royal Society of Medicine in 1987. His work in Cyprus during 1982–99 centred on gene mapping studies and preventative genetic programmes for highly prevalent neurogenetic diseases.

Dr Justin Bryans joined MRC Technology (MRCT) in June as Head of the Chemistry division of its new Drug Discovery Group. He brings a wealth of commercial drug discovery experience and a proven track record of delivering drug candidates into the clinic. Dr Bryans’ previous positions include Senior Chemist at Xenova, Associate Director of Chemistry at Parke-Davis and Senior Principal Scientist at Pfizer. He has led projects in a wide range of therapeutic areas and is a co-inventor in over 50 patents. The new Drug Discovery Group builds on existing strengths within MRCT, which already has a group of scientists who screen potential drugs at its laboratories in Mill Hill, north London. MRCT is recruiting a group of medicinal chemists and expanding the biology group. The aim is to enhance screening capability and chemistry to help accelerate the translation of MRC biology into innovative new therapies.
Opportunities

From 1 September 2005, the MRC will only accept applications costed on a full economic cost (FEC) basis. The EAA application form has been adapted accordingly.

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* Normal decision point
Note: Start date for all awards is 1.7.06 or later

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Note: Start date for all awards is 1.7.06 or later

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<td>The fourth call for Framework Programme 6 is 9 November. This final call is for Thematic Priority 1 – Life Sciences, Genomics and Biotechnology for Health. For further details, see <a href="http://www.cordis.lu/lifescihealth">www.cordis.lu/lifescihealth</a>, or contact Rosa Parker (<a href="mailto:fp6@headoffice.mrc.ac.uk">fp6@headoffice.mrc.ac.uk</a>).</td>
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Programme leader track forum

On 19 March more than 40 MRC researchers from all over the UK gathered together at head office for a networking forum. The first of its kind for the MRC, the event gave up-and-coming scientists the opportunity to rub shoulders with their contemporaries, share scientific ideas and develop contacts for future collaborations. And although networking was the focus of the day, participants were also able to increase their corporate knowledge through presentations by Chief Executive Colin Blakemore, programme managers from their respective research area and other key head office sections.

The forum attracted scientists from a variety of disciplines and at different stages in the programme leader track development scheme (see box). All had submitted a brief abstract of their research portfolio in advance, which were then used as a springboard for informal discussions throughout the day. Judging by the lively and sustained conversations taking place in all directions during breakout sessions, some mutually beneficial collaborations may soon be in the offing!

The afternoon was headlined by Colin Blakemore’s concise yet comprehensive overview of the MRC’s corporate strategy for the next few years and its 10-year vision for the future. Specific topics included the 2004 Spending Review and the MRC’s research priorities, the various advisory bodies involved in MRC decision-making, external partnerships and their importance to the MRC’s goal of advancing clinical research, and results of interest from the MRC’s recent reputation audit. Colin identified the key challenges for the MRC, discussing their implications for future MRC programme leaders. Questions from the audience included queries about career opportunities within the MRC and funding for scientific collaborations with external partners.

Participants told Network that they particularly appreciated the event’s dual perspective: the mutually supportive and stimulating experience of networking with peers, coupled with the opportunity to meet their programme board managers and receive useful corporate information. One participant saw it as a “move by the MRC towards greater transparency and clearer guidelines and expectations.” Certainly many expressed enthusiasm for more events of this type, seeing it as a winning formula for developing the programme leaders of the future.

The programme leader track scheme is open to researchers who have shown the potential to lead and sustain independent research programmes of international standing. The scheme offers participants the opportunity to combine further development of their research programme with structured personal development, including performance management and training in transferable skills. For further details visit www.mrc.ac.uk/about-careers/about-careers_with_mrc.htm.
Research ethics – the global perspective

Medical research in the developing world can pose particular ethical challenges. The MRC and other European funders are working with their African research partners to address the key issues...

6th Global Forum on Bioethics in Research

March 2005 saw 150 people from more than 40 nations gathering together in Blantyre, Malawi, to discuss one of the burning ethical questions arising from research in developing countries – what happens when the research is over? This 6th Global Forum on Bioethics in Research was, as in previous years, designed to encourage free and frank debate, with emphasis on the perspectives of developing countries. Participants examined the ethical issues surrounding post-research access to drugs, devices and vaccines for study volunteers and their wider communities, focusing on the roles and responsibilities of investigators, research sponsors and research ethics committees (RECs).

