

**THE  
WELLCOME TRUST  
1989/90  
NINETEENTH REPORT**

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Secretary to the Trustees	P O Williams, DSc(Hon), DM(Hon), FRCP

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It has been another year of progress and expansion for the Wellcome Trust. Expenditure in the current year will be £78.7 million compared with £64.1 million for the year ended 30 September 1990 — an increase of 23 per cent. It is anticipated that the Trust's income will continue to grow, at least in line with inflation, for the foreseeable future. This strong financial position is in no small way due to the continued success of Wellcome plc.

The Trust's existing commitments to medical research continue to be maintained and in the past year many new initiatives have also been undertaken. Among those implemented in 1990 was the Hitchings-Elion Fellowship scheme which will enable up to fifteen United States' medical scientists to work in Britain each year. This new arrangement has been organized with the co-operation of the Fogarty Foundation and the Burroughs Wellcome Fund. It illustrates the importance the Trust attaches to increasing Anglo-American exchanges and also recognises the research activities of Dr George Hitchings and Dr Trudy Elion, who both won the Nobel Prize for Medicine in 1988 for their many years of creative work at Burroughs Wellcome. The results of their research have made a significant contribution to the prosperity of both Wellcome plc and the Wellcome Trust.

On the domestic front, the Trust has become very concerned about the level of salaries in medical research. In October 1989 it was decided to expand the prize studentship scheme so that up to sixty PhD students could receive a realistic stipend. Also, the Trust has enhanced the salaries of postdoctoral fellows and research assistants to a level which we believe will encourage them to stay in medical research. The Trustees are pleased that other medical research charities and the Medical Research Council have accepted the need for these improved PhD stipends.

The most important project that the Trust is undertaking at present is the refurbishment of the Wellcome Building. It will house the Trust's offices and the Wellcome Library of the History of Medicine, which will be linked by a tunnel to its very large book store in Bentley House on the north side of the Euston Road. The reconstruction of the Wellcome Building has required much planning and in the case of the exhibition 'Science for Life', a great deal of imaginative work. The Wellcome Building will, we hope, become a centre for medical science and history and form a focus for medical research in Britain when it is occupied in early 1992.

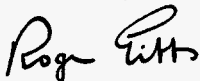
Two Trustees, Dr Helen Muir and Lord Swann, retired during the year. Helen Muir was a Trustee for eight years. She is a dedicated research worker and always showed the deepest interest in the Trust's affairs. Her contribution to medical research has been considerable and we will miss her participation in our activities at Park Square West.

Lord Swann retired on 1 March 1990 after seventeen years as a Trustee. Very sadly, he died suddenly on 22 September. Michael Swann was the most talented and congenial of men who gave great help to a wide variety of institutions, both within and outside the academic world. He made a telling contribution to the success and development of the Wellcome Trust. He is greatly missed by us all.

On 30 June, Sir Alfred Shepperd retired. He joined Wellcome Foundation Limited as Finance Director in 1972 and became its Chairman and Chief Executive in 1977. Sir Alfred led the Wellcome Group through its most exciting period of growth and also through its transition to public company status. He can quite rightly look back, with considerable pride, on what the Company has achieved over the past two decades. We at the Trust are most grateful to him. He has been succeeded by Sir Alistair Frame as Chairman of Wellcome plc and by Mr John Robb as Chief Executive. We wish them both every success in the years ahead.

It was recently announced that Dr Peter Williams, who has been Director of the Wellcome Trust for the past twenty-six years, will retire on 30 September 1991. He will be succeeded by Dr Bridget Ogilvie, who is the Director of Science Programmes at the Trust.

Never has the Wellcome Trust had a more active or demanding year. On behalf of the Trustees, I would like to thank everyone at the Trust and our panels of advisers and referees for the invaluable contribution they have all made.



R G Gibbs

This report reviews the financial year 1 October 1989 to 30 September 1990, during which the Trust has had £63.0m available for its activities. This is an increase of £13.7m on the previous year. The policy statement for 1990/91 issued in October 1990 envisaged an expenditure totalling £78.7m for 1990/91 of which £72.7m will be available for the support of scientific research, and the history of medicine.

This is the last introduction (the sixteenth) to a Trust report that I will write before the appointment of a new Director. Even though I will be responsible for the period of the 1990/91 report, its introduction will be focused through the eyes of my successor Dr Bridget M Ogilvie. I therefore take this opportunity to express my personal views on the role of the Trust in medical research today. Before doing so may I congratulate Dr Ogilvie on her appointment. Having personally recruited her as the first Director of Science Programmes at the Trust it gives me great pleasure to pass on the mantle to her.

The Wellcome Trust is an independent organisation which creates its own policy. It must, of course, do this on the basis of knowledge of the state of the universities, the government and the National Health Service, and the changes taking place therein. Sometimes the Trust may have to react to these changes. Most of the time, however, its task must be to decide what is the best way to pursue Sir Henry Wellcome's stated purpose — to advance knowledge in the biomedical sciences and the history of medicine 'which may conduce to the improvement of the physical condition of mankind'. Thus, scientific quality and relevance to the physical condition of mankind is the first criterion for selection. Inevitably in a field like medicine a number of peripheral possibilities arise which must be resisted if the central objective is to be limited enough to be effective. The usual diversions are requests for funds to support the university system, the health care system and special groups of deprived people.

There are obviously sound reasons why help should be given to these three categories. However, once supported, they have an enormous appetite which would soon devour the resources of even such a relatively rich trust as the Wellcome. We have therefore taken the line that the university and health care systems must logically benefit as a spin-off from our central purpose rather than as central themes. Nevertheless the Wellcome Trust is now a very significant source of funding for universities. It also provides grants and has started to train researchers for health services research. We judge proposals from these sectors, like all others, on the merits of the scientific cases presented. This attitude means that we tend to leave to others the lobbying and negotiation that has been so active during the past year in relation to changes in the universities and health service, resulting from the early activities of the University Funding Council and in connection with the Health Services Act. There are enough voices from the universities and the medical world representing their case. The Trustees and their staff are therefore pleased to support the Association of Medical Research Charities and the academic committee convened by the Royal College of Physicians — and serve on these — without feeling obliged to take part in further political lobbying.

We note that the new pressures on the universities to be financially less dependent on government are pushing them to sources of funding that are less conducive to academic freedom than grants from an independent research council or a charitable foundation. It is difficult to believe that in today's political climate, commerce and government are not seeking advantage from the support of research when they make major contributions to universities. These motives are, of course, perfectly acceptable from the viewpoint of the prosperity of the country or the more equitable distribution of scientific activity over the realm. But when geographical distribution vies with academic suitability in determining where to place a research unit, we begin to use the wrong reasoning in deciding what to support. This is a danger that also besets disease-orientated charities trying to satisfy their donors' expectations that they will soon come up with a 'cure'.

One illustration must be the relocation of the activities of the Clinical Research Centre from Northwick Park, not to Hammersmith alone as was proposed originally, but to various sites around the country. It is reasonable to want more of our universities and hospitals to have their proportionate share of the government gold, but the best research or advances in patient care do not evolve from evenhandedness but from selectivity which often means the development of a 'critical mass'. The Wellcome Trust would therefore appear to be pulling against the general tenor of government policy as it continues to put excellence above short-term usefulness as the basis of its selectivity.

This policy is sustained at the Trust by maintaining a considerable scientific participation in the evolution of medical research. This is achieved firstly by the constitution of the Board of Trustees, of whom five out of seven are practising scientists; and secondly by the Director and most of the senior staff who are scientifically trained and maintain an interest and participation in the flow of science in the various fields. All of this in-house expertise is advised and supported by the active participation of more than 60 panel members and numerous expert referees.

It is against this background that the Trust has had to take a number of major decisions during the past year. The first was the replacement of two retiring Trustees with suitably qualified successors. Here the problem was to ensure that the Trust could attract the best people available and yet not so drown them in Trust work as to make it impossible for them to continue the very activities which would make them valuable as Trustees. One way to reduce their load has been to relieve them of the chairmanship of the Trust's scientific advisory panels - although they will still attend as members. Another solution, in the case of Sir David Weatherall, was provided by Downing Street in appointing him to the Regius Professorship of Medicine at Oxford from 1992, which will relieve him of certain onerous responsibilities. Sir Hans Kornberg who has succeeded Dr Helen Muir, had, of course, already passed over the Chairmanship of the Department of Biochemistry in Cambridge to Professor Perham. The other step has been to expand the establishment of scientific staff at the Trust by the appointment of scientific and senior scientific officers, who will become secretaries to the panels, and thereby enable the scientific programme directors to be relieved of some of their day-to-day routine.

Having established what needs to be done, the Trustees have evolved a comprehensive programme of support for the biomedical sciences and the history of medicine. The principal aim has been to train and develop the potential of talented research workers, and to provide whatever form of support will most successfully advance knowledge in medical science and the history of medicine. An important step towards this end has been the implementation of the Trustees' decision to enhance the salaries of postdoctoral non-clinical scientists funded by the Trust. This decision was announced in the last report, and its implementation, as hoped, has led to other organisations acknowledging the need for greater financial recognition of the importance of medical research.

The Trust continues to receive a large number of applications - a total of 1916 during the year of which 1155 were funded. However, one sometimes wonders whether the relentless pursuit for grants is beneficial for the system as a whole. An analysis of the time allocated to their research projects by principal investigators applying for grants averaged 16 hours per week by new lecturers and 9.8 hours for established academic staff. This was for requests of £92 000, on average, most of which goes towards salaries for staff. At a time when it is generally agreed that good quality staff are difficult to find, the question must be raised as to whether the provision of limited supervision to numerous assistants is the most productive way of doing research rather than making a major creative commitment oneself? This is a real question, not a rhetorical one, and the Trust's newly created unit for Policy Studies in Science and Medicine (PRISM) will be investigating this problem in due course.

