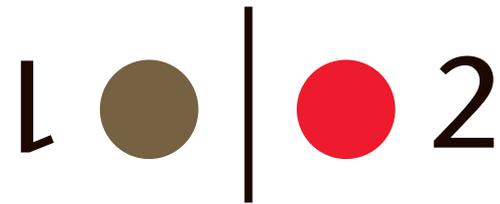


MRC annual report and accounts



Preface

The Medical Research Council (MRC) submits this report on its activities from 1 April 2001 to 31 March 2002, in accordance with Schedule I to the Science and Technology Act 1965. The MRC wishes to take this opportunity to pay tribute to the efforts of its own staff, and of all other staff it supports. It also expresses thanks for all the advice and assistance from people consulted individually, and from members of boards, committees and working parties. This report, and further details about all MRC's work, can be found on its website – www.mrc.ac.uk

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Chairman

Professor Sir George Radda
Chief Executive

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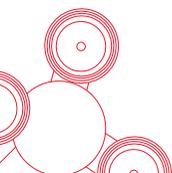
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Mission

MRC's purpose is to:

- Encourage and support high quality research with the aim of maintaining and improving human health.
- Train skilled people, and to advance and disseminate knowledge and technology with the aim of meeting national needs in terms of health, quality of life and economic competitiveness.
- Promote public engagement with medical research.

MRC Royal Charter (1994)

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A selection of outstanding achievements by MRC scientists both during the year and in the past are highlighted in the Annual Review that accompanies this Report. Please visit MRC's website – www.mrc.ac.uk – for more detailed information about all MRC's activities, and for electronic versions of all MRC publications, including this Annual Report.

Executive summary

Support for research

- MRC's estimated gross research spend in 2001/02 was £403.2m
- MRC made new awards totalling £123m for research in universities and teaching hospitals
- One new unit and three new research centres opened

Partnerships

- MRC is hosting the new National Cancer Research Institute, which brings together nine cancer charities, two other research councils and all four UK Health Departments
- MRC is taking the lead, with the Department of Health, the Human Fertilisation and Embryology Authority, the Medicines Control Agency, other research councils and relevant charities in developing a national stem cell initiative
- MRC participated with the other research councils in preparatory work to establish RCUK

MRC Technology

- Exploitation income in 2001/02 was £11.7m
- Fifty new patent applications were filed and 42 new licensing agreements completed
- The National Audit Office reported that MRC has been particularly successful in building on intellectual property arising from its research

Good research practice

- MRC established a Centre for Best Practice for Animals in Research
- MRC published Guidelines for Human Samples used in Medical Research
- MRC was the main organiser of the third Annual Global Forum on Bioethics

Communication

- MRC launched a new look website with improved content and navigation
- MRC and the Wellcome Trust commissioned a consultation on public attitudes to the UK biobank project
- A lay consumer group contributed to MRC's review of the causes and epidemiology of autism

People

- The MRC employs 3,610 full time and 324 part time staff
- The number of women in senior scientific and support roles is increasing
- MRC's International Appointments Initiative (IAI) attracted six world class scientists from abroad to take up senior positions in UK universities and MRC research centres, bringing the total number of IAI appointments so far to 16.

Finance

- MRC's Parliamentary grant in aid for 2001/02 was £345.3m in cash terms
- MRC's total expenditure for 2001/02 was £412.9m

Foreword

From the Chairman and Chief Executive

The activities and events highlighted in the 2001/2002 Annual Report provide the latest snapshot of ongoing scientific progress that has spanned nearly 90 years. The cutting edge research and exciting new initiatives illustrated here are the result of both successful partnerships and individual vision – the work of men and women whose creativity and foresight are helping address today's major health challenges.

The year was sadly marked by the deaths of two such giants, Nobel laureates Max Perutz and César Milstein. Max and César will be greatly missed by their many friends and colleagues at the MRC Laboratory of Molecular Biology, Cambridge, and throughout the world. Their work laid foundations that support research to this day and beyond, and leaves a rich legacy to the new generations of young scientists who they inspired.

During the year MRC has continued to work in partnership with government, the other research councils, research charities, industry and other stakeholders, both in the UK and internationally, to maintain the UK's reputation for world leading biomedical research. New developments in support of cancer research, stem cell research, and the establishment of the UK biobank project, are a few of the major initiatives that demonstrate this commitment.

The National Cancer Research Institute (NCRI), was launched in April 2001. NCRI is hosted by the MRC, and brings together nine cancer charities, two other

research councils and all four UK health departments to provide a strategic focus for all aspects of UK cancer research. A new MRC Cancer Cell Unit, set up with the help of a £5m donation from Hutchison Whampoa Ltd., opened in April. The Unit, which is part of the Hutchison/MRC Research Centre at Addenbrookes, Cambridge – a collaboration between MRC, Cambridge University and the Cancer Research Campaign – will work with the university's Department of Clinical Oncology to translate basic research into new preventative measures, diagnostic tests, and cancer treatments. Two new prostate cancer research centres also opened, and joint funding to build a £22m molecular imaging centre in Manchester for cancer treatment research was announced.

MRC played a leading role in informing changes to UK legislation governing research on human embryonic stem cells that have set the stage for the UK to become the world leader in research into developing stem cell therapies. MRC is taking the lead in developing a national stem cell initiative with partners including the Department of Health (DH), the Human Fertilisation and Embryology Authority, the Medicines Control Agency, other research councils and charities. In particular, MRC is taking forward the Government's recommendation to establish a national stem cell bank.

The MRC, working with the Wellcome Trust and DH, has also made a significant contribution to planning for the UK biobank project, a new national resource for the study of genetics, the



environment and health. The project's scientific protocol, operational structure, and ethical framework have been informed by input from an expert working group – chaired by Professor Tom Meade, Director of the MRC Epidemiology and Medical Care Unit – extensive public consultation, and rigorous peer review by international scientific experts.

We look forward to reporting on the progress of the UK biobank project, and other initiatives in next year's Annual Report. While we exploit existing opportunities and meet current challenges, we will continue to prepare for future developments. MRC's near 90 year legacy of achievement in biomedical research provides a firm foundation on which to base our future activities.

Support for research

Comprehensive Spending Review

Recent progress in the MRC priority areas of the post genome challenge and the health of the public, which were initiated under the 1998 Comprehensive Spending Review.

| Post genome challenge | Health of the public |
|---|---|
| Advisory Committee on Scientific Advances in Genetics established | Reviews of autism and of fetal pain completed. Reviews of fluoride and health and of nicotine replacement therapy underway |
| MRC and the Centre National de la Recherche Scientifique (CRNS, France) agreed to coordinate the development of, and access to, mouse gene arrays | National Collaboration on Ageing Research established by MRC and other research councils to encourage new research approaches |
| Two Engineering and Physical Sciences Research Council (EPSRC)/MRC/Biotechnology and Biological Sciences Research Council (BBSRC) interdisciplinary research collaborations funded in nanotechnology (Department of Trade and Industry and Ministry of Defence also involved) | Cooperative Group Development Grant for sickle cell research awarded to Kings College London and the Tropical Medical Research Institute, Jamaica |
| Fourteen Discipline Hopping Awards funded under the second call for proposals (joint with EPSRC) to encourage established physical sciences researchers to apply their expertise to life sciences problems | The Phase I HIV vaccine trials in Oxford and Nairobi have completed recruitment and volunteers are in annual follow up. The International AIDS Vaccine Initiative is funding Phase II trials |
| Call for proposals issued to establish a network of human DNA sample banks | Fifteen projects funded under the joint LINK programme on mobile telecommunications and health |
| Joint MRC/National Institutes of Health (USA) workshop held in computational biology | Clinical Trials for Tomorrow Review initiated |
| Meeting held to discuss future goals and funding of the International Mouse Mutagenesis Consortium | Twenty two projects funded jointly with BBSRC, Department for Environment, Food and Rural Affairs, the Department of Health (DH) and Food Standards Agency on diagnostics for transmissible spongiform encephalopathies |

Spending Review 2000

Selected examples of initiatives supported by additional funds that were awarded to the research councils by SR2000 to target the priority areas of genomics, basic technology and e-science

| Genomics | Basic technology | E-science |
|---|---|---|
| <p>Participating councils were allocated funds to address specific problems within their remits</p> <p>Cross Council Genomics Coordinating Committee established. Consultation with key scientists nominated by each Council and also with the Wellcome Trust</p> | <p>Programme and funding managed by EPSRC on behalf of all councils</p> <p>Strategy Advisory Group, Cross Council Steering Group, and scientific panels to interview shortlisted applicants established</p> | <p>Funding for generic infrastructure problems managed by EPSRC on behalf of all councils. Each council also received funds to address specific problems within its remit</p> <p>Director of e-science appointed. Scientific Advisory Committee, Technical Advisory Committee, and Cross Council Operations Group established</p> |
| <p>MRC funding approved for a new national mouse facility (the Mary Lyon Centre) at Harwell.</p> | <p>First Cross Council call for proposals launched May 2001; eight consortia funded at a cost of £20m</p> | <p>MRC funding approved for four e-science research proposals, two jointly with other councils</p> |
| <p>MRC funding approved for a high throughput protein production facility in Oxford</p> | <p>Second Cross Council call for proposals launched March 2002</p> | <p>MRC call for e-science proposals in cancer or brain science; results known in 2002</p> |
| <p>Workshops organised on heart failure and on a consortium approach to cardiovascular research. Funding awarded for international appointments and for new UK/USA collaborations</p> | <p>MRC contributed towards EPSRC regional workshops to publicise the call and organised two more workshops in Oxford and Cambridge</p> | <p>Plans for health informatics workshop with other research councils, DH and DTI</p> |
| <p>New generation of microarrays based on oligonucleotide probes being developed jointly with CNRS</p> | | <p>MRC Human Genome Unit (Edinburgh) mouse atlas selected as a core e-science demonstrator project</p> |

Supporting research excellence in universities

MRC continues to provide support for a varied research portfolio in the University sector through a range of investigator initiated grant schemes.

