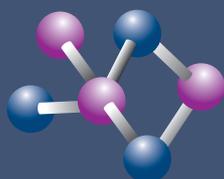


medical research scotland

annual review 2007/2008



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FUNDING A HEALTHIER FUTURE

Foreword from HRH The Princess Royal



BUCKINGHAM PALACE

Medical Research Scotland has successfully established itself as an independent Scottish Charity and I am pleased to be writing this foreword to its Annual Review as its Royal Patron.

Over its 50 years in existence, Medical Research Scotland has supported a wide range of research by Scottish-based scientists and doctors. The healthcare challenges of the 21st century mean that this work is increasingly important, with a real need to ensure that those who wish to embark on a research career are enabled to do so with early-stage funding. That is the focus of Medical Research Scotland and one which will lead to future benefits, both in Scotland and the wider world. The task for Medical Research Scotland now is to ensure streams of both high quality projects and of the funding necessary to support them, and having visited the Charity in February I am confident this aim will be met.



Chairman's Introduction



The continuing importance of Medical Research Scotland funding to young clinicians

and scientists as they embark on their careers was highlighted at our committee meeting in February, when three of our previous grantholders gave short presentations on what our funding has meant to them. Each demonstrated how it had been an essential step on the ladder to academic posts in our universities and hospitals. The diversity of our support was clear - a liver transplant surgeon, a respiratory physician and a neuroscientist - all of whom have now established successful careers. We were honoured at that meeting to be joined by Her Royal Highness The Princess Royal and it was clear that she was greatly impressed by what Medical Research Scotland achieves in providing vital support to these bright young people. Consequently, I am delighted to report that Her Royal Highness has graciously agreed to become our first Royal Patron.

I am sure that her involvement can only strengthen our profile and increase awareness in Scotland of the importance of our charity.

This year we have spent £666,881 and awarded seven grants which are listed on page 4. The three-year scheme of awards with a ceiling of £150,000 appears to be working well and provides a more realistic timetable in terms of delivering meaningful results from research projects. We have tightened up our reporting procedures to ensure more accountability, by both the individual grantholder and the hosting institution, allowing us to monitor progress diligently and ensure best use of our funds. Unfortunately this year we had no applications for the Tyson Fellowship which was being run as a pilot scheme for three years and was specifically directed to nurses, midwives and allied health professionals. The number of applicants in the previous two years had been low and the inability to attract any this year has led us to conclude that the bequest of Mrs Tyson can be better used in an alternative manner.

Our annual Research Open Day took place at the Royal Society of Edinburgh at the end of May. These days are usually very enjoyable and well received. As well as presentations by our grantholders, we heard from a Director in the Chief Scientist Office, Dr Alison Spaul and Dr Denise Coia, Principal Medical Officer, Mental Health in Scotland who is also

one of the Members of Medical Research Scotland. We are hopeful that next year the Open Day will be expanded to allow the active involvement of our Royal Patron.

Summary financial information is on the inside back cover (the full accounts are available on the website). It comes as no surprise that the capital value of our funds is lower than at this time last year. Financial instability worldwide has had an inevitable impact on our investments and this is an area which the Audit & Investment Committee are monitoring very closely, but fortunately we still derive sufficient income to fund all the grants that we choose to support.