A series of thought-provoking introductory lectures, followed by case studies and breakout groups, ensured that the debate was challenging, lively and wide-ranging. So what should happen when the research is over? There are no easy answers but the consensus was that plans to make the benefits of research available to participants and local communities must be in place before the research begins and revisited as it progresses. Researchers cannot implement the results of their research in isolation; they need to work with policymakers. Furthermore, they need help to do so, as few researchers are natural negotiators. Sustainable local capacity-building and improved research facilities are of key importance to developing countries. And the role of RECs has expanded vastly. They now frequently face applications ranging from genetic risk factors to huge epidemiological surveys. In developing societies it is especially important to provide opportunities for RECs to share experiences and learn from one another. Ongoing training of REC members is also essential. Delegates were asked to take these messages back home and urged to continue working towards solutions appropriate for their countries.

Forum facts

The Global Forum on Bioethics in Research is an informal partnership founded by a number of organisations with a shared interest in the ethical conduct of research involving human beings in developing countries. It meets annually to debate a chosen topic and the great majority of participants come from developing countries; other Forum partners contribute funds to enable these participants to attend.

The MRC has a long-standing investment in medical research in Africa through its units in The Gambia and Uganda. It was one of the Forum’s founding partners in 1999, along with the Fogarty International Center and other institutes of the US National Institutes of Health, the World Health Organization, the South African MRC, and the Pan American Health Organization. Over the years many other organisations have joined, including the Wellcome Trust – the main organisers of the 6th Forum – the Rockefeller Foundation, Institut National de la Santé et de la Recherche Médicale (France), the European Commission, the European and Developing Countries Clinical Trials Partnership, the Council on Health Research for Development, and the Aga Khan University (Pakistan).

African countries launch ethics network

In April the MRC Laboratories in The Gambia hosted the first meeting of Networking for Ethics on Biomedical Research in Africa (NEBRA). A collaboration of West African countries, NEBRA is funded by the European Commission under its Science and Society programme. It involves four co-ordinating countries – Benin, The Gambia, Gabon and Mali, and 11 participating countries – Burkina Faso, Cameroon, Central African Republic, The Congo, Côte d’Ivoire, the Democratic
NEBRA came about because these African countries wanted to improve their ethics review procedures to fulfil international requirements and so attract more clinical research addressing their own health priorities. Together they approached the European Commission for support, along with the MRC, the World Health Organization, the University Eberhard Karls (Tübingen, Germany) and project co-ordinators the French Institut National de la Santé et de la Recherche Médicale.

NEBRA’s primary aims are to:
- Draw up an inventory of the people and resources involved in research ethics review in West Africa.
- Acquire a real understanding of their needs and gaps in the ethics review infrastructure.
- Increase understanding of the particular ethical issues raised by research in the area.
- Develop a strategy for improving ethics review capacity in West Africa.
- Strengthen networking to ensure the dissemination of results and continued development of NEBRA.

At the plenary meeting in April, representatives of the 15 member countries discussed and agreed the first stage of the NEBRA initiative. This will involve each country using interviews and a questionnaire survey to identify its existing ethics review capacity and needs. African and European experts with a particular interest in the social science issues raised, and four trained African interviewers, worked with NEBRA on developing the questionnaire, which is now being piloted in The Gambia and Mali.

As the current Framework Programme (FP6) draws to a close, the fourth and final round of calls for Thematic Priority I – Life Sciences, Genomics and Biotechnology for Health has recently been announced. The call, which closes in November 2005, has a budget of €362m, with a further €171m allocated to proposals led by small and medium-sized enterprises (SMEs). Details of the topic areas for which proposals are invited are available from the EU’s CORDIS website.

Help with the application process
The MRC and the Department of Trade and Industry act as the UK National Contact Point for Thematic Priority I (TP1). They can assist on all aspects of the application process, including guidance on application procedures, one to one meetings, proposal screening, help in finding partners and identifying potential sources of funding to support submission. The MRC, for instance, provides funding to support the submission of proposals involving MRC units, institutes, centres and research professors, which can cover networking and planning meetings, proposal writing, business plans, etc. The closing date for such funding is 29 July 2005 – for further information and an application form, contact fp6@headoffice.mrc.ac.uk

FP7 update
In April 2005 the European Commission published plans for the next Framework Programme, FP7. The plans show a significant extension in scale and ambition from previous programmes, with a budget of €73bn for the seven years from 2006 to 2013 to support four areas of activity: Co-operation, People, Capacities and Ideas. These proposals herald exciting opportunities for the development of research across Europe.