Details of all grant schemes and of current awards are available on the MRC website – www.mrc.ac.uk.

In 2001, MRC made new awards totalling £123m for research in universities and teaching hospitals.

Centre Grants

MRC Centre Grants aim to support multidisciplinary research centred environments in partnership with universities. They involve significant investments by both the MRC and the host universities with full time scientific leadership.

In December 2001, MRC awarded a new Centre Grant, which includes the MRC Cognition and Brain Sciences Unit and the Wolfson Brain Imaging Centre, to Cambridge University. Professor Trevor Robbins will direct the Centre and will bring together researchers in basic and clinical neuroscience to explore the functions of defined brain systems and networks.

The MRC Centre for Developmental Neurobiology at King's College London, directed by Professor Andrew Lumsden, held an inaugural conference in September 2001 attended by national and international experts in the field.

In November 2001, Sir George Radda formally opened the MRC/University Bristol Centre for Synaptic Plasticity, which is directed by Professor Graham Collingridge.

Cooperative Group Grants (COGGs)

COGGs draw together researchers to improve the overall output of research and enhance individual research projects (supported by Component Grants where funded by MRC).

In 2001 the MRC set up 19 new COGGs throughout the UK, bringing the total number of awards to 145.

Many COGGs link basic and clinical research, and bring multidisciplinary approaches to major human health problems. Others are configured to underpin wider research initiatives; for example, a new COGG has recently been awarded to the Wolfson Brain Imaging Centre in Cambridge to

underpin MRC's major neuroscience research programmes in Cambridge.

Career Establishment Grants

Career Establishment Grants are awarded for five years to recently appointed clinical and non-clinical university scientists. The scheme aims to help them establish themselves as independent investigators capable of winning further support in open competition. MRC made 11 awards in 2001.

Programme Grants

Programme Grants remain MRC's principal mechanism for supporting both focused and more broadly based long term research programmes. MRC made 37 new awards in 2001.

Discipline Hopping Awards

MRC made a second round of Discipline Hopping Awards during the year to encourage established physical sciences researchers to apply their expertise to life sciences problems. The awards, of up to £50,000 for a one year period, are aimed at pump priming new interdisciplinary collaborations. The Engineering and Physical

Sciences Research Council (EPSRC) jointly funded the programme, enabling 14 projects across physics, chemistry and engineering to be supported. A new form of Institutional Discipline Bridging Awards has been launched with EPSRC.

Other schemes

Following a review by the Monitoring and Evaluating Steering Group (chaired by Sir Anthony Cleaver), it was agreed that both the MRC Innovation Grants scheme and the Realising Our Potential Awards scheme should be terminated; discussions are underway about options for merging and relaunching these schemes.

Joint Research Equipment Initiative (JREI). Twenty six awards, totalling £1.5m, were made under the JREI in 2000/01.

Science Research Investment Fund (SRIF). The Government made £1bn, including £225m from the Wellcome Trust, available for SRIF.

Clinical research

Visits to University Medical Schools by MRC officials continued during 2001 with the aim of increasing the number

and quality of clinical research proposals submitted to MRC. Efforts were also continued to promote the potential of Career Establishment Grants in establishing clinical researchers, of COGGs in developing basic research that can lead to clinical application, and of the possible role of MRC units in supporting good clinical research.

MRC research centres

MRC Cell Biology Unit

A new MRC Cell Biology Unit, directed by Professor Alan Hall, was established on the 1st April 2001. MRC Council approved Professor Hall's proposals for 2001–2006 in July 2001.

MRC Cognition and Brain Sciences Unit

In September 2001, Sir George Radda opened the new West wing of the MRC Cognition and Brain Sciences Unit in Cambridge. The new building provides extensive laboratory space for behavioural testing plus excellent lecture and seminar facilities.

MRC Environmental Epidemiology Unit

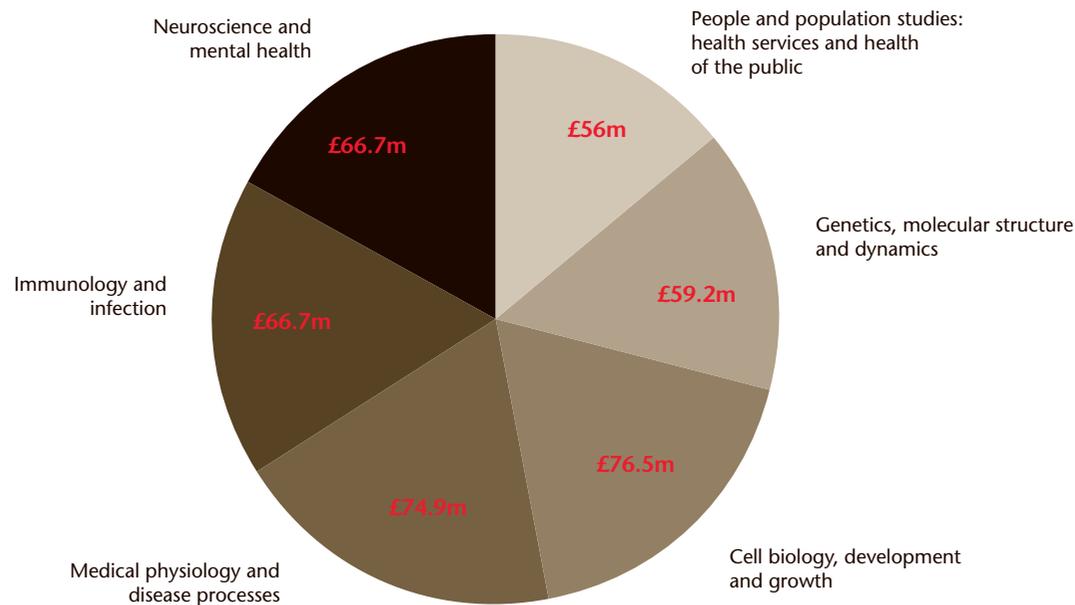
MRC has started to search for a leading international medical scientist to succeed Professor David Barker as Director of the MRC's Environmental Epidemiology Unit following his retirement in 2003. The new Director will be expected to forge and lead new research in clinical epidemiology by fostering scientific collaborations and integrating new scientific approaches, and to capitalise on MRC's substantial previous investment in the Unit's cohorts.

MRC UK Human Genome Mapping Project Resource Centre (HGMP-RC) and MRC Mammalian Genetics Unit (MGU)

The HGMP-RC microarray programme, a collaboration between HGMP-RC and MGU, is now distributing human and mouse arrays to the academic community free of charge. The Resource Centre distributed more than 2000 arrays to over 50 UK groups last year.

In October 2001, an international consortium involving scientists from HGMP-RC, US Department of Energy's Joint Genome Institute and the Singapore Biomedical Research Council's Institute

Spend by scientific area (estimated gross spend in 2001/02)



for Molecular and Cell Biology finished the first draft of the pufferfish (*Fugu rubripes*) genome.

MRC Human Immunology Unit (HIU)

A large part of HIU's work involves research into ways of vaccinating against HIV. Phase I trials in Oxford and Nairobi of a vaccine designed by the Unit have completed recruitment and the trial volunteers are now being monitored regularly. Phase II trials in the UK and Kenya are now planned, with additional funding from the International AIDS Vaccine Initiative.

MRC Institute of Hearing Research

Professor David Moore was appointed as Unit Director in January 2002, and will take up his appointment in October 2002. His research interests focus on auditory experimental psychology. Professor Moore will succeed Professor Mark Haggard, who is leaving after 25 years to pursue his research interests in Cambridge.

MRC Molecular Haematology Unit

Funding has been increased for the Unit's research into the control of expression of the globin gene and how variations in control relate to inherited and acquired disorders of erythropoiesis – the formation of effective red blood cells.

MRC Prion Unit

The MRC Prion Unit, directed by Professor John Collinge, has now moved to University College London (Institute of Neurology). Dr Sebastian Brandner, a neuropathologist from Zurich, has recently been recruited to the Unit through the International Appointments Initiative. The Unit has an important role in training and has been awarded three new clinical training posts (one 3 year appointment per year) which will operate like fellowships.