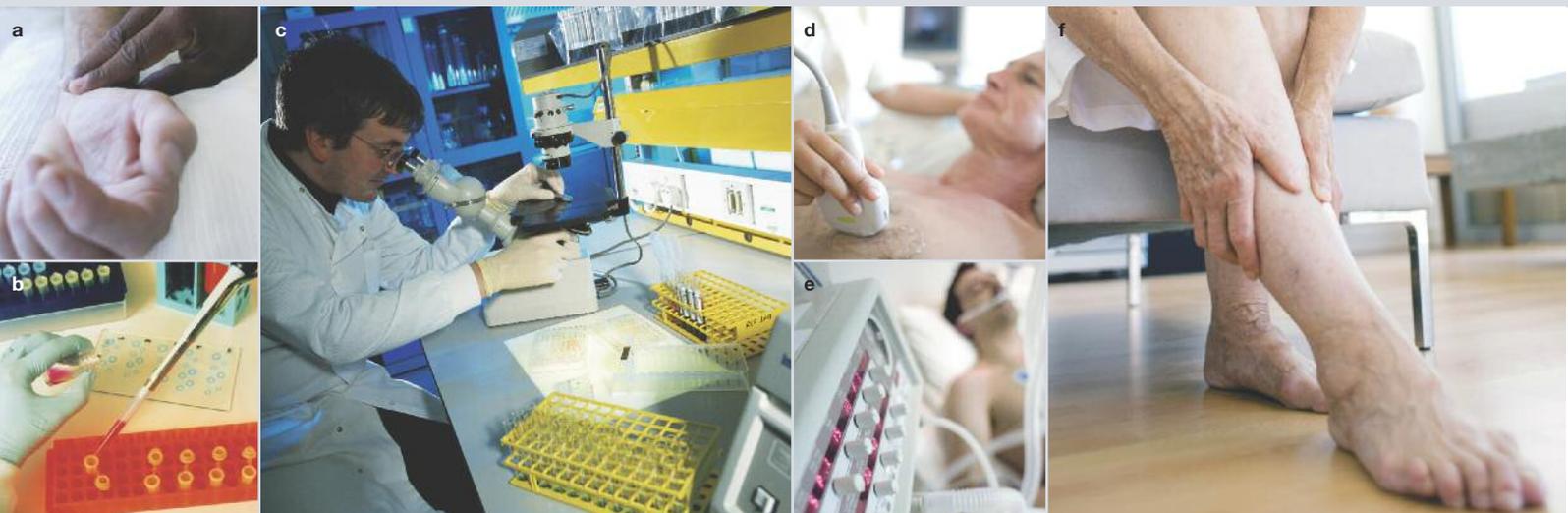
There have been a number of changes in the membership and these are listed on the back cover. I am very grateful to my colleagues for all their work and support throughout the year. The workload for members is not inconsiderable. The Scientific Adviser, The Secretaries and others who contribute to the running of Medical Research Scotland have my personal appreciation of their willing service.

Professor S Moira Brown
OBE, PhD, FRCPath, FRSE
Chairman

The year reviewed

Medical Research Scotland is committed to:

- supporting people in the early stages of their careers in medical research in Scotland
- supporting only the highest-quality clinical and laboratory-based medical research, which is aimed at improving understanding of the basic mechanisms of disease processes; or the diagnosis, treatment or prevention of disease; or the advancement of medical technology.



In keeping with its objectives as Scotland's largest charity funder of medical research, during the year Medical Research Scotland:

- secured agreement from HRH The Princess Royal to be its Patron for a three-year period
- awarded six Research Project Grants and a Tyson Research Fellowship
- continued to raise awareness of its activities and new operational name
- continued to develop its policy in relation to fundraising and is planning a major event in 2009
- continued its ongoing reviews of both the external services provided to it and its membership ensuring a wide breadth of expertise
- continued to keep its investment portfolio and income under very close review
- continued to develop the operation of and systems involved with the online grant application process and carried out significant work in respect of the reporting requirements for grants

In the year ahead, Medical Research Scotland plans to maintain its work in all the foregoing areas and also, in particular, to:

- continue to develop its policy in relation to public awareness and fundraising and, to this end, establish a dedicated *ad hoc* sub-committee
- consider ways to increase the number of high quality applications for research funding; and review the use of the Tyson bequest
- continue to monitor and develop its online grant application processes, particularly in light of the three-year grant awards and updated reporting requirements

Towards a healthier future

Principally, the grants awarded by Medical Research Scotland support fundamental, laboratory-based research in biochemistry, genetics or molecular biology. The research projects are focussed on understanding the mechanisms and processes involved in disease progression and it is the insights resulting from the research which in turn may lead to better diagnosis, treatment, or prevention of disease.

HIV and brain function

Before effective treatment became available for the control of HIV infection, 20% of infected individuals suffered from dementia at an early age. As more HIV-infected people live longer, however, more subtle changes in mental health and brain function are becoming evident. Funding for Edinburgh University's **Dr Iain Anthony** sought to clarify whether HIV, or its associated treatment, accelerates the natural brain ageing processes.

He studied the brains of HIV-infected individuals who had died from non-HIV related causes and were in the early stages of HIV progression, but were receiving the latest form of HIV therapy. His results showed increased accumulation of the abnormal form of a particular protein, perhaps as a result of brain inflammation. The normal version of this protein is important in nerve function, accumulates slowly in the brain as an individual ages, but is only found in large quantities in Alzheimer's disease and some other dementias.