Key features of FP7 include a broadening of thematic areas; an expanded Health theme with a greater emphasis on translational research, new therapies and healthcare systems. Other promising areas for the UK biomedical community include diet and nutrition, environmental factors relating to health and diagnostics and applications. There are also significant opportunities for mobility and career development under the People area and for basic research delivered through a European Research Council under Ideas.

Throughout 2005 the MRC will continue to contribute to the development of FP7 through Research Councils UK, the Government and directly to the European Commission. And to help ensure that the views of the UK biomedical research community are fully represented, the MRC is asking that its scientists engage in Government and EU consultations on the development of FP7 wherever possible.

Find out more online
Global Forum meeting reports: www.gfbronline.com
Programme of the 6th Forum: www.wellcome.ac.uk/doc_ WTD003178.html
**Smoke gets in your eyes**

Age-related macular degeneration (AMD) is a condition in which the retina’s light-capturing cells are gradually destroyed; it is the most common cause of blindness in the UK. Research led by Professor Astrid Fletcher has now shown that smoking doubles the risk of AMD and may account for almost 30,000 cases in the UK. The population-based study at the London School of Hygiene and Tropical Medicine assessed over 14,000 elderly people from 49 general practices. The participants had detailed eye tests and were asked about their past and present smoking habits. After taking into account other possible risk factors, the results showed that current smokers were twice as likely as non-smokers to be visually impaired because of AMD. Better news was that people who stopped smoking more than 20 years earlier were not at risk. By using current estimates of the number of people in the UK who are blind or partially sighted as a result of AMD, the researchers calculated that smoking was likely to have caused 28,000 cases. Professor Fletcher commented: “An increased risk of AMD is yet another reason for people to stop smoking and for governments to develop public health campaigns against this hazard.”

*Br J Ophthalmol 89: 550-553*

**Deaf mice hold hearing clues**

MRC and University of Hong Kong scientists have pinpointed the gene responsible for sensory development in the inner ear. Their discovery may lead to major advances in developing treatments for the deaf and severely hearing impaired. The team studied two types of mice – one completely deaf and the other with severe hearing impairment – and compared the gene activity of sensory and associated supporting cells. In the deaf mice, with no sensory hair cells and severe inner ear malformation, Sox2 gene activity was absent. However, in the hearing impaired mice, which had abnormal inner ear development with disorganised and few sensory cells, expression of Sox2 was reduced, but present. Several genes are implicated in making functional hair cells, but Sox2 is the first gene to be identified that initiates development of the entire sensory system, comprising hair and supporting cells. Professor Robin Lovell-Badge of the MRC’s National Institute for Medical Research said: “To develop treatments for deafness in the future, it is now necessary to look at whether the Sox2 gene can play a part in bringing damaged sensory hair cells back to life or in triggering new sensory cells to grow for use in potential stem cell therapy.”

*Nature 434: 1031-1035*

**Something in the air**

Air pollution thickens the blood and increases the likelihood of inflammation. These findings by University of Edinburgh researchers may help to explain why polluted air is linked to worsening respiratory problems and an increased risk of heart attacks and stroke. Funded by the MRC, the British Lung Foundation and the Cold Foundation, the study focused on the effect that inhaling ultra-fine pollutants has on cell function. Professor William MacNee and colleagues tested the inflammatory and blood clotting responses of human macrophages, lung cells and umbilical cord cells after exposure to these tiny particles. They found that levels of blood-clotting factors were raised in most of the cell types, the death rate of immune cells increased significantly, and inflammatory activity was boosted. One mechanism by which the particles might lead to these cardiovascular effects is by entering the bloodstream through the lungs. Here, their effects on macrophages could lead to plaque build-up on artery walls. If these plaques rupture they can lead to blood clots – an effect that is enhanced by the particles – which can then trigger a heart attack or stroke.