MRC Resource Centre for Human Nutrition Research

Ann Campbell, MP for Cambridge, officially opened the Resource Centre's new building, the Elsie Widdowson Laboratory, in Cambridge in February 2002.

MRC Toxicology Unit

Following the appointment of Professor Pierluigi Nicotera as the new Director, the Unit's proposals

for future research were supported by the Board and funded by MRC Council in December 2001.

Unit quinquennial reviews

MRC's Anatomical Neuropharmacology Unit, Immunochemistry Unit, Virology Unit, Laboratory of Molecular Biology (Institute quinquennial review) and Clinical Trials Service Unit were all reviewed during the year. Most of their programmes were judged to reach the highest standards in science.

Partnerships

Partnership working with a variety of other organisations, both bilaterally and in consortia, is key to MRC's strategy.

This section highlights both new and ongoing partnerships involving other research councils, government departments, and research charities. Industrial partnerships are covered in the MRC Technology section that follows.

Developing the research agenda

Ageing research. The councils have appointed Professor Alan Walker (Sheffield) to take forward the National Collaboration on Ageing Research. A launch conference, opened by Lord Hunt, took place in Birmingham in November 2001. The Funders Forum for Research on Ageing and Older People held its annual meeting in September 2001.

Autism. MRC reviewed research on the causes and epidemiology of autism at the request of the Department of Health (DH). Professor Eve Johnstone (Edinburgh) chaired the review, which was conducted by independent scientific experts working with parents and others with experience of autistic spectrum disorders, and members MRC's Consumer Liaison Group. The report was published in December 2001. One of

several key findings was that there is good evidence that no link exists between autism and vaccination with the combined measles/mumps/rubella vaccine.

In March 2002, DH made £2.5m, which will be managed by MRC, available to take forward the review's recommendations.

Bioinformatics. The Bioinformatics Funders Forum, which comprises the research councils and the Wellcome Trust and meets regularly to exchange information and discuss funding opportunities in this field, has expanded its membership to include DH and the Department of Trade and Industry (DTI).

Cardiovascular disease. The Cardiovascular Research Funders Forum has met quarterly throughout the year. In December 2001 it hosted a workshop on heart failure which spanned basic and clinical research.

A workshop was also convened in December 2001 to discuss the development of a consortium approach within cardiovascular research that will foster collaboration, and develop critical mass in key areas of research and training, such as imaging, functional genomics and new models of cardiac physiology.

Chemical Biology. MRC joined the Royal Society of Chemistry's chemical biology forum, which also includes EPSRC, last year, to promote this field to UK chemists.

Chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME). At the request of DH, MRC will develop a broad strategy for advancing biomedical and health services research on CSF/ME, through an advisory group chaired by Professor Nancy Rothwell (Manchester) and including consumers, and researchers independent of the field. The group will take account of the DH working party report published in January 2002 and other recent authoritative reviews, and will report to MRC Council during 2002/3.

Diabetes research. DH announced a new National Service Framework for Diabetes early in 2001, and agreed with MRC to conduct a joint topic review of diabetes research, which will report in the summer of 2002. The review will consider strengths and weaknesses in current UK research and aim to identify opportunities to strengthen strategic and applied research relevant to the health of people with diabetes.

Fetal pain. MRC set up a working group to review research into fetal pain in response to a request by DH. Discussions focused on five research areas identified by the Royal

College of Obstetricians and Gynaecologists. The report was published in August 2001 and was accompanied by a highlight notice indicating areas where research proposals would be welcomed.

Fluoride and health. MRC set up a working group at the request of DH, to discuss current evidence on fluoride and health and to advise DH on what further research might be needed. The final report is due later in 2002 and will provide recommendations to inform policy decisions.

Foresight. The MRC contributed advice to the review by the government's chief scientific advisor, Professor David King, of the Foresight Programme in preparation for its relaunch in May 2002. The MRC developed its strategies in line with a number of priorities including stem cell research, health informatics, clinical trials and the ageing population, which were highlighted by the Healthcare 2020 Panel in December 2000.

Health informatics. Following a discussion by the MRC Strategy Development Group on Biomedical Informatics in April 2001, MRC is planning a workshop on Health Informatics for the summer of 2002. This involves other research councils, DH and DTI. Its aim is to develop an integrated health

informatics research agenda. The audience will be drawn from the research community, from service providers, and from industry.

Mental health. MRC continues to interact with DH over the establishment of the new National Institute for Mental Health in England.

National Cancer Research Institute (NCRI). The NCRI became operational in July 2001 with the appointment of Dr Liam O'Toole as Administrative Director. Its remit is to take a strategic oversight of cancer research in the UK. Early initiatives include:

- assembling a database of research projects funded by all NCRI member organisations
- plans to review the fields of radiotherapy and radiobiology
- development of a national system for routine collection, storage and analysis of biological samples from cancer clinical trials to enable further critical research

The National Cancer Research Network (NCRN). NCRN was established in April 2001, with funding from DH. Its aim is to double the number of patients taking part in cancer clinical trials. It will also develop a national portfolio of cancer research and help coordinate the activities of the major clinical trials funders: MRC, Cancer Research

UK, Leukaemia Research Fund and DH. MRC has worked closely with NCRN partners to develop a new, single entry point for the review, assessment and funding of cancer trials.

Nicotine replacement therapy (NRT). MRC has set up an advisory group, comprising expert scientists and lay consumers, to provide advice to DH on the use of NRT in pregnancy, patients with cardiovascular disease, teenagers and long term usage. The advisory group will evaluate current understanding of the use of NRT in smoking cessation and consider areas where further research is required. Its report will be completed during 2002.

Research Councils UK (RCUK). MRC participated with the other research councils in preparatory work to establish RCUK, a high level strategy group comprising the seven research council chief executives and the Director General of the Research Councils. Visit www.research-councils.ac.uk for more information.

Stem cells. MRC is taking the lead, with DH, the Human Fertilisation and Embryology Authority, the Medicines Control Agency, other research councils and relevant charities in developing a national stem cell initiative. In particular, MRC is taking forward the recommendation made in the August 2000 report of the Chief Medical Officer's expert

group that a national stem cell bank should be established. The bank will be located in an independent national facility and will make adult and embryonic stem cell lines available to researchers, both for fundamental research and for research leading to the development of new treatments.

A funding decision will be made in July 2002. MRC, together with regulatory authorities, is developing standard information and consent forms for donors, and route maps for stem cell researchers, which will protect donors' interests and inform researchers about the UK's regulatory and ethical requirements in this area.

A stem cell research funders coordinating committee meets biannually. It has already set up a communications coalition across the agencies and is planning a national workshop for summer 2002.

Theoretical Biology. The Engineering and Physical Sciences Research Council (EPSRC), Biotechnology and Biological Sciences Research Council (BBSRC), Natural Environment Research Council (NERC) and MRC organised a theoretical biology workshop in October 2001, which featured presentations from current research council grant holders and talks from council officers on funding opportunities.

Research funded in partnership

Basic technology. Eight programmes costing around £20m were supported under the first call for proposals managed by EPSRC on behalf of all the research councils. These included applications for cancer research and biomedical imaging.

Biobank. In March 2002, MRC Council formally approved a funding contribution towards the UK biobank project – the prospective UK wide population cohort involving around 500,000 adult volunteers.

Since 1999, when MRC and the Wellcome Trust (WT) committed funds in principle to the UK biobank project, (then known as the UK Population Biomedical Collection), the MRC has worked closely with WT and DH, its partners in this venture. MRC has played a significant role in developing the scientific protocol for this large and ambitious national resource, laying the groundwork to define the operational structure of the initiative, and organising public consultation exercises.

An expert working group – chaired by Professor Tom Meade, Director of the MRC Epidemiology and Medical Care Unit, Wolfson Institute, London – considered the project's feasibility and how the project might be

organised. The UK biobank project's scientific protocol will be peer reviewed by international scientific experts and considered in light of their comments by specialist MRC and WT review panels. Proposals for the management of the resource will be shaped by ongoing public consultation exercises during 2002.

Department for International Development (DFID). A new international programme of research into microbicides to prevent HIV transmission was launched in February 2002, after evaluation by MRC, and with funding from DFID. The programme involves a partnership with researchers from five African countries and will be facilitated by the MRC Clinical Trials Unit and Imperial College, London. An effective acceptable microbicide would empower women to protect themselves against HIV and other sexually transmitted diseases.

The Concordat between DFID and MRC under which DFID makes a significant (£4.2m) annual contribution to MRC for research relevant to the health of developing societies was the subject of an interim review by an independent team in 2001. The review confirmed the effectiveness of the partnership and offered recommendations on how joint working could be made even more effective.