### News of recent awards

During the year, apart from the regular grants programme, special studies have been made of a number of new ideas, and individual awards outside the core programme have been made in response to special needs. Thus the Trust has given £300 000 to the Royal Society of Medicine to computerise its library, which it is hoped will link even more closely to the Wellcome Institute for the History of Medicine library. The Trust has helped this important library for medical research on previous occasions with substantial grants. The Royal College of Physicians of Ireland also made a special plea for help with its library and was awarded £20 000. The new Institute for Molecular Medicine in Oxford which the Trust, together with the Medical Research Council and Imperial Cancer Research Fund, had helped to create, was given core funding of £200 000 per annum for five years so that it could get underway as quickly as possible. Also the Trust has agreed to fund the setting up of the European office of the Human Genome Organisation (HUGO). This will be located in Trust accommodation.

Workshops on osteoporosis, gene therapy and mathematical biology led to policy discussions about support for these fields. In the last case, special fellowships and scholarships were created and the first awards were made in July 1990.

A special review of the Trust's support for veterinary research was undertaken by Dr Bridget Ogilvie who visited all the UK veterinary schools. As a result, the Trustees decided to fund special training awards for this field (see page 95).

Note should also be taken of the progress of the developmental biology project in Cambridge. The building is now nearing completion, and during the year the various teams have received major awards from the Trust so that they will be able to staff the Institute when it is opened in June 1991 by the Duke of Edinburgh.

The second largest grant in the history of the Trust, £4m to Professor Roy M Anderson, FRS, at Imperial College, London was made during the year to fund the Wellcome Trust Parasitic Diseases and Biology of Helminths Research Unit.

Applications to the Trust for large sums of money for major developments are becoming more numerous. In the coming year the Trustees are faced with a number of requests to support developments of this type, far outstripping the funds available.

### Feedback on grant applications

A high proportion of grant applicants, particularly those who have been unsuccessful, now request feedback after a decision has been made on their proposals. The provision of this information seems to be appreciated by the recipients but it must be emphasised that the sending of feedback with subsequent agreement to submit a new or revised proposal cannot be interpreted as an indication that support will be provided. The provision of feedback places a considerable and additional burden on the office staff and it is important therefore that the Trust receives in return information from applicants who have benefited from this process.



## History of Medicine

In the history of medicine the Wellcome Institute has been much preoccupied with moving into temporary accommodation in Bentley House and in Tavistock Square. The major task of relocating and storing the library was undertaken during the early part of 1990 and much credit must go to Messrs Eric Freeman, Robin Price and Steven Emberton and all their assistants for its smooth achievement. A special meeting of the Trust's History of Medicine Advisory Panel was held in May from which evolved a forward-looking plan aimed at extending the public interface with the subject, especially among students and doctors. The decision to place the visual images of the iconographic collections held by the Trust on to a videodisc will create a valuable resource for the future. Also of note was the loan to the National Gallery of the painting by Adam Elsheimer of Saint Elizabeth tending the sick, which was used by the Trust for its 1990 Christmas card.



*A hospital, with Saint Elizabeth of Thuringia attending to the patients. Oil painting on copper  
27.0 x 19.5cm by Adam Elsheimer (1578-1610) c.1598*

The work of the Academic Unit of the Institute came up for special review and was highly commended.

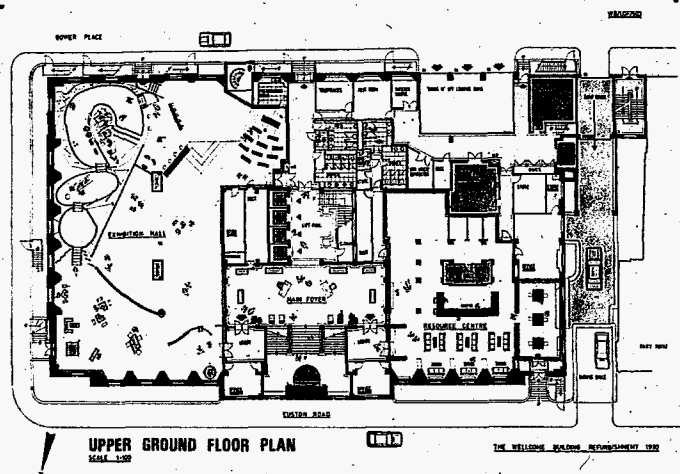
## Centre for Medical Science and History



*The Wellcome Building at 183 Euston Road, London, which is currently being refurbished. The hoarding around the building has a series of illuminated poster displays designed to heighten public awareness of the importance of medical research.*

Finally, we must draw attention to the very hard work undertaken on the refurbishment of Bentley House and the Wellcome Building. These major developments, which will consolidate the Trust's in-house activities on opposite sides of the Euston Road, joined by a tunnel, have necessitated extremely hard work by Mr Denis Richardson, the project manager, and his team, who are to be congratulated on bringing the development of Bentley House to completion on time and within budget. It was an onerous task to create the capacity to store the Wellcome Library (on mobile shelving) as well as to provide racks for the pictures, manuscripts and archives owned by the Trust. The Wellcome Building, for which the contract for refurbishment has been given to Trollope & Colls (City), the firm which built the building in 1932, is now being redeveloped for its future use.

During the year major steps have been taken to create a Centre for Medical Science and History which is to be housed in the Wellcome Building when it reopens in 1992. The whole enterprise has been managed through a Centre Working Party chaired by the Director who up to now has assumed overall charge for the Centre. Dr Laurence Smaje has been transferred with effect from early October 1990 from the Directorship of the Physiology and Pharmacology Programme to take charge of the Centre, and Mr Steven Emberton who had earlier become the Public Activities Development Manager, will now work with Dr Smaje. The Centre will include an exhibition, 'Science for Life' being developed by Dr Paulette McManus in conjunction with the designers MIET Studio. Regular committee meetings have been held to define the content of each section of the exhibition. Formulating these plans has been a stimulating exercise and we hope that the eventual product will be very attractive and informative.



Floor plan of the upper ground floor at the Wellcome Building.

The resources centre is aimed at providing information on the availability of grants and positions in medical research, and will be linked through JANET to all universities in the country. As the resource develops we believe that it will become an important support for medical research. In addition, the tropical videodisc and the iconographic disc will be accessible through the Centre. These are described in more detail on pages 129 and 132.

The third activity is a meetings programme using the excellent facilities being developed in the building. Some meetings will be generated internally to promote the interests of the Trust and the research community. Others will arise through the activities of the various organisations which may wish to use the facilities.

The Wellcome Trust is a busy place as it strives to be innovative in the support of medical research and medical history. This report gives details of the awards made during the year, each of which has received detailed scrutiny.

After twenty-six years at the helm I leave the Trust with a feeling of great satisfaction that it is now fulfilling Sir Henry Wellcome's great expectations and will continue to do so in the future.

P O Williams

## FINANCE

The finances of the Trust are closely linked to the performance of its total investment portfolio. The investment portfolio managed by the Trust's Investment Managers whilst producing an income of £14.0m in 1989/90 was subject to the very considerable fluctuations in the international stock markets, particularly towards the end of the year when tension in the Middle East led to the very severe marking down of values on all the major international stock markets. As a result its market value at the end of the year was £237m (£223m 1986). The value of Wellcome plc shares during the year moved at times quite spectacularly. Having started the year at 664p, the price then rose to 780p in January, falling to 423p on the 24 August and closing the year at 476p. During the year the value of the distributions made by Wellcome plc showed a 34.6 per cent increase on the previous year's figures and, at £44.2m, represented some 70 per cent of the Trust's total income which amounts to £63m (£49.3m in 1989).

The expenditure during the year in support of medical research amounted to £54.6m, with a further £3.8m committed to the support of the history of medicine. The amount available for support in 1990/91 totals £72.7m.

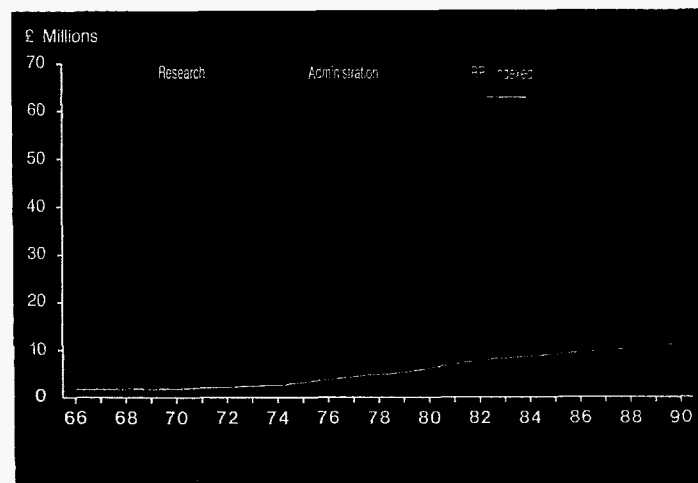


Figure 1. Annual expenditure 1966-1990

The Government has yet to indicate when the proposed new legislation on charities may be put before Parliament. The 1989 White Paper entitled *Charities: A Framework for the Future* still allows for representations to be made on behalf of the charity world and these continuing efforts will probably lessen the effect that any legislation might have on highly responsible charities such as the Wellcome Trust.

The single European market planned for 1992 still causes concern, as harmonisation of the fiscal treatment of foundations may well damage charities in the UK.

### Wellcome plc

The company has seen a year of considerable change. Sir Alfred Sheppard retired as Chairman and Chief Executive on 30 June and was replaced by Sir Alistair Frame as Chairman and by Mr John Robb as Chief Executive. Mr Martin Brookman retired and was replaced by Mr John Precious as Group Finance Director. Mr Claude Matons also retired. Mr James Cochrane joined the Company as European Operations Director and Mr Keith Merrifield joined the Wellcome Board as International Operations Director after spending a number of years as Managing Director of Wellcome International Trading Ltd.

It is pleasing to note that Wellcome plc were again awarded the Queens Award for Export Achievement. The Trustees continue their regular visits to Wellcome plc establishments particularly to the research facilities at Beckenham in England and in North Carolina, USA.

### ADMINISTRATION

### Lord Swann

This note about Lord Swann was being written to commemorate his Trusteeship when we heard of his sudden death on 22 September 1990 only seven months after he ceased to be a Trustee. We extend our deepest sympathy to Lady Swann and their family.

Lord Swann became a Trustee in 1973. He succeeded Lord Murray of Newhaven and took on the role of representing the university interface of the Trust.