*Occup Environ Med 65: 164-171*

**Benefits of drug reviews questionable**

Providing home-based medication review for elderly people may increase hospital admissions, shows a study at the University of East Anglia. These unexpected findings raise questions about NHS recommendations to introduce regular medication reviews into primary care. MRC fellow Dr Richard Holland and colleagues identified 872 elderly patients discharged from hospital after an emergency admission. Half of the patients received two home visits by a pharmacist, while the other half continued with usual care. The pharmacists educated the patients and carers about their drugs, removed out-of-date medicines, reported potential side effects and drug interactions to the general practitioner (GP), and informed the local pharmacist if a compliance aid was needed. During six months, there were 30 per cent more hospital admissions among patients visited by the pharmacists than patients who were not. Having a home-based medication review also led to a 40 per cent increase in GP home visits and seemed to worsen patients’ quality of life. The reasons for these counterintuitive results were not clear, but they may have been due to patients understanding their conditions better and so seeking more help, or from them taking their prescribed medications correctly, leading to more complications from drug interactions and reactions. In addition, the intervention may simply have increased anxiety and dependence on health services. This work, which suggests the need for more effective ways to review medication, has crucial implications for the national service framework for older people.

*BMJ 330: 293*
**Vaccine saves young lives in rural Africa**

Pneumococcal pneumonia and meningitis cause about 1.6 million deaths each year, mostly in developing countries. A large MRC trial has shown that vaccinating children against the bacterium that causes deadly pneumonia, meningitis and sepsis could save the lives of up to a million children a year. Led by Professor Felicity Cutts, with colleagues from the London School of Hygiene and Tropical Medicine, the four-year randomised study vaccinated over 17,000 children in the rural parts of The Gambia. While the vaccine is known to prevent invasive pneumococcal disease in the developed world, this was the first to study its effectiveness in rural Africa, where child mortality is high and access to healthcare is limited. The results showed that the conjugate pneumococcal vaccine reduced overall child mortality by 16 per cent. In addition, compared with children who were not vaccinated, those who received the vaccine had 15 per cent fewer hospitalisations and 37 per cent fewer cases of X-ray-confirmed pneumonia. The study is the first proof that the vaccine prevents deaths. “Vaccination can prevent many of the serious infections caused by pneumococcus even in a rural African setting,” said Professor Cutts, “This is great news for children and parents in rural areas everywhere.”

Lancet 365: 1113-1114

**Turning to the left**

Some children with attention deficit hyperactivity disorder (ADHD) can behave as if the left side of the world has disappeared. Work at the MRC Cognition and Brain Sciences Unit in Cambridge shows that this phenomenon of “left neglect” is more common in children than previously thought. Since left neglect is not routinely tested for by clinical services and it is not apparent to the children or parents, the condition often goes unnoticed. Children can have problems reading, as they ignore the first letters of words, yet the cause of this problem is not always picked up and may be attributed to dyslexia. Dr Tom Manly and colleagues found that children with ADHD particularly stop noticing things to their left when doing unstimulating tasks. Dr Manly said, “The right side of the brain seems to be heavily involved in keeping us awake and alert, particularly when we are bored. Because the right side is interested in what is going on to the left, and vice versa, as this alertness declines over time or with boredom, it takes some of our awareness of the left with it. Children with ADHD appear to reach this point more quickly than other children.” Routine assessment of children’s ability to attend to the left and right could be helpful to identify children with ADHD and other learning difficulties.


**Minimising stroke brain damage**

A stroke is caused by an abrupt interruption of the blood flow to the brain. The oxygen-deprived brain cells die instantly and release substances that can kill surrounding cells and so cause brain damage. For many years, researchers have sought ways of preventing the spreading of this lethal effect on nearby cells. It was known that the excessive release of the neurotransmitter glutamate following nerve cell death triggers a flood of calcium ions into surrounding cells, which are ultimately killed by increased calcium levels. However, the process itself was not fully understood. A team at the MRC’s Toxicology Unit, with researchers in British and Italian universities, have revealed one of the key mechanisms involved. Led by Professor Pierluigi Nicotera, the group looked at what causes calcium overload in rat brains during stroke. They discovered that the initial calcium influx activates proteases known as calpains. These enzymes break down the cell membrane proteins that would normally pump calcium out of the cell – revealing that the fault lies in the mechanism to remove calcium ions. “These findings may explain why stroke therapies aimed solely at blocking the entry of calcium into nerve cells have been unsuccessful,” explained Professor Nicotera. “The research identifies novel targets for stroke and other neurodegenerative diseases, and may lead to new drugs to treat these conditions successfully.”

Cell 120: 275-285
An engaging week of science

A key focus of the MRC’s mission is to promote public engagement with medical research. But how can more MRC scientists become involved in communicating their work? National Science Week in March showcased a selection of effective and adaptable approaches.

