

Caledonian Research Foundation



Supporting Research of International Quality
in Scotland

Biennial Review 2002-04

Chairman's Introduction

Mid-way through the period covered by this review of the Foundation's activities, I accepted the position as Chairman of the Governors following the retirement of John Evans. The Foundation and Scotland's young researchers owe much to his tireless efforts on behalf of CRF throughout his many years of association with it and he is proving a challenging act to follow. John became Deputy Chairman following the death in office of Sir Alastair Currie in 1994 and was appointed Chairman in 1999, when George Burnet retired. We may have missed him at formal meetings of the Governors, but have been delighted to see him at Prize Lectures and Conferences, ably demonstrating his continued interest in and support of the Foundation's activities.



The annual Prize Lecture is one of the most important events sponsored by the Foundation. When military historian, Professor Richard Holmes gave his Prize Lecture in Edinburgh in May 2003, his audience included a number of teachers and senior pupils from local schools - the First World War being an important part of the examination curriculum in history. While this year's Prize Lecturer, Professor Joan Steitz of Harvard University, had a rapt audience of research scientists from across Scotland for her presentation on pre-mRNA gene splicing.

The continued global downturn in the financial markets, coupled with the ending of receipts from tax credits on investments, have meant the continued tightening of the Foundation's belt with regard to its funding support. We were not therefore able to award 12-month Support Fellowships in biomedical sciences after that made for 2002-03. The number of applications for the three-year Research Fellowships in Biomedical Sciences remains high, however, with the standards seeming to rise annually. The same is true of those applying for three-year Postgraduate Scholarships, where the obvious capability and promise of these young applicants makes the task of the selection committee very challenging.

We continue to be concerned about the relative paucity of supported applications from humanities scholars wishing to carry out

research in Scottish institutions. Prior to his sudden and untimely death in October 2004, Professor Tony Harper was seeking to find ways to improve the situation. He had been an enthusiastic supporter of the European Visiting Research Fellowships in the Humanities from his appointment as a Governor a decade ago and had chaired the awards selection committee for some time.

In the following pages you will read a little about the range and diversity of the activities supported by the Foundation in seeking to achieve its objective of supporting research of international quality in Scotland. This slim volume can, however, only provide an overview of its work during the past two years and more information can be found on our website (www.calres.co.uk). We are very fortunate in that we continue to enjoy fruitful and productive relationships with both the Royal Society of Edinburgh and the Carnegie Trust for the Universities of Scotland.

I close by thanking my fellow Governors and colleagues in these organisations for their continued support of the work of the Foundation. I must also record our thanks to Richard Filleul, Partner in Murray Beith Murray, who retired at the end of 2004, having looked after the Secretarial functions of CRF diligently, efficiently and with great good humour for several years. We wish him well in his retirement.

Supporting Scotland's Research Base

The Foundation's objective is to support research of international quality in Scotland and the funds it disburses each year enable it to do this in a number of ways. The following is a brief summary of some of the activity it has supported during the two years under review. A full list of the research awards made is provided on page 4.

Prize Lectureships

Each year, the Foundation's Prize Lectureship is awarded to an academic of international repute. The recipient usually spends several days in Scotland, visiting research centres and meeting staff to discuss current research, in addition to delivering the Prize Lecture in Edinburgh and one other Scottish city.

Eminent historian, Professor Richard Holmes, CBE, of the Royal Military College of Science, Cranfield University, was recipient of the 2003 Prize Lectureship and he gave his lecture, "War of Words: The British Army and the Western Front 1914-18", in Edinburgh and in Aberdeen. In his lecture, he talked about the polarisation of historians which has resulted from the bloody struggle on the Western Front and argued that we find it hard to approach the war as history rather than as literature. He suggested that letters and diaries of participants, written at the time, tend to give a different view of the war from that reflected in much of its poetry and literature and that the debate about generalship has tended to obscure the real achievements of the men who fought, endured and won the war.