He has also found increased amounts of two enzymes in the brain, both of which are able to change the normal protein to the abnormal version. The abnormal form of the protein may be an indicator of premature brain ageing. His results indicate that the accelerated accumulation of this abnormal protein may have implications for the mental health of HIV sufferers receiving long-term advanced therapy.

Although the symptoms of HIV infection may be kept under control with combination drug therapy, there may be serious disadvantages to this treatment approach if there is premature ageing of the brain in these patients.

Neural tube defects

The brain originates from a simple sheet of cells which folds and closes to form the neural tube. Neural tube defects, including anencephaly and spina bifida, arise when the neural tube fails to close. In spite of antenatal screening and folic acid supplementation, Scotland still has one of the highest incidences of such defects. The genetic causes of folic acid-resistant defects are poorly understood, hampering the development of new screening and prevention strategies.

Groundbreaking work, by **Dr Sanbing Shen** and colleagues at Aberdeen University, on two enzymes known to be crucial for brain development, has shown for the first time that the development of hydrocephalus-related brain abnormalities is associated with one of these enzymes and the severity increases with increasing amounts of the enzyme.

They have also shown that the same protein is also involved in retinal development. Vision is often impaired in hydrocephalus patients and Dr Shen's results have shown that too much protein may cause cells to stop dividing prematurely, resulting in a thin retina and impaired sight.

Better end-of-life care

There is increasing interest in involving cancer patients and their carers in decisions about their end-of-life care and how best they can manage, particularly if they wish to remain at home. Few palliative care studies have addressed these issues from the patients' point of view, or involved patients in the research. Aiming to contribute patient-centred evidence to support the improvement of health, social and community care services, **Dr Bridget Johnston** of Stirling University, our first Tyson Fellowship recipient, has been exploring the experience of both carers and patients with advanced cancer regarding end-of-life care.

She interviewed patients, carers and the healthcare professionals involved with them and noted that patients tended to prefer to describe themselves as "living with", rather than "dying from" cancer. She concluded that the needs and support for self care at the end of life are fundamentally different from those for self care in chronic illness. She is now at the stage of trying to work out how the results from her research can be translated into practical changes to help these patients to have a better experience at the end of their lives.

Grants awarded 2007-08

During the year, the Members awarded funding for research into conditions as varied as the immune response to dental caries, paracetamol-induced kidney failure, personality disorders, cancer-induced bone pain and the autism spectrum.



Dr Shauna E Culshaw (Centre for Biophotonics, Strathclyde University) to improve understanding of the basic mechanisms of the adaptive immune response to cariogenic bacteria in the oral cavity: *This fundamental study aims to provide pointers to how best to prevent or treat dental decay and thus improve oral health, general well-being and quality of life.*

£39,777 over 18 months to **Dr James W Dear** (Clinical Pharmacology Unit, Edinburgh University) for the characterisation of paracetamol-induced acute renal failure, using dendrimer-contrast magnetic resonance imaging: *Testing a new technique for imaging the pattern of organ injury, this project is studying possible new treatments and clarifying the role of the immune system in kidney injury.*

£149,843 over two years to **Dr Ada Delaney** (Centre for Neuroscience Research, Royal [Dick] School of Veterinary Studies, Edinburgh University) for an investigation aimed at gaining

new insights into evidence-based pain management for cancer-induced bone pain: *The biochemical response in nerves is the focus of this study which hopes to find markers which might aid the evaluation of new analgesics for this type of bone pain.*

£149,841 over three years to **Dr Mary Donaldson** (Pathological Sciences, Glasgow University Veterinary School) to investigate the potential of TopBP1 as a therapeutic target for human papillomavirus infection: *By improving understanding of how cell components interact with viral proteins, this work aims to find ways of disrupting the life cycle of human papillomavirus (HPV) to prevent it causing genital warts and cervical cancer.*

£141,343 over three years to **Dr Gareth B Miles** (School of Biology, St Andrews University) to test the 'synaptic stripping' hypothesis for amyotrophic lateral sclerosis (ALS), through an investigation of cholinergic synapses on motoneurons in ALS: *This project hopes to shed light on the*

mechanisms which damage the motor nerves in this paralysing and fatal disease.