He also brought with him an important background of biological research from his work as Professor of Zoology in Edinburgh. He was the Principal of Edinburgh University at the time of his appointment but not long after becoming a Trustee he became Chairman of the BBC. This, of course, lessened his direct university involvement but brought to the Trust other useful connections.

Lord Swann also brought to the Trust an interest in the veterinary field, stemming from his chairmanship of the Joint Committee on the use of antibiotics in animal husbandry and veterinary medicine, and so he was a natural successor to Professor Robert Thompson as Chairman of the Trust's Veterinary Panel. Along with the late Keith Sinclair, he stimulated the Trust's veterinary programme to grow and develop.

When he received a peerage in 1981 he added another dimension to the Trust by providing an ongoing contact with Parliament, thus broadening the political interface of the Trust. All of us at the Trust gained great pleasure from our association with him and miss his participation in our meetings.



*The Rt Hon the Lord Swann, FRS.*

**Helen Muir**

Helen Muir brought to the Trustees her background in biochemistry and cell biology and assumed responsibility for these fields alongside Michael Morgan from 1982 to 1990.

She took her role seriously and worked very hard on her panel papers to ensure that the best applications were selected for support. She undertook this considerable effort, against the background of her busy life as Head of the Kennedy Institute of Rheumatology. She gained many international and national honours for her work during the time of her Trusteeship, including being elected a Foreign Member in the class for Medical Sciences, by the Royal Swedish Academy of Sciences and an honorary DSc by Brunel University. During her time at the Trust many changes occurred in the size and style of its activities and in biochemistry, specially the development of the molecular and cellular approach to biomedical science.

Helen Muir was the first woman to be appointed to the Board of Trustees and she brought grace and elegance to our activities from which we all benefited.



*1 Helen Muir, CBE, MA, DPhil, DSc, FRS.*

Dr C E Gordon Smith was awarded the George McDonald Medal in April 1990. This is awarded jointly by the Royal Society of Tropical Medicine and Hygiene and the London School of Hygiene and Tropical Medicine in recognition of outstanding research leading to the improvement of health in tropical countries.

Professor Sir David Weatherall was appointed as a Foreign Member of the National Academy of Science of the USA, a rare distinction for a practising clinician.

A list of the Trustees of the Trust is given at page 2.

**Staff of the Trust**

P O Williams, DSc(Hon), DM(Hon), FRCP, Director, Chairman of Board of Management  
 Alison Grove, BA, Assistant to the Director  
 Maura Juffkins, BSc, Publications Officer  
 Jill Steward, Meetings Programme Manager (from July 1990)

**Science**

Bridget M Ogilvie, PhD, ScD, FIBiol, Director (Science Programmes)  
 Jill Steward, Personal Assistant (to July 1990)

D Gordon, MA, MB, FRCP, Programme Director (Neurosciences)  
 M J Morgan, BA(Mod), PhD, Programme Director (Molecular and Cell)  
 J G Howard, MD, PhD, FIBiol, FRS, Programme Director (Infection and Immunity)  
 (to June 1990)

L H Smaje, MB, PhD, Programme Director (Physiology and Pharmacology)  
 R E Howells, PhD, FIBiol, Programme Director (Infection and Immunity) (from June 1990)  
 Mary Phillips, PhD, Scientific Officer  
 I G Scott, PhD, Scientific Officer

**History of Medicine**

E J Freeman, BA, ALA, Director (History of Medicine)  
 D E Allen, MA, PhD, Co-ordinator of the History of Medicine Programme

**Finance**

I Macgregor, FCA, Director of Finance  
 Deirdre Carty, Grad IPM, Personal Assistant (to August 1990)  
 Lisa Maw, Personal Assistant (from September 1990)

P McNelly, FCA, FCT, Financial Controller  
 D L Freeman, Chief Accountant  
 Sylvia Ling, Finance Administrator

**Administration**

D G Metcalf, Chief Administrative Officer (to June 1990)  
 E W T Langridge, Site Services Manager  
 D G Hooker, Administrative Officer (to June 1990)  
 I Ingrey-Counter, BSc, MBIM, FAFM, Facilities Manager (from August 1990)  
 Deirdre Carty, Grad IPM, Personnel Administrator (from August 1990)

**Grants administration**

Linda Arter, Head of Grants Administration  
Jill Saunders, MA, Principal Grants Officer

R J Blake, BA, Grants Officer  
Sandra Carpenter, Grants Officer  
Laura Chambers, Grants Officer  
Sián Doughty, Grants Officer  
Kathryn Drake, BA, Grants Officer  
Anne Edwards, Grants Officer  
Rebecca Fitt, BA, Grants Officer  
S A Herst, BSc, ACIS, Grants Officer  
Margaret Hurley, Grants Officer  
G A F Radford, BA, Grants Officer  
C D J Sainty, BA(Econ), Grants Officer  
Elizabeth Shaw, BSc, Grants Officer  
Katherine Smith, BA, Grants Officer (to August 1990)

**Centre for Medical Science and History**

S E Emberton, MBIM, Public Activities Development Manager  
P C Blundred, BSc, DipLib, Information Librarian (from May 1990)

**Unit for Policy Research in Science and Medicine (PRISM)**

J Anderson, PhD, Head of Unit  
Harriet Moxham, MSc, Policy Analyst

**Information systems**

H T Gleave, BA, Manager  
Gill Becker, Office Systems Analyst

**Property**

D C Richardson, CEng, MIProdE, Manager

The following staff hold honorary appointments;

The Director of the Trust, Dr P O Williams, was awarded the degree of Doctor of Medicine *honoris causa* by the University of Nottingham and was elected President of the Royal Society of Tropical Medicine and Hygiene from June 1991.

Dr Williams was pleased, on behalf of the Trust, to receive one of the first issue medals from University College London in recognition of the major contributions the Trust has made over the years.



*The Director of the Trust, Dr P O Williams, receiving one of the three first issue gold medals from University College London on 27 October 1989. From left to right; Dr Billie Williams, Dr P O Williams, Judith A Way, Mr R G Gibbs.*

**Dr Bridget M Ogilvie**

Member of Council and Deputy Chairman of the Fellowship Committee of the Institute of Biology  
Visiting Professor, Department of Biology, Imperial College of Science, Technology and Medicine, London

**Dr D Gordon**

Honorary Senior Lecturer in Medicine, St Mary's Hospital Medical School, London  
Honorary Consultant Physician, St Mary's Hospital, London

**Dr M J Morgan**

Honorary Senior Lecturer, United Medical and Dental Schools of Guy's and St Thomas's Hospitals, London  
Member of the Horden Committee of the Biochemical Society

Dr R E Howells  
Visiting Professor at the London School of Hygiene and Tropical Medicine

Dr L H Smaje  
Visiting Professor in Physiology and Biophysics, St Mary's Hospital Medical School  
President of the European Society for Microcirculation

The use of computer-based systems in the Trust continued to expand with a further 17 terminals and devices being linked to the main computer during the year, making a total of 67. In addition, the computer staff also support 26 personal computers, an increase of 17 on 1988/89, which are used for localised processing. Plans are underway for the transfer of the main computer to the Wellcome Building. Work continues towards a fully integrated grants administration and accounting system.

The Property Department has during the year supervised the successful renovation programme within Bentley House and is now very heavily committed to managing the major redevelopment of the Wellcome Building.

The number of personnel employed within the Trust during the year has increased to 141 from 129 and it is anticipated that, as we move towards the opening of the new Wellcome Building, the Centre for Medical Science and History, and the Information Resources Centre, staff numbers will continue to grow. The planning for the use of the new building and for the staffing and facilities required to support these new activities is now at an advanced stage.

#### James Howard

James Howard had been known to the Trustees for a very long time, initially because he had worked with Lord Swann in the department of Zoology in Edinburgh from 1966 to 1969.

He then moved to the Wellcome Laboratories in Beckenham, where over many years he contributed to the leadership of biological activities and the management of research.

When the direction of the laboratories took a new turn and a new research director was appointed, he felt the time had come to retire. He was invited to the Trust as a Programme Director to look after its Tropical and Infectious Diseases Programmes in succession to Bridget Ogilvie, who had become Director of Science Programmes. His personal stature, high level of scientific achievement and the respect in which he was held by fellow scientists made it possible for him to develop this programme even further. His knowledge of the Tropics was less great but he soon established close contacts with the Trust's Units overseas, which led to him encouraging their development. In particular, his wisdom was very important during the difficult phases of transfer of responsibility for the Indian and Jamaican Units and the planning and implementation of developments in Kenya. His thoughts on the future of Belem and for a closer association with the Francophile tropics will be of special importance in the next phase.

His company and good sense were enjoyed and valued and will be missed by many at the Trust. He has been succeeded by R.E. Howells, Professor of Parasitology at the Liverpool School of Tropical Medicine. Dr Howells was a member of the Trust's Tropical Medicine and Infectious Diseases Panel prior to his appointment.

#### Derek Metcalfe

Derek Metcalfe could be said to be the last of the original staff (excepting the Director) recruited before the Trust moved to Park Square West. He had thus seen the whole place grow from its small beginnings and his career had developed along with the Trust resulting in his appointment as Chief Administrative Officer in 1985. His special achievement was to make the grants programme an efficient and coherent entity. He developed and instilled discipline into the whole programme so that the many grants officers who came under his tutelage developed a great respect for his sense and integrity.

Having been so long with the Trust he knew all about it and, until a year before he retired, was responsible for a very wide range of administration. After his retirement at the end of June 1990, and with the growth of the Trust, it has been necessary for two staff to be appointed to take on his former role. One of these appointees is Mrs Linda Arter, who has become Head of Grants Administration. Linda has been trained by Derek and has proved a great success.

Unfortunately, Derek had suffered from ill health for a number of years and it was therefore agreed that he should retire a few years early. He is sadly missed.

#### Acknowledgements

The Trustees and their staff would like to express their thanks to the numerous expert advisers who assist the work of the Trust by refereeing applications, serving on committees and panels and advising on policy. The administration of the Trust would be impossible without their unstinting support.

## SUPPORT FOR MEDICAL RESEARCH

During the year the Trust's commitment to medical research totalled £54.6m (£40.0m for 1988/89).

The following sections examine each scheme and panel in detail. The subsequent pages give an overview of the work of the Trust.