In the annual pattern of alternating between the sciences and the humanities, the 2004 Prize Lectureship was awarded to Professor Joan Steitz of Yale University, a leading world authority in the field of RNA biochemistry and cell biology. She gave her lecture, "Pre-mRNA Splicing – the tie that binds", in Edinburgh and again in Dundee. The splicing of pre-messenger RNA is an essential step in the expression of almost all human genes and Professor Steitz was the first to recognise and establish the link between small nuclear ribonuclear protein particles (snRNPs) and human autoimmune diseases. Following an outline of their history, she talked about these subunits of the RNA-splicing apparatus and the research challenges presented by the need to understand more about the molecular processes involved and their relevance to human disease.

International Conference in the Biomedical Sciences

These annual, two-day, multidisciplinary conferences are funded by the Foundation and organised jointly with the Royal Society of Edinburgh. The topics chosen relate to major topics in biomedical research, reviewing current knowledge and highlighting future directions. With speakers invited from all over the world these highly successful events offer the Scottish biomedical research community an opportunity to meet and question international experts in the field as well as others in cognate disciplines.

In 2002 the conference considered an issue of major clinical importance in an ageing society, namely the physiological processes, psychological aspects and clinical applications of research findings into

memory and its loss. Advances in the understanding of learning and memory have led to the

psychological concept of multiple memory systems being related to anatomical and neurobiological functionality. In addition to reviewing current understanding in these fields, the symposium also considered the changes in memory that occur in old age, independently of any disease-related changes.



Supporting Scotland's Research Base

The following year, remembering the challenges posed by the 2001 foot & mouth disease outbreak and the earlier BSE 'crisis', a broad range of experts came together to categorise old and new threats to the food chain, assess the success – or otherwise – of old solutions and propose new ones. Taking as case studies, some high-profile outbreaks of the past, the threats – pathogenic, human and systems-based – were reviewed and discussed. It was

agreed that the public health authorities have a key role in maintaining and improving surveillance systems, to monitor trends and to ensure that the emergence of 'new' food pathogens is detected early. In addition it was acknowledged that much greater attention should be given to the training of all food handlers – in large and small food companies, catering and fast food outlets – and also to those in the farming sector.

Biomedical Research Fellowships

These provide much-needed support to enable young scientists working in Scotland to establish themselves as independent researchers, going on to set up and lead their own research teams. In this way, they help to secure the future of the international-quality research base essential to the intellectual and economic well-being of the country.

Understanding Cell Division

Dr Damien Hudson* was awarded a three-year Personal Research Fellowship (2003-2006) to investigate the mechanisms involved in shortening the DNA molecule within the nucleus just prior to cell division. For normal cell division to take place, the large DNA molecule is condensed 10,000-fold, creating the familiar, rod-shaped chromosomes which are then copied and separated into two new nuclei.

Using a combination of biochemical, proteomic, structural and genetic analysis techniques, he is working to break down the protein complex – condensin – which is known to play an essential part in the shortening process. Once he has broken the complex into its constituent proteins, he hopes to be able to identify which are important in the process of defining the structure of the chromosomes at this crucial stage in the processes of cell division.

**Dr Damien Hudson, Wellcome Trust Centre for Cell Biology, University of Edinburgh: Genetic analysis of essential genes involved in chromosome structure and segregation in vertebrate cells*

Assessing Obesity Risk

The 12-month Support Fellowship (2002-03) was awarded to Dr John Reilly* who investigated the relative contribution of the many factors involved in causing childhood obesity to the risk of obesity in later life. The current epidemic of obesity among British children will not only result in a great deal of ill health in childhood, but also a substantial future burden of adult ill health, especially from cardiovascular disease. Having investigated all the contributory factors – genetics, level of physical activity, energy expenditure and early-life experiences, such as type of infant feeding and age at weaning – in turn, he then devised a statistical model which allowed the integration of all the data and the comparison of their relative contribution to the risk of obesity in later life.