E-science. MRC made four awards last year from e-science funding received under the 2000 Spending Review:

- Professor Jotun Hein, who moved from Århus to Oxford to take up an EPSRC funded Chair in Bioinformatics, was awarded funding through MRC's International Appointments scheme to support his own research programme.
- A consortium, comprising the European Bioinformatics Institute, Sanger Centre, MRC Centre for Protein Engineering, and University College London, received support to make five existing gene sequence and structural biology databases interoperable.
- Professors Cuschieri (Dundee) and Marshall (Manchester) have been funded to develop artificial neural networks for individual cancer management. The award is jointly funded between MRC and the Particle Physics and Astronomy Research Council.
- Professor Kirkwood (Newcastle) has received joint MRC/BBSRC funding to develop biomathematics and bioinformatics tools to integrate data from diverse biological sources to advance ageing research.

MRC has also issued a call for expressions of interest from consortia applying bioinformatics, neuroinformatics, health informatics, computational

biology or e-science, to problems in cancer or brain science. Shortlisted applicants attended a workshop aimed at forging links between groups and with the generic e-science infrastructure. Full proposals were peer reviewed in January 2002 and funding decisions will be made in April 2002.

Health of the public. The MRC's Health of the Public initiative continues to welcome high quality research proposals on the developmental, environmental and socio-economic factors affecting health and health inequalities, as well as interventions.

To date, 15 strategic grants, three trial grants and one cooperative group development grant have been funded. MRC and the NHS R&D Directorate additionally fund 44 special training fellowships in health services and health of the public research, 12 of which fall within the health of the public remit. The Committee for the Epidemiological Study of AIDS which is funded by the Health Departments and supports research into epidemiological, social and behavioural aspects of AIDS, currently funds 14 research grants.

Human DNA collections. MRC is establishing a network of centres that will bank samples from the 13 large DNA collections funded in October 2000 – two of them jointly with research charities – to make the samples more widely available

as a national research resource. MRC's Inter Board Initiatives Group considered six full proposals in January 2002, and two centres were asked to come forward and develop a joint plan for the operation and management of the DNA banking network. Funding decisions will be made in July 2002.

Military health. MRC continues to provide advice to the Ministry of Defence (MoD) on research relevant to military health. During the year, MRC launched a call for proposals for epidemiological studies of service personnel who participated in trials at Porton Down between 1939 and 1989. The outcome will be announced by May 2002.

MRC and NERC additionally advised MoD on its proposals for a research programme on the health risks associated with battlefield use of depleted uranium. During 2002, both Councils will assist MoD with the peer review of proposals to study the health effects of depleted uranium.

Mobile telecommunications and health research programmes. Following a Government review of the potential effects of mobile technology on health, MRC provided £600k towards the £7.4m made available from industry and Government to support a LINK collaborative research programme. Following

the first call for proposals, 15 projects were funded in January 2002 at a cost of around £4.5m. A second call for proposals was announced in December 2001 and decisions are expected later in the year.

Nanotechnology. MRC is contributing £3m over six years to two interdisciplinary research collaborations (IRColls) in nanotechnology, funded following the joint call for proposals issued by EPSRC, BBSRC, MRC, MoD and DTI. The Cambridge/Bristol/University College London IRColl directed by Professor Mark Welland (Cambridge) is focusing on the accurate control of the physical properties of nanostructures and devices by fabrication with single molecule precision. The Oxford/Glasgow/York IRColl, directed by Professor John Ryan (Oxford) is investigating biomolecular systems from the level of single molecules up to complex molecular machines.

Parkinson's disease. Joint funding has been awarded by MRC, the Parkinson's Disease Society and the Health Departments for a large national clinical trial, led by Professor Adrian Williams (Birmingham), to assess the long term benefits of neurostimulators (surgery) for Parkinson's disease.

Primary care research. A total of 21 grants, including two programme grants, 12 trial grants and seven strategic grants

were supported under the joint MRC/DH Initiative on Primary Care Research, following two calls for proposals.

Prion disease and transmissible spongiform encephalopathies (TSEs). At the request of the Chief Medical Officer, the MRC Prion Unit, working closely with the MRC Clinical Trials Unit, has embarked on a clinical evaluation of quinacrine in Creutzfeldt-Jacob Disease patients.

An MRC led joint call for proposals (with BBSRC, DH, the Department for Environment, Food and Rural Affairs, and the Food Standards Agency) on diagnostics for TSEs resulted in the award of 22 new projects (three MRC funded).

The Joint UK TSE Research Funders Workshop took place at Durham University in March 2002 when grant holders presented their latest research findings. The MRC also continues to contribute to TSE research coordination in Europe.

Synchrotron Radiation. The UK's protein crystallography beamline at Grenoble – beamline 14 at the European Synchrotron Radiation Facility – which is managed by MRC and co-funded with BBSRC and EPSRC, came on stream and generated 28 new protein structures in its first six months of operation.

International

Science and health are global issues, and the MRC attaches a high priority to international collaborations, which can be facilitated by joint working with international bodies and national agencies from other countries. The MRC, through its research centres, participates in a large number of international collaborations, both bilaterally and as part of larger international consortia. MRC research centres are also involved in over 60 major European research and training networks funded under the current EU Fifth Framework Programme for research and development.

The European Union's Sixth Framework Programme (FP6)

The MRC has continued to play a leading role, in partnership with the Department of Health and other research councils, in developing UK policy on biomedical research funding under FP6. The MRC is also actively engaged in promoting the research funding possibilities available under FP6, and supporting the involvement of its academic community.

International subscriptions

The MRC manages the UK's contribution to several international biomedical research organisations: the European Molecular

Biology Laboratory and the European Molecular Biology Conference (EMBC) in Heidelberg, the International Agency for Research on Cancer in Lyon, the Human Frontier Science Program and the European Science Foundation in Strasbourg.

The MRC meets the UK subscription to and is represented on EMBC. In preparation for the impending renewal of the inter-governmental agreement that underpins the Conference the Council has set in place mechanisms to assess the value of its contribution.

This will inform negotiations over future funding levels by the UK and other member states.

Sixteen of 78 awards made under the first rounds of the European Molecular Biology Organisation Young Investigator Programme went to UK researchers; MRC has contributed towards this programme which aims to afford key networking opportunities to established groups in EMBC member states.

Collaborations

MRC actively promotes and facilitates international collaborations with research organisations overseas. Present collaborations include:

Clinical trials. The MRC has recently developed a tri-national collaboration programme with the US Veterans Administration and the Canadian Institutes of Health Research to encourage proposals that address health care questions of common concern. The first clinical trial funded under the collaboration, an £11m study of new clinical management strategies for HIV patients (OPTIMA), started in June. Five outline applications were received under the second call for proposals in January.

Following on from last year's Workshop on Challenges in Developing pan-European Clinical Trials, MRC has been working with the European Science Foundation to advise on the development of mechanisms to promote multicentre European trials. A call for research proposals was launched recently.

MRC has agreed to co-fund a trial (ICON5) with the US National Cancer Institute to determine the most effective combination of chemotherapy drugs to give to women with ovarian cancer. The trial is due to open in June 2002.

Computational biology. MRC and the US National Institute of General Medical Sciences held a joint two day meeting on

computational cell biology in London in the summer of 2001. Visiting scientists from around the world attended and also gave seminars in UK universities, stimulating considerable interest in this important emerging area of science. Following this meeting, MRC targeted some of its Special Research Training Fellowships to applicants with a background in mathematics and the physical sciences, and an interest in training in this field.

Research relevant to the health

of developing countries. MRC funding for research in developing countries is focused on combating infectious diseases, including malaria, HIV/AIDS, Tuberculosis and childhood infections. The MRC is currently funding extensive programmes of work these major poverty related diseases in Africa, in the Gambia, Uganda, Tanzania and Kenya. Additionally the MRC supports research programmes in China, India and Jamaica, addressing a narrower range of conditions including reproductive health, nutrition, and sickle cell disease.

The MRC is taking a leading role in working towards the establishment of the European - Developing Countries Clinical Trials Programme

(EDCTP): TEDCTP under Article 169 of the EU's Treaty of Rome. This was launched politically in Barcelona in April 2002 and has the aim of linking European research programmes and clinical trial infrastructures with those in developing countries in Africa in order to combat the major poverty related diseases.

Riken. The MRC and Riken Genomic Sciences Center (Japan) have recently signed an agreement to collaborate in post genome research. This agreement covers access to RIKEN cDNA libraries within the UK, via the MRC Mammalian Genetics Unit, Harwell, and the HGMP Biological Services, Cambridge. The agreement was marked in January 2002 during a visit to Japan by Patricia Hewitt, the Secretary of State for Trade and Industry.

Cardiovascular initiative. In 2002 the MRC made a two year award of £200k to the Universities of Cambridge and Yale (USA) towards creating a collaborative programme to strengthen research into vascular disease.