A total of 1916 applications were received (compared with 1591 for 1988/89). Of these 1155 were funded in part or in full, representing 60 per cent of requests. The total value of applications was £143.9m (see Figures 2 and 3).

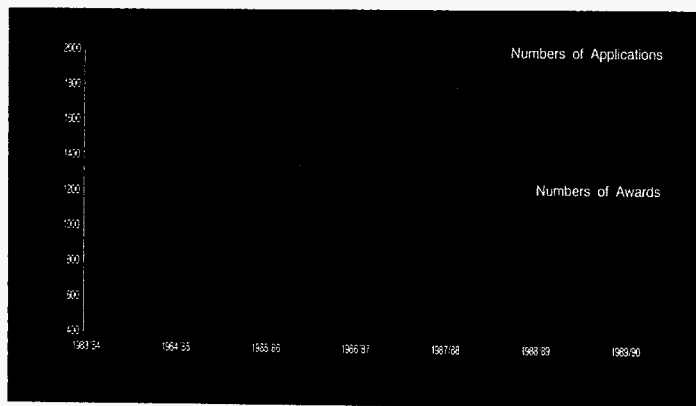


Figure 2: All applications 1983-1990 - numbers received and awarded.

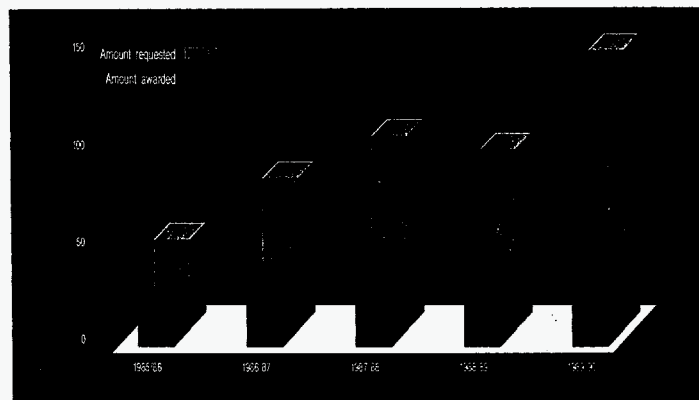


Figure 3: All applications 1985-1990 - amount requested and awarded.

During 1989/90 a total of £26.4m was awarded by the panels for short-term support. The allocation of funds by panel is shown in Figure 4.

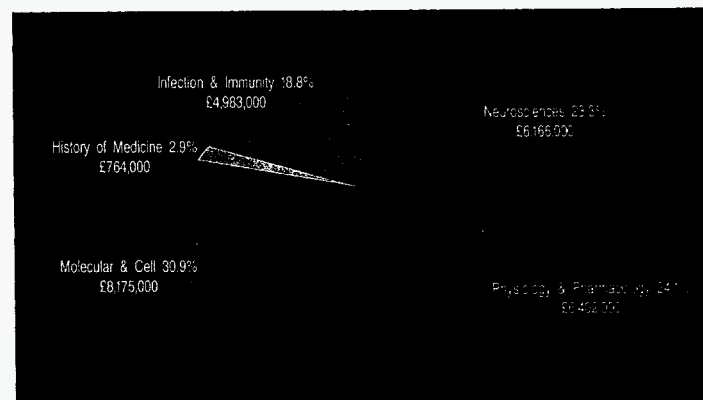


Figure 4: Distribution of short-term awards 1989/90 - in terms of amount awarded.

The Trustees policy is to set aside one-third of their income for longer-term support. An analysis, by panel, excluding the history of medicine, for 1990 onwards is given at Figure 5. (For details on expenditure for the support of the history of medicine see page 120).

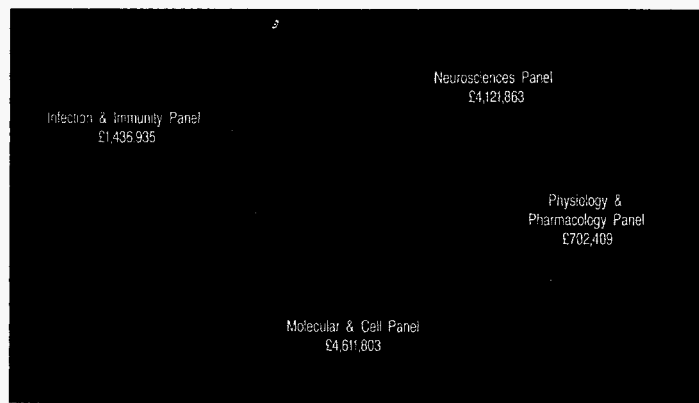


Figure 5: Longer-term awards - amount committed by panel: 1990 onwards.

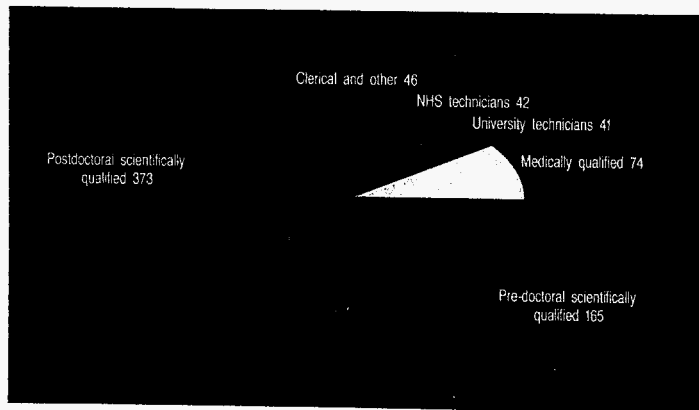


Figure 6: Research workers supported by the Wellcome Trust. Grants awarded during 1989/90.

The following awards are listed here as they do not fit conveniently under any of the Trust panel or interest group headings. They reflect the diversity of projects to which the Trust commits its funds.

**Dr P Briggs** £6000  
**Association for the Advancement of Science, London:**  
 for one year, for additional expenses towards  
 the establishment of Science and Technology Media  
 Fellowships (032484/2/90Z).

**The Human Genome Organisation** £176 000  
**London:** for one year, to help establish the European Office  
 of the human genome project (031575/2/90Z).

**Joint National Survey of** £961 474  
**Sexual Attitudes and Lifestyles:** by *Julia Field, Social and  
 Community Planning Research, London: Dr Anne Johnson,  
 University College and Middlesex School of Medicine, Jane  
 Wadsworth, St Mary's Hospital Medical School and Professor R M  
 Anderson, Imperial College of Science, Technology and Medicine*  
 (031282/2/90Z).

**Dr Helen Kyle** £74 657  
**Parliamentary Science and Technology Information  
 Foundation, London:** for three years, for a Wellcome  
 Westminster Fellowship at the Parliamentary Office of  
 Science and Technology (031750/2/90Z).



**CAREER DEVELOPMENT SCHEMES**

PRINCIPAL RESEARCH FELLOWSHIPS AND SENIOR LECTURESHIPS	25
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**PRINCIPAL RESEARCH FELLOWSHIPS AND SENIOR LECTURESHIPS****PRINCIPAL RESEARCH FELLOWSHIPS AND SENIOR LECTURESHIPS**

New appointments to the Senior Lectureship scheme ceased in 1986. 60 appointments have been made since the scheme started in 1978. Scientists who would previously have been eligible for support under the Senior Lectureship scheme can now apply for Senior Clinical, Basic Biomedical or Principal Research Fellowships.

The Principal Research Fellowship scheme was established in 1989 and five awards have been made to date. Its purpose is to fund individuals who are judged to be of readership or professorial status, but who do not hold an established post. Awards are intended to be for ten years in the first instance with a review after eight years. If this is satisfactory, support will continue on a five year rolling basis.

Principal Research Fellowship awards made during 1989/90;

**Dr M E Akam**  
Department of Genetics, University of Cambridge: for five years, for the molecular analysis of pattern formation in insect and crustacean embryos (030388Z/91/2).

**Professor Brigit L M Hogan**  
Wellcome/CRC Institute, Cambridge: for five years, for a study of the molecular analysis of mammalian development (011048Z/91/2).

**Professor B K Park**  
Department of Pharmacology and Therapeutics, University of Liverpool: for five years, for a study of the mechanisms in biochemical pharmacology, under Professor A M Breckenridge (012339Z/90/2).

**Professor B G Spratt**  
School of Biological Sciences, University of Sussex, Brighton: for five years, for an extension of a study of the molecular basis and molecular epidemiology of penicillin resistance in *Streptococcus pneumoniae*, under Dr P R Wheeler, Department of Applied Biology, University of Hull (030637Z/90/1).

The Trustees were pleased to learn of the following honorary appointments and awards:-

To Principal Research Fellows;

Dr B K Park was appointed to a Professorship at the University of Liverpool.

To Senior Lecturers;

Dr D A Eisner was appointed Professor of Veterinary Biology at the University of Liverpool

Dr M J G Farthing was appointed Professor of Gastroenterology at the University of London

Dr Sandra E File was appointed Professor of Psychopharmacology at the University of London

Dr M A Hanson was elected to a personal readership at the University of Reading

Professor S G Cull-Candy was elected to a personal chair in the Department of Pharmacology at University College London (from 1 October 1990).

The annual meeting of Principal Research Fellows and Senior Lecturers was held on 22 March 1990. The following spoke about their work:

Dr J K Aronson  
Department of Clinical Pharmacology  
University of Oxford  
'Mechanisms for the regulation of Na/K pump numbers and activity in cell membranes'

Dr Sandra E File  
Division of Pharmacology  
United Medical and Dental Schools of Guy's and St Thomas's Hospitals, London  
'Benzodiazepine dependence'

Dr J K P Sheehan  
Department of Biochemistry and Molecular Biology  
University of Manchester  
'Mucus glycoproteins - fortress molecules under siege'

Dr R D Ward  
Department of Medical Entomology  
Liverpool School of Tropical Medicine  
'Latin American perfumes - a tale of passion amongst the flies'

Dr G C Ford  
Department of Biochemistry  
University of Sheffield  
'Design and redesign of a protein'

SENIOR BASIC BIOMEDICAL SCIENCE FELLOWSHIPS

The new scheme for Senior Basic Biomedical Science Fellowships was introduced by the Trustees in 1985, in response to representations about the shortage of support of this type. The fellowships are tenable for five years in the first instance, with the possibility of an extension of a further three years. During this year, awards made in the first round have been assessed, and a number of fellows have had their support extended. The Trustees hope that, in time, some of their Senior Fellows will be of such high quality as to be candidates for the Trust's Principal Research Fellowships.