**Brainy questions**
Who are “psycho people with medicines, curly haired and wearing glasses and labcoats”? Scientists, as perceived by groups of Manchester school children. And who are “everyday people who find out different things and make a change to the world”? Scientists, as perceived by the same groups after collaborating with MRC researchers to devise and perform an interactive event on brain sciences at the Trafford shopping centre. The project, led by Dr Stuart Allan of Manchester University, was one of many events organised by MRC scientists as part of National Science Week – a global celebration to increase public awareness of science.

In Cambridge, there were talks on diet and interactive exhibitions on cancer diagnostics at the MRC Cognition and Brain Sciences Unit open evening, Exploring the Brain and Mind. An open day at the Institute of Psychiatry in London attracted 180 people; in Oxford and Reading, 500 primary school pupils participated in art workshops on hearing, movement and micro-organisms; and about 50 children and adults prepared DNA, looked at cells under a microscope and heard about how the brain works at a London event exploring life sciences research. Post-doctoral and PhD students at the MRC Radiation and Genome Stability Unit at Harwell presented the reality of life in the laboratory to 25 A-level students. Together they worked on practical experiments and held discussion groups on genetic engineering. The MRC Human Reproductive Sciences Unit and the MRC Human Genetics Unit in Edinburgh fielded an impressive team of enthusiastic PhD students to engage family audiences in two exhibitions at the Edinburgh International Science Festival.

**Demystifying science**
So what are the reasons and rewards for this impressive focus on public engagement? In his Edinburgh Medal address, Whose Science is it Anyway, MRC Chief Executive Professor Colin Blakemore set it in the context of “an inexorable, irreversible and admirable trend to openness,” but with the caution that, “transparency should generate more trust than suspicion.” In fact, the recent MORI survey Science in Society, for the Department of Trade and Industry, indicates that trust in scientists remains high at around 70 per cent – a slight increase since 2003. Colin said that, “the real key to public ownership of science is that scientists should be more visible and more willing to talk to principal stakeholders – ordinary people who will benefit or suffer from their actions.”

This was clearly the case when Professor Simon Lovestone used an MRC Science Week grant to fund an open day on Alzheimer’s research at the Institute of Psychiatry. The audience was drawn from the local community and organisations, such as the University of the Third Age, and charities, and many had a personal interest in the disease. Staff gave guided tours of the laboratory and demonstrated real experiments at 16 research stations. The day ended with a lively panel session chaired by Dr Raj Persaud.

**Present your science to Parliament**
Over 250 young researchers won places to present posters on their research at the National Science Week Parliamentary event. This year, winners of the top two awards at the Biosciences evening reception were MRC-funded scientists. Dr Rachel Batterham, a special fellow at University College London, was awarded the 2005 Mendel Medal, and runner-up Katherine Sharrocks, a research student at Oxford University, won the 2005 De Montfort Medal. To find out more about the annual event, see www.setforeurope.org

**MRC Science Roadshow**
Art workshops: connecting young people to science
Pupils at the Hill Primary School, Caversham, Reading, having fun during an art workshop based on topics in the National Curriculum linked to MRC-funded research. Artist and scientist Lizzie Burns helped the children create artworks based on hearing, movement and micro-organisms.
The event also engaged a younger audience. In collaboration with three local schools, A-level students worked alongside researchers on a pilot experiment to test a series of compounds on fruitflies. Their reward was some interesting results, with findings published in a letter in *PLoS Biology* – an exciting outcome for the students contemplating a career in science. One of the researchers commented, “twelve pairs of hands and eager minds enabled gathering data that would have required some weeks of research time.”

**Engaging opportunities**

So what else motivates busy researchers to take their science to the public? The opportunity to change perceptions and attitudes to science is frequently reported as one of the most rewarding aspects. For Lizzie Burns (see box) it invigorates her own excitement with science, “There’s always someone who opens my eyes and makes me see science from another angle.”

These activities reflect just some of the opportunities throughout the year for MRC scientists to engage with the public. And recognising that there are barriers to taking part, the MRC is looking at ways of enabling more researchers to be involved in the future – from sharing good practice to increasing financial incentives.

**Events diary**

**BA Festival of Science**

The MRC will once again be taking part in the BA Science Festival at Trinity College Dublin, with a number of stimulating events. The Medical Sciences Section presents a day of talks on 7 September on the theme *Viruses: the Deadly Enemy?* The MRC will be organising hands-on activities in the festival’s drop-in zone, which aim to attract hundreds of visitors of all ages. Dr Lizzie Burns is holding an art/science workshop, *Build Your Own Virus*, and the resulting artworks will be judged in a competition by Medical Sciences President, Professor Luke O’Neill.