Sickle cell disease. In August 2001 Professor Alan McGregor (London) led a visiting subcommittee which participated in a workshop at the Tropical Medical Research

Institute (TMRI), University of West Indies, Jamaica, to advise on the Sickle Cell Unit's future development and to assess the current status and future oversight of key resources. In December, MRC awarded an £800k Cooperative Group Development Grant for a study aimed at identifying genetic modifiers of sickle cell disease. The award is shared between Professor Terrence Forrester of the TMRI Sickle Cell Unit, and Professor Swee Ley Thein at King's College London. The MRC, University of West Indies and the Jamaican Ministry of Health have also recently signed a new tripartite agreement in order to help strengthen and develop biomedical research capacity within Jamaica.

Mouse genetics, physiology and mutagenesis. Professor Steve Brown (MRC Mammalian Genetics Unit, Harwell) successfully led the bid, under the EU Fifth Framework Programme for research and development, for an EU integrated network in mouse genetics and physiology. This will bring funding in the order of €12m to the consortium.

The MRC is one of several European research organisations working collaboratively with the EU to support the European Mouse Mutant Archive, a non-profit repository for transgenic mouse lines essential for basic biomedical research.

The MRC is also playing a leading role in seeking to develop an International Mouse Mutagenesis Consortium (IMMC), Professor Brown led an MRC funded one day workshop in February 2002, to discuss IMMC's future goals and funding. The meeting brought together international scientists and funding agencies to review proposed plans, timescales, targets and coordination.

Developmental neurobiology. A joint workshop on developmental neurobiology, attended by researchers from the MRC and Max Planck Gesellschaft (Germany), was held in Cambridge in March 2002. It aimed to further strengthen links between scientists supported by the two organisations, particularly at the level of younger group leaders.

Neuroinformatics. MRC continues to contribute to the work of Organisation for Economic Cooperation and Development in the areas of neuroinformatics. Over the last year a web based resource site has been established and database development has continued.

Microarrays. The MRC HGMP Resource Centre (HGMP-RC Cambridge) is currently developing a new generation of microarrays

based on oligonucleotide probes. With MRC support HGMP-RC will generate 20,000 oligonucleotide probes for human and mouse genes to make arrays. The Centre National de la Recherche Scientifique (CRNS, France) has matched this funding and the MRC and CNRS are continuing to coordinate and develop access to mouse gene microarrays. A bilateral coordinating committee has been established to oversee this collaboration, which has further facilitated the exchange of knowledge and resources.

Visits to China and India

An MRC delegation led by Sir George Radda visited China in October 2001 to explore the scope for and feasibility of enhanced research collaboration. It is hoped that a Chinese delegation will soon visit the UK in order to discuss the possibility of holding a joint workshop for leading young scientists.

Sir George Radda was part of a UK delegation that accompanied the Prime Minister Tony Blair to India in January 2002 as part of the India/UK science festival. The visit was used to identify areas for possible future collaboration.

MRC Technology

Exploitation income in 2001/02 was £11.7m. The decrease in income compared to the previous year's figure of £17.9m is because there were no sales of shares in former start up companies (over £8m of income in 00/01 came from such sales). There continued to be an underling growth in royalty income in 2001/2.

In February 2002 the National Audit Office published a report on 'Delivering the Commercialisation of Public Sector Science' which acknowledged that MRC "has been particularly successful in building on intellectual property arising in its research establishments".

David Owen, Chief Executive Officer of Medical Research Council Technology (MRCT), retired this year. His successor will be announced in the summer of 2002.

Working with industry

Progress has been made across a range of MRC exploitation activities to meet the MRC objectives for commercial exploitation. During the year, 50 new patent applications were filed and 42 new licensing agreements completed with companies including:

RiboTargets plc. Research at the MRC Laboratory of Molecular Biology elucidated the molecular structure of bacterial 30S ribosome subunit crystals, highlighting several protein and nucleic acid ribosomal components that will be developed by RiboTargets as targets for the discovery of a new class of antibacterial drugs. This agreement allowed RiboTargets to complete a major corporate agreement with Johnson & Johnson, and also underpinned a further fund raising round for the company.

Further technologies were also licensed to other MRC "spin out" companies including:

- **Ardana Biosciences Ltd.** (cervical ripening technology)
- **Prolifix Ltd.** (fungal targets for drug discovery)
- **Cobra Therapeutics Ltd.** (broadening the fields within which the company is free to exploit technology previously licensed to it by the MRC)

AdProtech Ltd. was granted an exclusive licence by MRC to parasite protein technology from the National Institute for Medical Research, which will be used to accelerate the company's malaria vaccination programme.

Athena Diagnostic Inc. were granted licences to rights to diagnosis of tuberous sclerosis and polycystic kidney disease by identification of gene mutations arising from work at the MRC Molecular Haematology Unit.

Omega Diagnostics Ltd. were granted a licence to patented technology developed at the MRC Virology Unit for diagnosis of herpes simplex virus 2.

Further licences were granted to members of the consortium of multinational pharmaceutical companies Pfizer Ltd., SmithKline Beecham Ltd. and Boehringer Ingelheim GmbH in the initiative with the MRC Protein Phosphorylation Unit, Dundee, and the University of Dundee.

MRCT output performance indicators

| Year | New patent filings | New licence agreements | Royalty income from licensing agreements (£k) |
|-------|--------------------|--|---|
| 97/98 | 32 | 22 (226) | 1,551 |
| 98/99 | 40 | 25 (251) | 2,853 |
| 99/00 | 32 | 26 (301) cumulative figure adjusted following review of licences | 7,582 |
| 00/01 | 34 | 36 (337) | 17,946 |
| 01/02 | 50 | 42 (379) | 11,713 |

Figures in brackets show cumulative totals

MRC start up companies have continued to flourish (see figure below).

Employment in start-up companies (at 31/3/02)

| Company | Employees |
|-------------------------|-----------|
| CAT | 264 |
| Cobra | 75 |
| Prolifix | 30 |
| MRCT (all sites) | 44 |
| BioFocus (formerly CGL) | 180 |
| Ribotargets | 95 |
| Gendaq | 15 |
| Aeres | 8 |
| Virogen | 9 |
| Diversys | 22 |
| Avidis | 17 |
| Ardana | 9 |
| MVM | 7 |
| IRSL | 70 |

This list does not include Celltech Group plc, which was a 1980 start-up company based on MRC technology and now has around 2,023 employees

Small Business Research Initiative

The Government announced the Small Business Research Initiative (SBRI) in the Science and Innovation White Paper (July 2000). MRC has not issued a general call for proposals because it is piloting its own Development Gap Funding scheme, with the aim of enhancing the commercial potential of research in MRC establishments. Ten development gap projects have been supported so far, with a total financial commitment of £1m. Preliminary evaluation of the scheme's progress showed that in most cases the support provided has led to strengthening of patent claims, and/or to demonstration of the commercial potential of earlier initial discoveries. As intended, the scheme is assisting new technologies to become more attractive to potential investors, and to promote the generation of new start up companies. MRC will decide how to take the scheme forward in the broader context in light of the outcome of the pilot.

MRC Technology (MRCT)

The MRCT laboratories in Mill Hill (London) continue to serve an incubator function for new companies, including the MRCT spin outs Aeres Biomedical and Virogen. An Assay Development Group has been established at Mill Hill, which will permit the creation

of robust assays for chemical screens against novel molecular targets identified in MRC institutes and units.

As stated in last year's Annual Report, MRCT is using some of MRC's exploitation income to support applied research projects to enhance the commercial potential of results emerging from work in MRC establishments. Ten such "Development Gap" projects have been funded since January 2000. Two technologies are now incorporated into start ups and are close to acquiring private finance. One additional technology is currently being taken down this route and will be packaged into a new company. A further technology and patent is being investigated as the basis of a start up company.

The ongoing 10 year collaborative venture with Teijin (Japan) has been renewed for five more years.

UK Medical Ventures Fund/MVM Ltd

UK Medical Ventures Fund completed a number of further investments during 2001, mainly in previously established companies. The major focus of attention during the year has been to raise a second fund. In September 2001, a first closing of the second fund was accomplished (£39m), with the expectation of significant further investment prior to a second closing.

Good research practice

Centre for Best Practice for Animals in Research (CBPAR)

CBPAR was established in May 2001 to provide a focus for identifying and disseminating best practice on the welfare of animals used in research, and facilitating the practical adoption of the principles of reduction, refinement and replacement. CBPAR works closely with the scientific community, policy makers, and organisations concerned with laboratory animal welfare, research funding and management.

Reduction, refinement and replacement of animal use

In 2000, MRC issued a call for proposals for research projects to develop more refined and humane methods for using animals in research, or avoiding their use altogether – to add to the extensive work on better methods and non-animal research approaches supported as an integral part of normal MRC research. MRC evaluated seven full proposals in 2001/02 and supported two three year projects to the tune of £370k. One of these is developing in vitro methods for research into brain injury, and is co-funded with the Defence Evaluation and Research Agency.