During the year, ninety applications for these fellowships were received, and nine awards recommended. In the event, one successful candidate accepted an appointment in the United States of America, and the eight awards are noted below.

A number of holders of these fellowships have now moved to established positions in universities. Dr T R Hirst has moved to a Lectureship in the Department of Biology in Kent, and has successfully applied to the Trust for support of his programme of research in his new appointment. Dr C D A Brown has moved to a Lectureship in the Department of Physiological Sciences in the University of Newcastle upon Tyne, Dr Eva Hyde has been appointed to a Lectureship in the Department of Biochemistry in the University of Birmingham, and Dr H R Matthews has been appointed to a Lectureship in the Physiological Laboratory, at the University of Cambridge.

Figure 7

	1985/86	1986/87	1987/88	1988/89	1989/90
<b>Total number of applicants</b>	59	95	96	97	90
<i>Geographical distribution of applicants</i>					
UK	53	73	71	74	70
North America	3	16	21	16	12
Europe	3	5	4	3	5
Other countries	—	1	—	4	3
<b>Number of awards</b>	7	5	2	9	8

Dr J R P Arnold  
Department of Genetics, University of Leeds: for five years, for nuclear magnetic resonance studies of ribonucleic acid, under Dr P G Stockley (0312592/91/2).

Dr C R M Bangham  
Nuffield Department of Clinical Medicine, University of Oxford: for three years, for additional research assistance for a study of cellular immune response to human T-lymphotrophic virus type-1, under Professor A J McMichael, Institute of Molecular Medicine, University of Oxford (0170192/91/1).

Dr N H Brown  
Department of Zoology, University of Cambridge: for five years, for a study of the structure and function of the PS2 integrin during embryogenesis, under Professor J B Gordon (031152/90/2).

Dr J M Crampton  
Department of Medical Entomology, University of Liverpool: for three years, for further support of his study of mobile genetic elements in mosquitoes of medical significance, under Professor W W Macdonald (0315752/91/2).

Dr I D Forsythe  
Department of Physiology, University of Leicester: for five years, for studies of the modulation of synaptic transmission in the CNS: regulation of calcium and potassium channels by presynaptic receptors, under Professor P R Stanfield (0313012/90/2).

Dr Ursula A Gompels  
Department of Medicine, University of Cambridge: for five years, for a study of the entry and spread of human herpesvirus-6; role in immunodeficiency, under Professor J G P Sissons (0313062/90/2).

**Dr P J Ham**

Department of Medical Entomology, University of Liverpool; for three years, for additional expenses for a study of the immune mechanisms of haematophagus vectors of filarial nematodes and other parasites (016780/Z/90A).

**Dr T R Hirst**

Biological Laboratory, University of Kent, Canterbury: for additional equipment, for a study of biogenesis and molecular engineering of toxins responsible for cholera and related diarrhoeal diseases (012215/Z/90A).

**Dr A J King**

Laboratory of Physiology, University of Oxford: for five years, for a study of spatial coding in the auditory system, under Professor C Blakemore (013116/Z/90Z).

**Dr Lynne V Mayne**

School of Biological Sciences, University of Sussex, Brighton: for eighteen months, for further support of her study of the isolation and characterization of the defective gene in Cockayne's Syndrome and studies on the role of this gene in DNA repair, under Dr R Vinton (015211/Z/90A).

**Dr R Reynolds**

Department of Biochemistry, Imperial College of Science, Technology and Medicine, London: for three years, for additional expenses for studies on oligodendrocyte migration, maturation and myelin production *in vitro* and *in vivo*, and their relevance to demyelinating diseases, under Dr G P Wilkin (018091/Z/92A).

**Dr Eleanor M Riley**

Department of Genetics, University of Edinburgh: for five years, for a study of the role of T lymphocytes in the development of transmission blocking immunity to *Plasmodium malariae*, under Dr R Carter (013030/Z/90Z).

**Dr R D St Johnston**

Department of Zoology, University of Cambridge: for five years, for a study of the localization of maternal determinants in *Drosophila*, under Professor J B Curdon (013131/Z/91Z).

**Dr J A Todd**

Nuffield Department of Surgery and Clinical Medicine, University of Oxford: for five years, for further support of his study of the equilibrium system in Cephalopods, under Professor P J Morris (013120/Z/90Z).

**Dr R Williamson**

The Laboratory, Plymouth (UK Marine Biological Association): for three years, for further support of his study of the equilibrium system in Cephalopods, under Professor Sir E J Denton (015184/Z/91Z).

**Dr D C Wraith**

Department of Pathology, University of Cambridge: for five years, for additional salary costs for a study of T cell recognition and tolerance in autoimmunity, under Professor H Waldmann (019508/Z/90A).

## SENIOR RESEARCH FELLOWSHIPS IN CLINICAL SCIENCE

The Trustees are pleased to be able to report the continued success of the Senior Clinical Fellowship scheme. Fellows selected in the annual competition are offered personal support for five years, together with the expenses for their programme of research. They are free to concentrate on research into problems related to clinical science, and this intensive period of research in a clinical career has often proved to be the springboard to a senior academic position.

In the Trust's last report, we noted the appointment of four fellows to positions under the new appointment scheme for clinical academic staff. Another Fellow has moved to an appointment under this scheme: Dr A P Weetman of the University of Cambridge. Dr Weetman's tenure of this lectureship is to be short: the Trustees have learnt with great pleasure of his appointment as Professor of Medicine in Sheffield. Seven other fellows moved to established positions during the academic year 1989/1990. Dr D O Haskard, Dr C D Pusey and Dr R J Unwin were all appointed to Senior Lectureships at the Royal Postgraduate Medical School: Dr Janet M Allen moved from her fellowship at the Royal Postgraduate Medical School to a Lectureship in Physiology in Cambridge: Dr Swee Lay Thein was appointed to the staff of Professor Sir David Weatherall's MRC Molecular Haematology Unit at Oxford: Dr H M D Gurling took up a Senior Lectureship in Psychiatry at the University College and Middlesex Hospital School of Medicine: and Dr J A E Rees took up a Consultant and Senior Lecturer appointment in the University of Wales College of Medicine.

Five new fellows were appointed, and these awards are noted below. The appointment of Dr K Marsh has added to the cadre of outstanding young clinical scientists working on problems of tropical medicine, supported by this scheme. Dr Marsh and Dr A V S Hill both work on problems related to malaria, and Dr R E Phillips on studies of HTLV1 in human disease.

The Trustees were pleased to note that the Squibb Poster Award for outstanding presentation of important scientific work in the field of gastroenterology had been won by Dr P J Ciclitira, a former Wellcome Senior Research Fellow in Clinical Science, for work supported by the Trust. He shares the award with research assistants who were supported on his grant.

**Dr V K K Chatterjee**

Department of Medicine, University of Cambridge: for five years, for a study of regulation of gene expression by TRH and thyroid hormone, under Professor D K Peters (013159/Z/90Z).

**Dr A C Chu**

Department of Medicine, Royal Postgraduate Medical School, London: for one year, for an extension, of his study of epidermal T cell interactions in physiological and disease states, under Professor Sir Colin Dollery (011862/Z/821A).

**Dr W O C Cookson**

Nuffield Department of Clinical Medicine, University of Oxford: for additional equipment, for his study of the genetics of atopy and atopic asthma, under Professor Sir David Weatherall (019453/Z/90A).

**Dr K Marsh**

Institute of Molecular Medicine, University of Oxford: for five years, for a study of *Plasmodium falciparum*: the relationship between host-parasite interactions and morbidity in malaria endemic areas, under Professor Sir David Weatherall (013132/Z/90Z).

**Dr Ruth Matthews**

Department of Medical Microbiology, University of Manchester: for additional equipment, for a study of the cloning and characterization of the immunodominant antigen of *Candida albicans*: its role in the pathogenesis and immunology of candidosis, under Professor J P Burnie (016704/Z/90A).

**Dr Joanna Poulton**

Department of Paediatrics, University of Oxford: for five years, for molecular genetic analysis of mitochondrial DNA in human disease, under Professor E R Mowbray (013350/Z/91Z).

**Dr P J Ratcliffe**

Nuffield Department of Clinical Medicine, University of Oxford: for five years, for a study of the control of cythropoietin gene transcription, under Professor Sir David Weatherall (013349/290Z).

**Dr J S Savill**

Department of Medicine, Royal Postgraduate Medical School, London: for five years, for a study of cellular control mechanisms in the resolution and persistence of renal inflammation, under Professor Sir Colin Dollery (013359/290Z).

**Dr A K-L So**

Department of Medicine, Royal Postgraduate Medical School, London: for additional expenses, for his study of the genetics of rheumatoid disease, under Professor Sir Colin Dollery (013352/290A).

**Dr D M St Clair**

Department of Psychiatry, University of Edinburgh: for additional support to enable a workshop on 11q gene mapping to be set up in relation to his genetic studies of schizophrenia, under Professor J H Evans (019411/290B).

**Dr D M St Clair**

Department of Psychiatry, University of Edinburgh: for five years, for additional salary costs for genetic studies in schizophrenia, under Professor J H Evans (019411/290A).

**Dr J R Stradling**

Osler Chest Unit, University of Oxford: for additional equipment for his study of sleep disordered breathing, under Dr J Lane (018181/290Z).

## RESEARCH TRAINING FELLOWSHIPS IN CLINICAL EPIDEMIOLOGY

This scheme is designed to provide medical graduates with research training on the application of epidemiological principles and techniques to problems in clinical research. Fellows normally receive support for a Master's Degree in epidemiology, as part of the Training Fellowship. In the year under review (1988/89 in parenthesis for comparison) 13 (12) nominations were received and 4(5) new awards were made. Applications under this scheme are now considered in parallel with Research Training Fellowships in Health Services Research. The dividing line between the subject matter of research in these two schemes is necessarily indistinct, and it has helped in the selection procedure for the interviewees to see applicants in the two schemes in parallel.