The BA Festival of Science 2005 takes place in Dublin during 3 to 10 September. More details are available from www.the-ba.net/FestivalofScience

**The Battle of Ideas**

The MRC is one of the sponsors of the Battle of Ideas – a inter-disciplinary event at which hundreds of people will have the opportunity to get to grips with and discuss the key ideas of our time. This is a new initiative from the Institute of Ideas as part of its commitment to robust and open debate.

Themed discussion strands on the battle for education, community, culture, medicine and international relations and the battle of the books will run alongside salons, “in conversation…” events, films and keynote debates on different aspects of the future.

The event will be held on 29/30 October at the Royal College of Art, London. For more information, visit: www.instituteofideas.com/events/battle2005.html

**Find out more online**

Information on how to get started and keep going.

**Funding**

Research Councils UK (RCUK) Science Week grants – see details on the website www.rcuk.ac.uk from August.

**Publications**

RCUK Dialogue with the Public: Practical guidelines

www.rcuk.ac.uk/guidelines/dialogue/

RCUK Practical Guidelines: Evaluation

A guide for anyone wanting to talk with the public about science issues.

www.rcuk.ac.uk/documents/evaluationguide.pdf

**Contacts**

See MRC Science Week grant holders at: www.mrc.ac.uk/public-interest/public-events/public-events_science_week_2005.htm

For advice and information, email: fatima.de-abreu@headoffice.mrc.ac.uk
MRC people

Seven MRC scientists have been elected Fellows of The Royal Society in recognition of their medical achievements and scientific excellence: Professor Douglas Higgs (top), Director of the MRC Molecular Haematology Unit, Professor John Collinge (middle), Director of the MRC Prion Unit, Professor Trevor Robbins (bottom), Director of the MRC Cambridge Centre for Behavioural and Clinical Neuroscience, Dr David Spiegelhalter, senior scientist of the MRC Biostatistics Unit, Dr Philip Evans of the MRC Laboratory of Molecular Biology, and MRC-funded scientists Professor Uta Frith and Professor Nicholas Proudfoot.

Professor Wendy Bickmore, senior scientist at the MRC Human Genetics Unit, has been awarded double honours, being elected to the Fellowship of the Royal Society of Edinburgh and to the Fellowship of the Academy of Medical Sciences.

The Academy of Medical Sciences also bestowed Fellowships on Professor Janet Darbyshire, Director of the MRC Clinical Trials Unit, Dr Anne O’Garra and Dr Briggita Stockinger, of the MRC National Institute for Medical Research, and MRC-funded researchers Professor Jon Driver, Dr Roger Keynes and Professor Hugh Perry.

The Queen’s birthday honours rewarded two leading MRC scientists for their contributions to medical research. Nancy Rothwell (left), MRC Research Professor at the University of Manchester, has been made Dame Commander of the Order of the British Empire, and Ian MacLennan (top right), Professor Emeritus of Immunology and Deputy Head of the MRC Centre of Immune Regulation, University of Birmingham, was made a Commander of the Order of the British Empire. They were joined by Professor Alan Jackson CBE, former member of the MRC’s Physiological Medicine and Infections Board, and Dr Mac Armstrong, a previous member of the MRC’s Council who was made a Companion of the Order of the Bath.

Professor Michael Alpers of the MRC’s Prion Unit was appointed as an Officer of the Order of Australia in January in recognition of a lifetime of service to tropical medicine and public health. Professor Alpers was previously director of the Papua New Guinea Institute for Medical Research and has dedicated his career to researching tropical diseases.

Professor Colin Blakemore, Chief Executive of the MRC, was awarded the 2005 Edinburgh Medal by the City of Edinburgh Council at the Edinburgh International Science Festival in April. This annual award is for outstanding scientific achievements that are judged to have made a significant contribution to the understanding and well-being of humanity.

The UK chapter of the International League Against Epilepsy has presented its Lifetime Services to People with Epilepsy Award for 2005 to Dr Tony Johnson, of the MRC Biostatistics Unit. Dr Johnson received the award for his lifelong statistical contributions to research into epilepsy in the UK across observational and randomised studies and for his support in the education of generations of clinicians in clinical epidemiology and statistics.

Jonathan Bird, MRC-funded student at University College London, has won the first Pauline Ashley Prize for his research into the repair and regeneration of the avian inner ear. Funded by the charity Defeating Deafness, the award is aimed at encouraging young scientists to undertake research into hearing conditions.