Clinical trials for tomorrow

In July 2001, MRC Council agreed to set up a 'Clinical Trials for Tomorrow' review, as a framework to evaluate the effectiveness of existing mechanisms

for assessing, funding and overseeing MRC randomised trials, in terms of priority setting, safety for participants, scientific quality, deliverability, and impact on patient care. The review panel, which is Chaired by Professor Alan McGregor (Kings College London), will set up four subgroups to look at; strategy and prioritisation of research questions; trial design and delivery; support for early phase studies; and engagement with consumers. The panel will make recommendations to Council based on the subgroups' reports and evidence taken from the academic community, Health Departments, National Institute for Clinical Excellence, charities, consumers, industry and other stakeholders.

Data archiving and access

Over the decades the MRC has supported many population studies that will continue to be a valuable resource well into the future. A preliminary survey revealed that few data sets have been archived to standards that allow access without considerable guidance from the originating teams, and that the wider research community has only limited awareness of the existence and value of these data sets. The MRC has therefore embarked on a set of more detailed case studies to identify the opportunities, technical, cultural and ethical challenges involved in archiving

key data sets for future use. The outcome will be reported to MRC Council in December 2002.

Good practice in medical research

MRC contributed to the General Medical Council's working group on good practice in medical research which published its guidance entitled '*Research: the role and responsibilities of doctors*' early in 2002.

Guidelines for human samples used in medical research

These MRC guidelines which cover issues such as the importance of valid consent, protecting the confidentiality of sample donors, use of samples in commercial research, and feedback of information to donors, were published in April 2001.

Guidelines on vaccine development for early phase trials

In spring 2000, a working party was established to develop guidelines for academics who wish to take bench research on vaccines through to early phase trials. The draft guidelines are currently being revised in the light of new European Union directives on good manufacturing practice production of all products for human therapeutic use, and will be posted on the MRC website during 2002 with an invitation to comment.

Monitoring and evaluating MRC's funding schemes

MRC has published guidance on reviewing research proposals, as applied to MRC's grants and training schemes. MRC has also considered the continuing merit and timeliness of the MRC's Innovation Grants scheme and the Realising Our Potential Awards scheme. It was recommended that these two schemes be merged and relaunched as a single new scheme, and work on this is underway.

A bibliometrics review of ageing research was commissioned from Professor van Raan's team (Centre for Science and Technology Studies, Leiden University, Netherlands). Preliminary data analysis allowed the identification of clusters where the UK's pattern of activity in ageing research was below (basic research) or above (social science) world averages in terms of volume or quality. The UK's contributions were found to account for 7-14% of world outputs.

Research in developing countries

MRC is a sponsor of the Global Forum on Bioethics in Research and was the main organiser of the third annual forum, which was held in February 2002 in Cape Town. The Forum brings together researchers and ethicists from developing and developed countries to discuss key issues of practical importance in developing societies.

Effective business practice

Audit. During the year, the Audit Committee continued to develop its expanded remit with respect to issues of corporate governance, including approving a risk management framework for the MRC in order to meet new Treasury requirements for a Statement of Internal Control alongside the grant in aid accounts. To effect this, the Audit Committee:

- oversaw the rolling programme of Compliance Audits and Systems based audits and the Directors' Annual Statement of Internal Control, which already addresses control issues beyond purely financial aspects
- regularly reviewed and monitored reports from MRC management on "business critical projects"

Efficiency. The upgraded MRC website went live in December 2001. The upgrade is aimed at meeting the Modernising Government initiative and improving MRC's effectiveness and efficiency. By adding new services it allows MRC customers to more easily find information they require, thus reducing requests handled by office staff, makes the publication process more efficient, and improves the currency and relevance of information on the site.

The MRC is also working jointly with four of the other research councils to procure and implement a common electronic records management system.

A joint project board has now been set up, chaired by MRC's Executive Director to oversee this work.

In the longer term, the MRC is developing a new Information System Strategy (ISS). Phase 1 of the new ISS will deliver a plan covering the next 3-5 years and aims at providing an improved level of IT services to internal MRC users (both in headoffice and units) and to external customers.

Service First. Service First is the Government's charter programme which aims to focus attention on service delivery across the public sector and is an integral part of the Better Government initiative.

The Research Councils and the Office of Science and Technology have agreed a list of key performance areas and each Research Council has set its own challenging standards. These standards will be regularly reviewed and additional measures identified. We will report on our performance against these targets both in our Annual Report and on our web site – www.mrc.ac.uk

The MRC undertakes to:

- abide by equal opportunities and anti-discrimination legislation

- ensure that procedures exist for consulting users proactively e.g. concordats with the health departments and other government departments, the work of the Consumers Liaison Group, EAA roadshows in Universities etc
- provide contact details (addresses, telephone numbers, fax numbers, email addresses) on all external documents
- uphold high standards of integrity in all areas of our operations
- operate a complaints procedure including name of contacts to which complaints should be directed
- maintain an up to date web site

Scientific misconduct

MRC is required to record incidence of scientific misconduct. As was the case last year, no incidences were reported amongst MRC researchers.

Conflicts of interest

When MRC Council members and board members are appointed, they are required to declare any private, professional or commercial interests that might conceivably conflict with the Council's interests. MRC keeps a central register of Council member's interests which is open to public inspection. Contact corporate@headoffice.mrc.ac.uk.

| Area and target | Achievement in 2000/01 |
|---|---|
| Grant applications | |
| Receipt of all grant applications will be acknowledged within 15 working days and applicants given an indication of the timetable for consideration | 100% through the new Electronic Application and Assessment system |
| Grant applications will be considered by the MRC's peer review process within 26 weeks of the submission date | *68% considered within 26 weeks |
| Feedback will be provided to grant applicants within seven working days of a decision being made | 45% within seven working days 55% within 10 working days |
| General correspondence | |
| Replies to general correspondence will be sent within 15 working days | 97.5% within 15 working days |
| Payment of invoices | |
| Payment of bills will be within 30 days of presentation | 70% paid within 30 days of presentation |
| *Some decisions were not reached within 26 weeks because funding decisions were deferred for financial reasons, or because some applications required consideration by more than one research board | |

Communication

MRC's new look

The year saw many developments in MRC Corporate Communications Group, in particular a new communications strategy is being implemented to improve dialogue with all MRC audiences and stakeholders. A notable development is MRC's new look website – www.mrc.ac.uk – launched in autumn 2001 with improved content and navigation. The site aims to provide both the scientific community and other users with accessible, relevant, and up to date information on all aspects of MRC's work.

Media

MRC's busy Press Office worked throughout the year to attract media interest in important news about MRC funded science, and to react to requests for further information from the media and the public. The press office also worked with journalists and broadcasters writing and making programmes about MRC work, and ran media training courses for MRC scientists and unit directors.

Changes to UK regulations governing stem cell research and US debates on therapeutic cloning and stem cell therapy were widely reported in the British media. MRC scientists and MRC Chief Executive Sir George Radda took part in a variety of media interviews.

The Press Office held a press conference at head office to announce the findings of the Second National Survey of Sexual Attitudes and Lifestyles. The Department of Health funded the survey through the MRC. The survey received wide media coverage, and BBC2 produced a three part documentary – 'Sex Lives' – based on its findings.

To see all the stories covered during the year, visit MRC Press Offices' pages – www.mrc.ac.uk/index/public_interest/public-press_office.htm

Publications

MRC sponsored a BBC booklet – 'Genetics and You' – to accompany the BBC series Bitter Inheritance, which was part of a series of programmes and other broadcasts relating to genetics. New Research in Focus leaflets on Bioinformatics, Health of the Public and Cancer were added to the Publications pages – www.mrc.ac.uk/index/publications/publications-public_information, and a new MRC Research Update on therapeutic cloning was posted at – www.schoolscience.co.uk.

Events

MRC organises and attends events throughout the year to present MRC's work to different audiences including the public, researchers, politicians, health

service professionals, and to forge productive links with other organisations.

Edinburgh Science Festival. The MRC stand at the Edinburgh International Science Festival (April 2001) attracted a large wide ranging and enthusiastic family audience. Nick Hastie, Director of the MRC Human Genetics Unit (HGU) in Edinburgh spoke at the festival public lecture series. MRC, together with the Biotechnology and Biological Sciences Research Council and Wellcome Trust, sponsored the Edinburgh Medal, which was awarded to Sir John Sulston (former Director of the Sanger Centre, Cambridge). MRC sponsored a public forum – Genetics: Genie or Genius? – which bridged the festival and a meeting of the Human Genome Organisation, and attracted 180 people to consider potential uses and abuses of genetics.

British Association Festival of Science.

Dr Wendy Bickmore (HGU) gave the Charles Darwin Award Lecture at the BA Festival of Science in Glasgow (September 2001). Professor Sally Macintyre, Director of the MRC's Social and Public Health Sciences Unit was President of the BA's Medical Sciences Section for 2001. Other MRC scientists took part in a day of talks on 'Society's Contribution to Medical Research',

and Professor Nancy Rothwell (Manchester) chaired a session titled 'Of Mice and Medicine' organised jointly with the Boyd Group. BA Young Peoples Section members previewed a new play about genes and genetics aimed at 11-14 year old school children. The Edinburgh International Science Festival produced the play in collaboration with scientists from the MRC HGU. The play toured Scottish schools and was performed before more than 4000 children.