The Trust's Clinical Epidemiology Fellows have an excellent record in moving on to established positions where they can continue their research. For example, Dr S Wesseley received a Clinical Epidemiology Fellowship for studies in forensic psychiatry. He developed an interest in the epidemiology of post-viral fatigue syndromes, and his findings attracted considerable interest. He has now moved to a Senior Lectureship in psychiatry at King's College School of Medicine.

**Dr Frances F M Cowan**

Department of Genito-Urinary Medicine, University College and Middlesex School of Medicine, London: for additional expenses, for her study to examine the relationship between herpes simplex virus antibody status (using typespecific serological assays) and demographic characteristics, sexual behaviour and symptoms, under Professor M W Adler (019417/289A).

**Dr J K Cruickshank**

Diabetic Unit, Clinical Research Centre, Harrow: for a nine month extension of his study of the genetic basis of non-insulin dependent diabetes mellitus: its validation in populations of different ethnic groups and assessment with possible gene markers, under Dr R Mahler (015451/286A).

**Dr Lelia Duley**

Nuffield Department of Obstetrics and Gynaecology, University of Oxford: for two years, for an extension of her study of the epidemiology and clinical management of eclampsia, under Dr I Chalmers (019431/289A).

**Dr Judith R Glynn**

Department of Epidemiology and Population Sciences, London School of Hygiene and Tropical Medicine, London: for eighteen months, for a study of the relationship between the severity of communicable diseases and the size of the inoculum, under Professor D J Bradley, Department of Communicable and Tropical Diseases (031452/290Z).

**Dr Helen Rodgers**

Department of Medicine, University of Newcastle upon Tyne: for two years, for a prospective case controlled study of stroke disability, under Professor O F W James (012052/290Z).

**Dr S O Shaheen**

MRC Environmental Epidemiology Unit, University of Southampton: for three years, for a study of the relationship between respiratory infection during childhood and chronic airflow obstruction in adult life, under Professor D J P Barker (031432/290Z).

**Dr H C Williams**

Department of Dermatology, United Medical and Dental School of Guy's and St Thomas's Hospitals, London: for three years, for an epidemiological study of factors affecting the prevalence and severity of atopic eczema in children of different ethnic backgrounds in London, and its relation to a parallel study in Jamaica, under Professor R J Hay (032100/290Z).

## RESEARCH TRAINING FELLOWSHIPS FOR MEDICAL AND DENTAL GRADUATES

This scheme has expanded rapidly since its inception in 1982. The Trustees regard the research training of young medical and dental graduates as being of paramount importance, and have provided substantial additional funds for this scheme in 1989/90. This general scheme covers all clinical subjects including the Trust's former Research Training Fellowship schemes in surgery and pathology. A few selected subjects such as psychiatry and ophthalmology are covered by separate arrangements.

The Trust continues to note with disappointment the relatively few applications from surgeons, obstetricians and pathologists. Part of the reason for this deficiency may be the clinical training requirements in these specialities, and we are therefore investigating ways to promote research in these important areas of clinical science.

There is evidence that prospective fellows and their sponsors welcome the flexibility of the Trust's training fellowship schemes. Medical Graduate Fellowships are awarded in competition four times each year, and the length and type of support are flexible. Fellows sometimes receive research training at selected centres abroad, where this experience cannot be gained within the British Isles.

During the year, 24 new fellowship awards have been made. 13 awards were made during 1988/89.

**Dr C Baynes**

Department of Clinical Endocrinology, St Mary's Hospital Medical School, London: for one year, for an extension of his study of insulin sensitivity and lipoprotein metabolism in type 2 diabetes, under Dr R S Elkeles (017779/2/87/A).

**Dr W M Bennett**

Endocrine Unit, Royal Postgraduate Medical School, London: for a study of the effect of insulin on amino acid and protein turnover in muscle and whole body in patients with Type I diabetes, under Professor S R Bloom (032385/2/90/2).

**Dr Z Chen**

Department of Surgery, University of Cambridge: for three years, for the development of new immunosuppressive drugs and regimens using allogeneic and xenogeneic models, under Professor Sir Roy Calne (031054/2/90/2).

**Dr A P Cope**

Department of Cellular Immunology, Charing Cross Sunley Research Centre, London: for three years, for a study of cytokine receptor expression in rheumatoid diseases, under Professor M Feldmann (031210/2/90/2).

**Dr C R Darby**

Nuffield Department of Surgery, University of Oxford: for two years, for a study of the induction of immune tolerance to transplanted major histocompatibility antigens in mice, under Professor P J Morris and Dr Kathryn J Wood (030654/2/89/2).

**Dr R J O Davies**

Oster Chest Unit, University of Oxford: for two years, for a study of the importance of obstructive sleep apnoea and snoring in the aetiology of hypertension and cardiovascular disease, under Dr J R Stradling (031482/2/90/2).

**Dr A S Duncombe**

Academic Department of Haematology, Royal Free Hospital School of Medicine, London: for a two month extension of his study of the recognition by human monoclonal antibodies of non-HLA matched cell antigen marrow transplant pairs, under Dr Jane E Grindy, Department of Virology (016603/2/87/A).

**Dr Fidelma Dunne**

Department of Medicine, University of Birmingham: for three years, for the expression and function of parathyroid hormone related protein in the developing human fetus, under Dr D A Heath (032271/2/90/2).

**Dr J M Farrant**

Liver Unit, King's College School of Medicine and Dentistry, London: for two years, for a study of the immunogenetics of primary sclerosing cholangitis, under Professor A L Eddleston (031611/2/90/2).

**Dr G T Finnerty**

Department of Physiology and Biophysics, St Mary's Hospital Medical School, London: for three years, for a study of the relationship of interictal spikes and seizures in experimental epilepsies, under Dr J C R Jefferys (030953/2/89/2).

**Elaine Foster**

Department of Biomedical Sciences, University of Sheffield: for three years, for a study to answer the question 'Is the poor localisation of dental pain due to convergence of sensory inputs in the trigeminal ganglion or trigeminal sensory nuclei?' under Dr M E Atkinson (030971/2/89/2).

**Dr M J Gill**

Department of Medical Microbiology, St Mary's Hospital Medical School, London: for three years, for a molecular study of the *pen B* locus of *Neisseria gonorrhoeae*, under Professor C S F Eason (031249/2/90/2).

**Dr E Hatchwell**

Department of Biochemistry, University of Oxford: for three years, for the application of X-linked DNA probes in clinical research: physical mapping and analysis of translocations associated with incontinentia pigmenti, under Dr I W Craig (030954/2/89/2).

**Dr R L Hayward**

Department of Biochemistry, University of Edinburgh: for three years, for a study of induced phase changes in biological phospholipids, under Dr J P Bradshaw (032928/2/90/2).

**T E J Hems**

Department of Anatomy, University of Edinburgh: for one year, for an assessment of surgical techniques for repair of large and proximal nerves, under M A Glaby (032280/2/90/2).

**Dr R Higgins**

Nuffield Department of Surgery, University of Oxford: for one year, for a one year extension of his study of the preparation and characterization of new monoclonal antibodies directed against antigens on activated human T cells, under Dr M J Dallman (016827/2/87/A).

**Dr P J Illingworth**

Department of Obstetrics and Gynaecology, University of Edinburgh: for one year, for an extension of his study of the role of inhibin and related peptides in the control of ovarian function, under Professor D T Baird (018297/2/88/A).

**Dr A Khwaja**

Department of Haematology, University College and Middlesex School of Medicine, London: for two years, for a study of the effects of granulocyte-macrophage colony-stimulating factor (GM-CSF) on neutrophil priming and mechanisms of GM-CSF receptor modulation, under Professor D C Lucht (032282/2/90/2).

**Dr A Levy**

Medical Unit, Charing Cross and Westminster Medical School, London: for a one year extension of his molecular and biochemical studies in human pituitary tumours, under Professor S L Lightman (016038/2/86/A).

**Dr D J M Lewis**

Department of Communicable Diseases, St George's Hospital Medical School, London: for three years, for a study of the characterization of the circulating T cell response after oral immunization with cholera toxin B subunit, and identification of the immunodominant B and T cell epitopes of CT-B, under Dr C E Griffin (031741/2/90/2).

**Dr Anneke Lucassen**

Institute of Molecular Medicine, University of Oxford: for three years, for a study of the role of T cell receptor repertoire in susceptibility to multiple sclerosis, under Dr J I Bell (030970/2/89/2).

**D J Premachandra**

Department of ENT Surgery, Kent and Sussex Hospital, Tunbridge Wells, Kent: for three months, for a study of the grafting of mastoid cavities with cultured autologous keratinocyte layers: a technique to eliminate post-operative otorrhoea, under R J Sergeant and Professor J W Fabre, Blind Melrose Centre for Medical Research, East Grinstead (031249/2/90/2).

**Dr C N Ross**

Department of Medicine, Royal Postgraduate Medical School, London: for three years, for a study of T cell receptor specificity and gene usage in Goodpasture syndrome, under Dr C D Pusey (030969/2/89/2).

**Dr S B Squire**

Department of Virology, Royal Free Hospital School of Medicine, London: for a study of the pathogenesis of cytomegalovirus pneumonitis in allogeneic transplant recipients, under Dr Jane E Grindy (031741/2/90/2).

**R W Stones**

Department of Anatomy and Developmental Biology, University College London: for two years, for a study of the clinical and laboratory investigation of vasomotor control in the pelvic veins in women, under Professor G Burnstock (032106/2/90/2).

**Dr M B Taylor**

Department of Medical Microbiology, St Mary's Hospital Medical School, London: for a three month extension of his study of the *in vitro* culture of *Pneumocystis carinii* and the use of cultured organisms for biochemical and immunochemical studies, under Professor C S F Eason (016384/2/87/A).

**Dr P J T Vallance**

Department of Pharmacology, St George's Hospital Medical School, London: for three years, for a study of membrane signal transduction mechanisms in human endothelial cells, under Professor T B Bolton (030951/2/89/2).