** Dr John J. Reilly, Department of Human Nutrition, University of Glasgow: The contribution to obesity risk of energy expenditure, physical activity and genotype*

For the Record

Over the two years covered by this Review, the Foundation has made the following research awards:

Personal Research Fellowships in the Biomedical Sciences

Dr **Archa Hannah Fox**, School of Life Sciences, University of Dundee – biochemical characterisation of paraspeckles, a novel nuclear domain (2002-05)

Dr **Hilary Anne Snaith**, Wellcome Trust Centre for Cell Biology, University of Edinburgh – an investigation of the role of mod5p to improve understanding the cellular polarity in fission yeast (2002-05)

Dr **Jeremy Sanford**, MRC Human Genetics Unit, Western General Hospital, Edinburgh – exploring the cytoplasmic functions of shuttling pre-mRNA splicing factors (2003-06)

Dr **Damien Francis Hudson**, Wellcome Trust Centre for Cell Biology, University of Edinburgh – genetic analysis of essential genes involved in chromosome structure and segregation in vertebrate cells (2003-06)

Support Research Fellowship in the Biomedical Sciences

Dr **John Joseph Reilly**, Department of Human Nutrition, University of Glasgow – the contribution to obesity risk of energy expenditure, physical activity and genotype (2002-03)

Postgraduate Research Scholarships

Vikki Forsyth, St Andrews: an historical survey of Arcadia in European literature (2002-05)

Lindsay Sugden, Edinburgh: Tephra transport pathways in englacial and proglacial systems (2002-05)

Anne Tindley, Edinburgh: the history of the Sutherland Estate, c1860-1920 (2002-05)

Leigh Ann Jones, Strathclyde: the influence of sex- and pregnancy-associated hormones on immune function and the development and maintenance of immunity to *Toxoplasma gondii* (2003-06)

Ruaraidh McIntosh, Heriot-Watt: supraicosahedral carborene chemistry (2003-06)

Niall O'Gallagher, Glasgow: the recurring theme of Empire in Alasdair Gray's writing (2003-06)

European Visiting Fellowships in the Humanities

From Continental Europe to Scotland

Mrs **Larysa Sanotska**, Lviv National University, Ukraine, to visit the Department of Scottish & Modern Literature, University of Edinburgh.

Professor **Waldemar Kowalski**, Akademia Swietokryska, Poland, to visit the Research Institute of Irish & Scottish Studies, University of Aberdeen.

Dr **Victor Apryschenko**, Rostov State University, Russia, to be based in the University of Strathclyde and also visit Edinburgh and London

Dr **Ema Jelinkova**, Palacky University, Czech Republic, to visit the Department of English Literature, University of Edinburgh.

Dr **Alexander Panayotov**, New Bulgarian University, Sofia, to visit the School of Divinity, University of St Andrews.

Rev Dr **Istvan Pasztori-Kupan**, Protestant Theological Institute Cluj (Kolozsvár), Romania, to visit New College, University of Edinburgh.

From Scotland to Continental Europe

Dr **Louise Bourdua**, Department of History of Art, University of Aberdeen, for visits to the Universities of Padua and Verona and the Centro Studi Antoniani in Padua.

Dr **Simon Gathercole**, Department of Divinity & Religious Studies, University of Aberdeen, to visit the Institut fur antikes Judentum at the University of Tubingen.

Professor **Alison McCleery**, Faculty of Arts & Social Science, Napier University, for visits to the University of Caen, the National Statistical Institute, the Normandy Chamber of Agriculture and the National Demographic Research Institute in Paris.

Professor **Steven Spier**, Department of Architecture & Building Science, University of Strathclyde, to visit the Instituto Universitario di Architettura in Venice.

Dr **Martin P. Kirkbride**, Department of Geography, University of Dundee, to visit the Department de Géographie / CISM, Université de Savoie, France and the Dipartimento di Scienza della Terra, Università di Milano, Italy.

Professor **Niall R. Whitty**, School of Law, University of Edinburgh, to visit the Max-Planck-Institut für Ausländisches und Internationales Privatrecht, Hamburg, Germany.

Dr **Christopher Whyte**, Department of Scottish Literature, University of Glasgow, to visit several centres in Hungary and Romania.



Caledonian Research Foundation is a Scottish Charity which has supported independent research in Scotland since 1990. It was originally established in 1977 as a spinout from a scientific research organisation and as a charity, but the emphasis of its activities changed in 1990 and its interest now lies mainly in sponsoring and encouraging research in Scotland.

In seeking to achieve its aim of promoting research of international standard in Scotland, the Foundation's Governors, who are all senior figures active in the Scottish academic and business communities, work closely with both the Royal Society of Edinburgh and the Carnegie Trust for the Universities of Scotland.

Governors 2004

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