Meetings, exhibitions and conferences. MRC's Reproductive Sciences Unit in Edinburgh hosted the Biomedical Research Education Trust (BRET) seminars in May 2001. The sessions were open to all staff who discussed public attitudes to use of animals in research. This was part of the preparation for a very successful evening the unit organised for local science teachers. MRC sponsored two 'Public Awareness of Science' evenings, where MRC scientists talked about their work to an audience of drama writers. In January 2002 MRC sponsored a BA sciBAR, a pub debate led by Professor John Bell, Nuffield Professor of Clinical Medicine, Oxford University, entitled 'The future of genetics: hype or hope?'

MRC also participated in the Cirencester Medicine in the New Millennium Exhibition (June); the British Cancer Research Meeting (July);

the Society for Neurosciences Conference in San Diego, California (November); the National Institute for Clinical Excellence Conference in London (December); the India Science Festival organised by the British Council in Delhi (January); and the Association for Science Education Annual Conference at Liverpool University (January).

Max Perutz Essay Prize. Sadly this was the last year that Max Perutz presented the prizes at the award ceremony for the essay competition named in his honour. The Max Perutz Essay Prize is a particularly fitting legacy for such an enthusiastic and accomplished science communicator. The competition attracted a record number of entries. The winning entry 'An AIDS vaccine: Is this a dream?' by Matilu Mwau from the MRC Human Immunology Unit was published in the Times Higher Education Supplement.

Consultation

MRC recognises the importance of seeking the views of people beyond the scientific community to comment on its activities and influence decision making. This is done in a variety of ways ranging from using existing research on consumer views to participation on committees and establishment of lay groups to support specific initiatives.

Consumer Liaison Group (CLG). The MRC Consumer Liaison Group is now in its second year, and is working well. This year saw the development of new ways to engage with consumers. In addition to CLG meetings, CLG members attended and contributed to committees, activities and meetings including; MRC's Research Boards, the Advisory Group for Scientific Advances in Genetics, the water Fluoridation Working Party, the MRC Stem Cell Advisory Group, and the Review of Research Needs on Work and Health. CLG input informed patient information provision for randomised controlled trials, guidance on writing lay summaries, and developing working practices for the UK biobank project and MRC fetal tissue bank.

The UK biobank project. In January, MRC and the Wellcome Trust commissioned a consultation on public attitudes to the UK biobank project. Sixty people participated in eight focus groups, which each met twice to consider the project, and individual interviews with interested parties were conducted. The consultation's findings are reported in '*Public Perceptions of the Collection of Human Biological Samples*' which is available on the MRC website – www.mrc.ac.uk/index/public_interest/public-consultation/public-biobank_consult/public-biobank_ethics.htm. See also the UK biobank project paragraph in the Medical research

charities section of the Partnerships pages on page 10.

Autism. There was significant consumer input to the Review of Causes and Epidemiology of Autism. A lay group was established alongside three expert groups. The lay group comprised members of CLG, representatives of autism charities, carers and people with autism. There were open processes to integrate views of the group and their networks into the review. The group contributed to drafts of the report and worked on dissemination. Work with the lay group will continue as the review is implemented.

Parliamentary

MRC's new Knowledge Management Group dealt with an increasing number of parliamentary questions during the year. The Group also coordinated the MRC's submission of evidence to a number of parliamentary inquiries (details below) as well as providing information to DH and OST for ministerial briefs.

Evidence to parliamentary inquiries. House of Lords Science Select Committee Inquiry: Animals in Scientific Procedures: The First Memorandum, submitted June 2001; The Second Memorandum,

submitted November 2001. Sir George Radda gave evidence to the committee on 4 December 2001. Transcript available at: www.parliament.the-stationary-office.co.uk/pa/ld200102/ldselect/ldselect/ldanimal/999/1120401.htm

Sir George Radda and Robin Lovell-Badge gave evidence on 2 July 2001 to the House of Lords Select Committee Inquiry on stem cell research. MRC also submitted written evidence. Sir George Radda gave evidence on 12 December to the House of Commons Select Committee inquiry on cancer research. MRC also submitted written evidence.

People

Pay and employment policies

The MRC has completed a fifth pay review cycle under its delegated pay and grading structure. The aims of the 2001 settlement were to:

- Maintain competitive salaries to attract and retain high quality research staff in the face of direct competition from other employers
- Reward outstanding performance
- Introduce a range of non-consolidated bonuses

to address recruitment and retention issues in specific areas

In addition we have continued to implement a revised pay and reward strategy to reflect current business needs and public sector pay policy.

The MRC has worked in partnership with our trade unions to consider and address issues of mutual interest such as appraisal, training, and pensions. We have reached agreement on and implemented new family friendly and harassment policies.

Diversity and equal opportunities

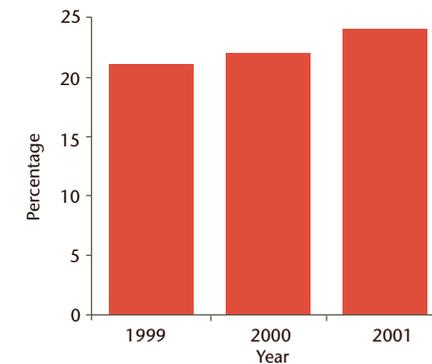
The MRC values the diverse skills and experience of its employees and is committed to achieving equality of treatment for all.

The MRC has an Equal Opportunities subcommittee, which audits MRC employee data annually to ensure the aims of its policies and practices are being achieved in a fair and equal manner, and to identify any imbalances that may need to be addressed.

Senior women scientists in the MRC

We continue to investigate and address impediments to women rising to senior scientific posts. The graph below shows that there has been an increase in senior women scientists and scientific support within the MRC.

Senior women scientists and scientific support



MRC Staff 2001–2002

| Occupation | Full time | | Part time | |
|-----------------------------------|--------------|--------------|------------|------------|
| | Feb 01 | Feb 02 | Feb 01 | Feb 02 |
| Science | 1,117 | 1,124 | 39 | 31 |
| Research project support | 895 | 887 | 105 | 101 |
| Management admin and policy | 421 | 426 | 59 | 61 |
| Technical services | 344 | 358 | 52 | 51 |
| Infrastructure | 102 | 101 | 65 | 66 |
| Locally employed staff (overseas) | 670 | 714 | 10 | 14 |
| Total | 3,549 | 3,610 | 330 | 324 |

We ensure that all of our policies and schemes are sufficiently flexible to accommodate all researchers (male and female) and career pathways. We aim to offer a competitive employment package and have a range of flexible working arrangements to assist MRC staff in balancing their work and domestic commitments.

International appointments initiative

The MRC continued to respond rapidly to opportunities for international recruitment in areas of scientific priority where national capacity was lacking. The MRC attracted six scientists of international standing to senior positions in UK universities and MRC research centres. Five are clinically qualified and all but one are non-UK citizens. The research expertise

they bring to the UK ranges across stem cell biology, bioinformatics, visual perception, cardiovascular disease, prion disease and cellular and clinical immunology.

Training and career development

The MRC offers support for talented individuals who wish to pursue a research career in the biomedical sciences including areas such as public health and health services research. This support is provided through a broad range of personal award schemes that are designed to suit each stage in a clinical or non-clinical research career path. The schemes range from studentship awards through to career development opportunities for senior investigators. Visit www.mrc.ac.uk for further details.

Awards since 1998

| Year | Numbers trained |
|---------|-----------------|
| 1997-98 | 332 |
| 1998-99 | 449 |
| 1999-00 | 691 |
| 2000-01 | 900 |
| 2001-02 | 975 |

MRC Predoctoral Fellowship scheme

MRC launched its Predoctoral Fellowship scheme in 2001, in response to widespread concerns that the current system of grant awards to higher degree students is becoming less attractive to the very best graduates, when compared to the status and salaries offered to graduate trainees in other professions. The first round of fellowships were offered through a competition involving MRC Institutes and Units and the awards were open to applicants of any nationality. There were 22 applications in this competition and 12 awards were made.

MRC management of the Department of Health Clinician Scientist awards

The MRC gives high priority to working in partnership with other stakeholders in the research training field, such as the universities, the Royal Colleges and the Department of

International appointments in 2001-2002

| | Number of awards | Clinical | Non-clinical | UK citizen | Non-UK citizen |
|-------------------------------|------------------|--------------|---------------|--------------|----------------|
| Higher education institutions | 3 (10) | 3 (4) | 0 (6) | 0 (2) | 3 (8) |
| MRC establishments | 3 (10) | 2 (2) | 1 (4) | 1 (3) | 2 (3) |
| Total | 6 (16) | 5 (6) | 1 (10) | 1 (5) | 5 (11) |

Bracketed figures show the total number of awards made under scheme up to March 2001

Health (DH). For example, the MRC is helping the DH Clinician Scientist award competition. MRC's Clinician Scientist Fellows already form a major component of the National Clinician Scientist scheme, which was launched in 2001 by the main funding bodies that provide support for UK clinical research fellows. As part of this initiative, DH and the Higher Education Funding Council for England have set up a new fellowship to complement those already provided by the other funding bodies. MRC has managed the assessment process for these Clinician Scientist

awards on behalf of DH. The first competition was held in 2001 and a total of 30 applications were received with 10 awards made.