**Dr P Venkatesan**

Department of Microbial Diseases, University of Nottingham: for two years, for a study of the immunology of giardiasis in a murine model, under Dr R G Finch (032284/2/90/2).

**Dr N J Viner**

Department of Rheumatology, University of Birmingham: for two years, for a study of the role of synovial antigen-presenting cells in inflammatory arthritis, under Dr J S H Gaston (032284/2/90/2).

**A J Wakefield**

Department of Surgery, Royal Free Hospital School of Medicine, London: for one year, for an extension of his development of an intestinal model to study graft survival and immunological mechanisms of transplant rejection, under Dr R E Pounder (016543/2/86/A).

**Dr P J Winwood**

Department of Medicine II, University of Southampton: for two years, for a study of the role of Kupffer cell-derived 97kD gelatinase in liver fibrosis, under Dr M J P Arthur (031161/2/90/2).

## TRAINING FELLOWSHIPS IN HEALTH SERVICES RESEARCH

This pilot scheme of Training Fellowships in Health Service Research has continued to make progress. The table below (Figure 8) lists the number of nominations and awards since its inception in the academic year 1987/88.

These fellowships are open to graduates in a wide range of disciplines, including medicine, and the Trustees have been encouraged by the high quality of many of the applicants.

Health Services Research is a subject of increasing importance, and the Trustees' decision to introduce this scheme was in recognition of the need for well-trained research workers in this field. In the light of the success of the fellowships, they have agreed a limited programme of support for research projects in Health Services Research, and grants of this type will be available in the academic year 1990/91. The Trustees noted with interest the Government's proposals for research within the Health Service, in the White Paper *Priorities in Medical Research (CM 902)*. They have expressed the hope that research develops its rightful place as an important arm of the National Health Service.

Figure 8

	1987/88	1988/89	1989/90
Number of nominations	4	7	10
Number of awards	2	2	4

**Dr Valerie Harper**

Department of Obstetrics, University of Aberdeen: for three years, for a study of antenatal care in the Grampian Region: evaluation of new regional protocol and the utility of certain optional investigations, under *Dr Davis M Campbell and Dr I T Russell, Health Services Unit* (031454/Z/90Z).

**Dr M Marshall**

Department of Psychiatry, University of Oxford: for three years, for an evaluation of the effectiveness of hostels and group homes in caring for people with chronic disabling mental illness: a prospective study, under *Dr D Gath* (031529/Z/90Z).

**Dr Susan M Wheeler**

Regional Virus Laboratory, University of Birmingham: for two years, for a study of aspects of spread and the feasibility of containment of the hepatitis B virus (HBV) in a multi-ethnic inner city area, under *Dr Elizabeth H Boxall and Dr D G DeBelle, Centre For Community Health, Birmingham* (031460/Z/90Z).

**Dr Charlotte M Wright**

Department of Child Health, University of Newcastle upon Tyne: for three years, for a study of deprivation and growth: a community approach to intervention in failure to thrive in Newcastle, under *Professor A Aynsley-Green* (031445/Z/90Z).

The Trustees have received a number of representations about the shortage of researchers working at the interface between mathematics and biology. Mathematical biology is of increasing importance in many areas of the life sciences, and difficulties in attracting qualified staff in this subject had been noted in various areas of the Trust's interest: for example, research workers using non-invasive methods for studies of the brain (see page 43) have had some difficulty in attracting statisticians interested in developing methods for handling the large and complex data sets generated by these techniques.

A meeting was therefore held at the offices of the Trust where Trustees discussed the problem with a number of outside experts. In the light of those discussions, the Trust advertised a new scheme of support providing Postdoctoral Fellowships and Research Training Scholarships in Mathematical Biology. Fellowship support is flexible in type, designed to attract mathematicians to pursue independent studies applying their mathematical skills to a biological problem, and to attract postdoctoral biological scientists to develop their mathematical skills in relation to their biological interests. Fellowships are advertised with a tenure of up to five years. Research Training Studentships are also advertised for graduates with mathematical or biological degrees, wishing to study for a PhD degree at the interface. The possibility of support for four years is available, to allow graduates to fully develop their skills in areas not covered by their first degree.

Twelve applications for fellowships were received, and seven candidates were interviewed. One fellowship application was approved for support. Twenty applications for Research Training Scholarships were received, and four awards agreed. One award was subsequently withdrawn as the candidate decided to take up another offer.

This scheme will be advertised again in the year 1990/1991. The Trustees are most grateful to the experts who advised them on the development of this programme, both at the meeting held at the Trust and elsewhere in informal discussion. They are also particularly grateful to the outside experts who helped with the assessment of candidates in the first round of this new scheme.

## MATHEMATICAL BIOLOGY SCHOLARSHIPS

**Debbie L Benson**

Centre for Mathematical Biology, Mathematical Institute, University of Oxford: for four years, for the study of pattern formation in the developing limb, under *Dr P K Maini* (032655/Z/90Z).

**M T Doyle**

Department of Statistics and Modelling Sciences, University of Strathclyde, Glasgow: for four years, for a study of the impact of social/sexual mixing, second heterogeneity and age-structure, on sexually transmitted disease dynamics, under *Dr S P Blythe and Dr D Greenhalgh* (032654/Z/90Z).

**R W Tegerd**

Department of Pure Mathematics and Mathematical Statistics, University of Cambridge: for three years, for a study of the mathematical models of cooperation in biology, under *Professor P Whittle* (032656/Z/90Z).

## MATHEMATICAL BIOLOGY FELLOWSHIP

**Dr C G Phillips**

Physiological Flow Studies Unit, Imperial College of Science, Technology and Medicine, London: for five years, for a study of the application of mathematics to biopolymer science and connective tissue research, under *Professor J T Stuart, Department of Mathematics; Dr K H Parker and Dr C P Winlove* (032669/Z/90Z).

## PRIZE STUDENTSHIPS

This scheme, in which exceptional students selected for postgraduate research training are paid a stipend equivalent to that of a research assistant, together with realistic laboratory expenses, has continued to attract good applicants.

An interim review conducted during the year led to the decision by the Trustees that awards would continue to be made to individuals and will not normally be transferable. Movement between institutions will be encouraged by ensuring that about 50 per cent of places are made available to nominees from a different institution.

It had been hoped to attract graduates from the physical sciences by making some awards for four years. The Trustees are disappointed to note that this approach does not seem to have been successful in attracting a significant number.

There were fewer withdrawals following award this year (9 as opposed to 18 during 1988/89) but whether this was because of the increased stipend is not known.

The significant amount of research being undertaken in polytechnics was recognised by allotting a number of nominations to the Committee of Polytechnic Heads of Biological Sciences. This body undertook preliminary screening of applications from polytechnics on our behalf and forwarded a restricted number to the Trust, several of which were awarded.

In the coming year, the scheme is to expand to 80 studentships. Nominations will also be invited from Wellcome Trust Units, Principal Fellows and postgraduate institutes; up to now applications have been largely confined to universities undertaking undergraduate as well as postgraduate teaching.

The Prize Studentship scheme, like all Trust schemes, is open to modification and the Trust will therefore be pleased to receive suggestions for improvement.

It should be emphasised that the Prize Studentships are not open to individual applications from candidates or supervisors. Instead, institutions are invited to nominate a specific number of candidates from which the Trustees will select a proportion for award. Full details of the scheme are sent to university registrars or their equivalent.

Recipients of the 1989/90 awards are detailed on the following pages.

## S G Addinall

Department of Molecular Biology, University of Edinburgh: for three years, for a study of the regulation of cell division, under Dr W D Donachie, Moredun Research Institute, Edinburgh (0316482/90/2).

## G Anderson

Department of Anatomy, University of Birmingham: for three years, for a study of intra-thymic factors regulating T-cell development, under Professor J J T Owen and Dr E J Jenkins (0315042/90/2).

## M Averof

Department of Genetics, University of Cambridge: for three years, for a molecular analysis of homeotic and segmentation genes in the crustacean *Artemia salina*, under Dr M E Akam (0315042/90/2).

## Muriel M Bouvier

Department of Physiology, University College London: for three years, for a study of electrical properties of neurones and glial cells, under Dr D I Attwell (031632/90/2).

## Collette J Bridgeman

Cell and Molecular Biology Laboratory, University of Sussex, Brighton: for three years, for a study of growth control by growth factors and their receptors in the human ageing disease, Werner's Syndrome, under Professor S Shell (0316482/90/2).

## Celia P Briscoe

Department of Biochemistry, University of Glasgow: for three years, for a study of the regulation of phospholipase D activity by receptor occupation, under Dr M J O Wakelam (0316882/90/2).

## D M Budgett

Department of Computing, Imperial College of Science, Technology, and Medicine, London: for three years, for a study of the remote sensing of the myocardium, under Dr D M Lowe (0315722/90/2).

## T D Bui

Department of Clinical Biochemistry, King's College School of Medicine and Dentistry, London: for three years, for a study of parathyroid hormone related peptide (PTHrP) in the autocrine regulation of cell proliferation, under Dr C Moniz (031548D/90/2).

## Lucia Caravia

Department of Mechanical Engineering, University of Leeds: for three years, for a study of the tribology of compliant surface materials with particular application to cushion forms of total replacement joints, under Professor D Dawson and Dr J Fisher (03171162/90/2).

## M C Chow

Department of Biochemistry, Imperial College of Science, Technology and Medicine, London: for three years, for a study of leishmania promoter analysis by DNA transfection, under Dr Deborah F Smith (0315712/90/2).

## M G de Bono

Laboratory of Molecular Biology, Medical Research Council, Cambridge: for three years, for the molecular and genetic analysis of nematode development, under Dr J Hodgkin (0317052/90/2).

## L A De-Netto

School of Applied Sciences, Wolverhampton Polytechnic: for three years, for a study of the expression of the human gene for urate oxidase, under Dr M J Connick and Dr J P Neopoulos, Department of Surgery, Dudley Road Hospital, Birmingham (0316992/90/2).

## Julie R Dunan

Department of Neuroscience, Institute of Psychiatry, London: for three years, for an investigation of the potential involvement of the amyloid precursor protein (APP) in synaptic plasticity, under Professor B H Anderton and Dr I C Campbell (0317392/90/2).