£97,672 over 30 months to **Dr Andrew C Stanfield** (Psychiatry, Edinburgh University) for a clinical, neuropsychological and MRI study comparing autism spectrum disorders and schizophrenia spectrum disorders: *This project aims to find markers which will help to distinguish between the similar clinical signs and symptoms of schizophrenia and autism thus improving diagnosis for subsequent treatment.*

The Mrs Mary Tyson Research Fellowship was awarded to **Dr Anna Sutherland** (Psychological Medicine, Glasgow University) for a study of perceived interpersonal threat as a unifying psychological model in Cluster B personality disorder: *Aiming to develop an effective, evidence-based cognitive model to improve treatments to reduce the antisocial and self-harming behaviours characteristic of these personality disorders.*

Legacies & Donations Received

The following legacies and donations were received with gratitude by the Members. Unless otherwise indicated, all will be applied in support of general medical research.

Donor	£
The Nairn Trust	1,000
The late Mr James Aitchison (for schizophrenia and manic depressive illness)	50,000
The late Miss Eliza Wallace	40,000
The late Miss Thomasina Simpson	4,806
The late Richard T Ellis OBE (estimated)	7,000
Total	102,806

Royalties arising from the commercialisation of research previously funded by Medical Research Scotland/ SHERT amounted to £58,951 during the year.

Financial Summary

The Trust can only spend income and is therefore reliant on the income from its investments, and also on legacies, donations and royalties. Income generated on the investment portfolio and related cash deposits was £1,161,604 during the year,

compared with £1,146,525 in 2006-07. As at 31st March 2008, the value of the Trust's investment portfolio (including capital cash) was £28,887,613, compared with £32,870,192 at 31st March 2007 and a value as at 28th August 2008 of £28,477,133.

The Trust's investments are divided into Restricted and Unrestricted Funds: the former supporting research into specific diseases; the latter being available to support any area of the Trust's work.

Income & Expenditure Summarised

	2008	2007
	£	£
Income		
Legacies & donations	102,806	706,535
Royalties	58,951	22,166
Investment income	1,161,604	1,146,525
Total incoming resources	1,323,361	1,875,226
Expenditure		
Costs of generating voluntary income	17,282	25,805
Investment management cost	74,528	93,586
Grants payable	357,494	743,057
Support costs of grant-making	156,224	181,388
Governance costs	44,219	44,850
Total resources expended	649,747	1,088,686
Fund balances at 31 March 2008	30,700,492	34,062,035

Medical Research Scotland is the country's largest independent charity funder of medical research

Members

The following served as Members of the Trust during the year:

*Professor S Moira Brown, OBE, PhD, FRCPath, FRSE (Chairman)

Dr Marie Boyd, BSc, PhD

Dr Denise Coia, MBChB, FRCPSych (from 31 May, 2007)

Professor William Cushley, BSc, PhD

*Mr Frederick Dalgarno, LLB, DipIM, CA

Professor Paul Garside, BSc, PhD (until 31 December, 2007)

Professor David J Harrison, BSc, MBChB, MD, FRCPath, FRCPE

Professor Margarete Heck, BSc, PhD (from 6 August, 2007 until 8 May, 2008)

Dr Karen Horsburgh, BSc, PhD

Professor Allan M Mowat, BSc, MBChB, PhD, FRCPath (from 13 November, 2007)

*Mr John Naylor, OBE, MA, CCMI

*Ms Fiona Nicolson, MA, LLB, DipLP

Professor Michael Steel, BSc, MBChB, PhD, DSc, FRCPE, FRCSE, FRCPath

*Mr Alan A Stewart

Professor Stephen J Wigmore, BSc, MBBS, MD, FRCSEd, FRCS (from 13 November, 2007)

* Denotes membership of the Audit & Investment Sub-Committee

Secretaries: Turcan Connell

Princes Exchange, 1 Earl Grey Street, Edinburgh EH3 9EE

Scientific Adviser: Dr Joan C M Macnab, PhD, FRCPath

Auditors: Chiene + Tait

Chartered Accountants and Registered Auditors, 61 Dublin Street, Edinburgh EH3 6NL

Investment Manager: Martin Currie Investment Management Ltd

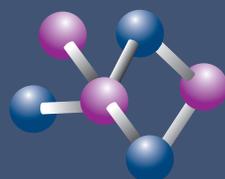
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