Transferable skills training

This year has seen continued significant increases in transferable skills training received, in line with our strategy of introducing structured development programmes for all staff groups. As well as updating and reviewing programmes for junior scientists and administrators, new programmes have been

introduced for research support, technical and infrastructure staff. We have also been actively looking at broader development issues including mentoring schemes and enhancing the developmental aspects of individual performance reviews.

Workshops

Workshops/conferences were held during the year for new research leaders (ie new MRC Fellowship & Career Establishment grant holders) and for holders of Discipline Hopping grants.

Finance

Income and expenditure for the year is summarised in the table on p30. Full, audited, accounts will be available from the MRC Accounts Section towards the end of 2002.

Income

As a result of the Government's last Spending Review (SR2000), grant in aid income was £345.3m in 2001-02, an increase of £25.6m from 2000-01. Additional funding, excluding the Commercial Fund (see below) and income managed on behalf of the Joint Infrastructure Fund, totalled £49m in the year, the main element of which was external funding for research programmes derived mainly from the following:

- Government departments sponsoring work in selected fields (major contributors are Department of Health, for work in AIDS and autism, and the Department for International Development, for work relevant to the health of developing countries)
- Income from industry, charities, and international organisations collaborating on specific research projects

Income to the Commercial Fund – a separate fund for income derived from the licensing of

intellectual property and other technology transfer activities – was £11.7m, £5.9m of which was allocated to MRC staff and units under the scheme of incentive payments to inventors.

Private funds

The MRC frequently receives bequests and donations that are paid into the MRC's Private Endowment Funds, a registered charity. This year new donations totalled £1.43m; the MRC is very grateful to benefactors concerned. The MRC's Audit Committee provides advice to the Council on its investment policy and performance. At the end of the year, following allocation of £4m to fund new research programmes, the total value of the funds stood at £19.3m.

Expenditure

Expenditure in the MRC's own institutes and units ('direct support') was £195.3m. After adjusting for activities now categorised as National Resources (see below) and deducting capital building spend, this represents an increase of some 8% on the previous year. This was the result of the introduction of new programmes and supplements to existing programmes (as described elsewhere in the Annual Report), salary increases and

an allowance towards price rises. Expenditure on capital building dropped as a number of projects were completed.

There was a marked increase in expenditure on National Resources: activities which make resources available to the whole community, eg the UK biobank project, MRC Geneservice and the Human Nutrition Resource Centre. These have been separately identified from other activities from 2000/01 onwards. This year a further group of activities have been more appropriately categorised as such, with an associated cost of £3.5m. The true increase in investment this year in National Resources is therefore from £2.2m to £8.2m.

Expenditure on 'indirect support', for research in universities and other organisations, amounted to £174m, excluding expenditure on behalf of the Joint Infrastructure Fund. This was an increase of almost 12% on the previous year's expenditure. Over 90% of these funds support grants, research training awards and personal awards to scientists in HEIs. The remainder represents the MRC's support for other research institutions such as the Sanger Centre and the Edward Jenner Vaccine Research Institute, and the UK contributions to international research organisations (see International subscriptions p14).

Income

| | 1997-98 £m | 1998-99 £m | 1999-00 £m | 2000-01 £m | 2001-02 £m |
|---|---------------|---------------|---------------|---------------|---------------|
| Parliamentary grant in aid | 289.1 | 294.0 | 304.6 | 319.7 | 345.3 |
| Other income | | | | | |
| Government departments | 9.4 | 10.1 | 11.4 | 11.6 | 16.7 |
| Joint Infrastructure Fund | – | – | – | 1.5 | 10.2 |
| Other UK public sector (inc. Research Councils, NHS Trusts) | 2.4 | 2.7 | 1.4 | 2.4 | 2.0 |
| Charities | 3.3 | 3.4 | 3.4 | 4.0 | 4.4 |
| Industry | 4.4 | 3.7 | 1.6 | 1.7 | 2.1 |
| International and overseas bodies | 4.3 | 5.0 | 7.6 | 8.2 | 8.9 |
| Commerical fund | 1.6 | 2.9 | 7.5 | 18.0 | 11.7 |
| Transfers from Private Fund | – | – | 1.7 | – | 4.0 |
| Miscellaneous | 9.1 | 6.4 | 11.7 | 15.8 | 10.9 |
| Total income | 323.6 | 328.2 | 350.9 | 382.9 | 416.2 |

Research expenditure

| | 1997-98 £m | 1998-99 £m | 1999-00 £m | 2000-01 £m | 2001-02 £m |
|--|---------------|---------------|---------------|---------------|---------------|
| Recurrent and capital expenditure on institutes and units | | | | | |
| National Institute for Medical Research | 25.2 | 25.4 | 27.6 | 29.1 | 29.3 |
| Laboratory for Molecular Biology | 14.3 | 15.0 | 16.7 | 16.7 | 18.4 |
| Clinical Sciences Centre ⁽¹⁾ | 9.3 | 7.6 | 7.6 | 8.4 | 10.2 |
| Research units and external staff | 91.6 | 97.6 | 116.4 | 115.3 | 119.8 |
| Capital building | 6.8 | 5.2 | 8.4 | 16.0 | 10.7 |
| Estate care and maintenance (recurrent expenditure) | 5.0 | 5.0 | 4.0 | 4.9 | 6.9 |
| Expenditure on institutes and staff | 152.2 | 155.8 | 180.7 | 190.4 | 195.3 |
| Expenditure in universities and other institutions | | | | | |
| Career Establishment Grants | – | 0.4 | 4.2 | 5.6 | 6.5 |
| Centre Grants | – | – | 0.6 | 0.6 | 1.3 |
| Centre Development Grants | – | – | – | 0.1 | 0.4 |
| Centre Component Grant | – | – | – | 0.3 | 0.6 |
| Cooperative Group Grants | – | 0.7 | 6.4 | 14.5 | 20.6 |
| Development Grants | – | – | 0.1 | 0.5 | 1.0 |
| Discipline Hopping Awards | – | – | – | – | 0.6 |
| International appointments | – | – | – | 0.2 | 0.7 |
| Innovation Grants | – | 0.3 | 0.6 | 0.5 | 0.4 |
| Programme and special project/strategic grants | 63.9 | 70.6 | 71.2 | 74.2 | 80.4 |
| Project grants | 40.3 | 29.8 | 16.7 | 9.0 | 2.6 |
| ROPAs | 4.4 | 4.2 | 2.2 | 2.5 | 3.0 |
| Training awards & fellowships | 31.7 | 30.7 | 37.5 | 37.4 | 42.0 |
| Special contributions | 9.4 | 5.4 | 6.1 | 4.7 | 7.0 |
| Joint Infrastructure Fund | – | – | – | 1.5 | 10.2 |
| International subscriptions | 6.1 | 5.6 | 6.1 | 5.7 | 6.9 |
| Expenditure in universities and other institutions | 155.8 | 147.8 | 151.7 | 157.3 | 184.2 |

Summary of expenditure

| | 1997-98 £m | 1998-99 £m | 1999-00 £m | 2000-01 £m | 2001-02 £m |
|--|---------------|---------------|---------------|---------------|---------------|
| Expenditure on institutes and staff | 152.2 | 155.8 | 180.7 | 190.4 | 195.3 |
| Expenditure universities and other institutions | 155.8 | 147.8 | 151.7 | 157.3 | 184.2 |
| Expenditure on national resources ⁽²⁾ | – | – | – | 2.2 | 11.7 |
| Expenditure on administrative running costs | 12.8 | 12.3 | 12.7 | 12.8 | 13.6 |
| Expenditure on commercial exploitation | – | – | – | 4.9 | 8.1 |
| Total expenditure | 320.8 | 315.9 | 345.1 | 367.7 | 412.9 |

[1] From 1997/98 costs relating to the Cyclotron Unit, Magnetic Resonance Unit and the CSC Administrative & Technical Support Group were separately identified in the Accounts. Previously, these costs had been a direct charge to the CSC.

[2] Activities which make resources available to the whole community - eg the UK biobank project, MRC Geneservice and the Human Nutrition Resource Centre (separately identified from other activities from 2000/01 onwards).

NB In line with changes in the way the Government manage and report spending, the MRC is in the process of moving towards accounting and budgeting on the basis of all the resources consumed in a year, rather than just cash. This income and expenditure report is in cash and will continue to be so until Resource Accounting and Budgeting is fully implemented in 2003-04. For 2003-04 we will present the data in resource terms and provide historical data for the period from 2001-02. We hope that this approach will maintain transparency and ease comparability of data included in the report.

This statement has not been audited by the Comptroller and Auditor General. Full Accounts, audited by the National Audit Office, will be available from the Accounts Section towards the end of the calendar year.



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