## I Eilsley

Department of Medical Physics-Bioengineering, University College London: for three years, for a study of face and head modelling for simulated surgery, under Dr A D Limny (0316262/90/2).

## Magdalena Exner

Department of Psychology, University of Reading: for three years, for a study of the characterization of the individual differences in the behavioural response to dopamine receptor agonists, under Dr D Clark (0316162/90/2).

## Shelley G Folkard

Department of Pure and Applied Biology, Imperial College of Science, Technology and Medicine, London: for three years, for a study of the characterization of protective immunity against *Onchocerca mitis*, under Dr A E Bianco (0325022/90/2).

## Jackie Ford

Department of Biochemistry, University of Oxford: for three years, for studies of the biochemistry and biophysics of signal transduction as a model for hormone and drug action, under Dr A Watts (0315912/90/2).

## A S Frame

Department of Science, Humber College of Higher Education, Hull: for three years, for a study of AIR-carboxylase and drug design, under Dr G Mackenzie (0316722/90/2).

## Alison L Gibb

Department of Pharmacology, University of Oxford: for three years, for studies on the formation of the thiolester in complement proteins C3 and C4, under Dr Edith Sim (0315922/90/2).

## L J Goodstadt

Laboratory of Physiology, University of Oxford: for three years, for a study of the modulation of G-protein signalling in the heart, under Dr T Powell (0315922/90/2).

## F A Goytiso

Department of Biochemistry, University of Cambridge: for three years, for a study of histone H1 in chromatin structure and function, under Dr Jean O Thomas (0317062/90/2).

## R B Greaves

Department of Chemistry, University of York: for three years, for a protein engineering and molecular modelling study of dihydrofolate reductase binding mutants, under Dr R E Hubbard (0316152/90/2).

## Annette J Hale

Department of Biochemistry, University of Nottingham: for three years, for a study of the characterization and metabolic activity of osteoclasts isolated from cultures of bone marrow taken from patients with Paget's disease, under Dr D J Hosking (0316112/90/2).

## R T Hannay

Laboratory of Physiology, University of Oxford: for three years, for a quantal analysis of synaptic transmission in the visual cortex and hippocampus, under Professor C Blakemore and Dr A U Larkman (0315912/90/2).

## Carol A Harley

Department of Preclinical Veterinary Sciences, University of Edinburgh: for three years, for a study of the identification of proteins which interact with yeast NSF (SEC18p): the membrane fusion apparatus of *Saccharomyces cerevisiae*, under Dr A Boyd (0316712/90/2).

## Lindsay J Hewlett

Department of Biochemistry, University of Dundee: for three years, for a study of the induction and organization of a novel endocytotic pathway on epidermal growth factor stimulated cells, under Dr C Watts (0315662/90/2).

## Wendy L Inglis

Department of Psychology, University of St Andrews: for three years, for a project entitled 'Is the damage to the nucleus tegment pedunculopontinus in Parkinson's disease related to the loss of neurones from the substantia nigra? An investigation in the rat', under Dr P Winn (0316442/90/2).

## S Jenkinson

Department of Pharmacology and Therapeutics, University of Leicester: for three years, for a study of the molecular mechanisms of lithium action and inositol depletion on inositol polyphosphate second messengers in neuronal systems, under Professor S R Nahorski and Dr R A J Challiss (0316152/90/2).

**L Jennings**

School of Applied Biology, Lancashire Polytechnic, Preston: for three years, for a study of the effects of histaminic and related compounds on exocrine secretion in the *in vivo* and *in vitro* guinea-pig pancreas, under *Dr J Singh and Dr R W'Loa* (031675/2/90/2).

**Sarah A Johnson**

Department of Environmental and Evolutionary Biology, University of Liverpool: for three years, for a study of the role of endogenous prolactin and growth hormone in the control of T-lymphocyte function, under *Dr D M Eustor* (031663/2/90/2).

**Kristine A Koepke**

Department of Biochemistry, University of Bath: for three years, for a study of site specific mutagenesis of retroviral integrase, under *Dr M J Danson and Dr D W Hough* (031644/2/90/2).

**N E Le Brun**

School of Chemical Sciences, University of East Anglia, Norwich: for three years, for studies of mono-nuclear iron sites in bacterioferritin from pseudomonads and various clinical isolates, under *Professor A J Thomson and Dr G R Moore* (031691/2/90/2).

**D Mcalpine**

Laboratory of Physiology, University of Oxford: for three years, for a study of the organization, development and susceptibility to hearing loss of the auditory brainstem, under *Dr D R Moore* (031596/2/90/2).

**Helen-Corinna McKillen**

Department of Physiology, University of Leicester: for three years, for a study of the regulation of ATP-sensitive potassium channels of mammalian skeletal muscle, under *Dr N B Standen* (031650/2/90/2).

**S F Mucklow**

Sir William Dunn School of Pathology, University of Oxford: for three years, for a study of the molecular characterization of a macrophage lectin-like haemagglutinin involved in stromal haematopoietic interactions, under *Professor S Gordon* (031593/2/90/2).

**H S Mudhar**

Department of Biology, University College London: for three years, for a study of the ablation of Muller glial cells in the retinae of transgenic mice, under *Dr I W D Richardson and Professor M C Raff*, Department of Zoology (031628/2/90/2).

**M P Murphy**

Department of Biochemistry, University of Cambridge: for three years, for a study of the role of cyclins A and B in the activation of cdc2-kinase in the eggs and oocytes of *Xenopus laevis*, under *Dr M Carrington* (031710/2/90/2).

**R J Perrins**

Department of Biochemistry, University of Bristol: for three years, for a study of the characterization, function and role of spinal cord neurones in a simple vertebrate, the amphibian tadpole, under *Dr A Roberts* (031620/2/90/2).

**Anne Marie Picardo**

Department of Cell and Structural Biology, University of Manchester: for three years, for a study of the molecular relationship between chromosomal and temperature dependent sex determination, under *Dr P T Sharpe and Professor M W J Ferguson* (032140/2/90/2).

**N Pullen**

Department of Biochemistry, University of Southampton: for three years, for a study of protein-protein interactions during visual signalling, under *Professor M Akhtar* (031537/2/90/2).

**Emma Rhead**

Department of Human Anatomy and Cell Biology, University of Liverpool: for three years, for a study of the identification of guanine nucleotide regulatory proteins involved in growth factor signal transduction, under *Dr S R Pennington* (031627/2/90/2).

**Leslie L Ritchie**

Department of Genetics, University of Glasgow: for three years, for a study of the molecular basis of mitochondrial disease, under *Dr H T Jacobs and Professor R W Davies* (031690/2/90/2).

**Valery A Snell**

Department of Biochemistry, University of Oxford: for three years, for a study of the role of cdc2+ in cell cycle control, under *Professor P Nurse*, Department of Microbiology (031598/2/90/2).

**Kristina Staley**

Department of Anatomy, University of Cambridge: for three years, for a study of the regulation of proto-oncogenes during development and degeneration in the rodent forebrain, under *Dr M V Sofroniew* (031711/2/90/2).

**C W Stephen**

Department of Biochemistry, University of Dundee: for three years, for a study of the regulation of DNA replication in human cells, under *Dr D P Lane* (031653/2/90/2).

**Helen R Taylor**

Department of Pathology, University of Cambridge: for three years, for a study of the role of herpes simplex virus genes in pathogenesis and latency, under *Dr S Efthathiou* (031712/2/90/2).

**Katherine P Topping**

Department of Microbiology, University of Newcastle upon Tyne: for three years, for a study of the structural basis for serotype-specific antibody recognition of protective streptococcal M protein epitopes, under *Dr M Keloe and Dr Jane E Calvert*, Division of Immunology (031655/2/90/2).

**Irene M C Tracey**

Department of Biochemistry, University of Oxford: for three years, for biochemical studies on animal models with genetic diseases, under *Professor G K Radda* (032140/2/90/2).

**A V Turnbull**

Department of Physiological Sciences, University of Manchester: for three years, for a study of the involvement of corticotrophin releasing factor in the hypothalamic responses to stress and injury, under *Dr Nancy J Rothwell* (031582/2/90/2).

**V A Tysoe-Calnon**

Department of Virology, Royal Free Hospital School of Medicine, London: for two years and four months, for a study of the cytomegalovirus glycoproteins and their antigenic sites, under *Dr Jane E Grundy* (031651/2/90/2).

**A L Upton**

Department of Physiology, University College London: for three years, for a study of the role of proteins of the lipoprotein/calpactin family in exocytosis, under *Dr S E Moss and Dr B D Gomperts* (031629/2/90/2).

**E J Usherwood**

Department of Medicine, University of Cambridge: for three years, for a study of the human T cells in persistent human virus infection, under *Dr L K Borysiewicz* (031709/1/90/2).

**Nicola G Wallis**

Department of Biochemistry, University of Cambridge: for three years, for a study of the protein domains and molecular recognition in multienzyme complexes, under *Professor R N Perham* (031713/2/90/2).

**A R Ward**

Department of Human Anatomy, University of Oxford: for three years, for a study of the role of receptors in the control of release of peptides from dendrites of magnocellular neurones, under *Dr J F Morris* (031713/2/90/2).

**M A Watson**

Department of Genetics, University of Glasgow: for three years, for a study of the molecular mechanism of synapsis and strand exchange during site-specific recombination, under *Professor D J Sherratt* (031681/2/90/2).

**Deirdre M Williams**

School of Biological Sciences, University of Sussex, Brighton: for three years, for a study of the central influence on the peripheral mechanical response of the human cochlea, under *Professor I J Russell and Dr Ann M Brown* (031649/2/90/2).



**I. Jennings**

School of Applied Biology, Lancashire Polytechnic, Preston: for three years, for a study of the effects of histamine and related compounds on exocrine secretion in the *in vitro* and *in vivo* guinea-pig pancreas, under *Dr J Singh and Dr R W Lea* (031675/290/2).

**Sarah A Johnson**

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**Kristine A Koepke**

Department of Biochemistry, University of Bath: for three years, for a study of site specific mutagenesis of retroviral integrase, under *Dr M J Danson and Dr D W Hough* (031644/290/2).

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**D Mcalpine**

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**H S Mudhar**

Department of Biology, University College London: for three years, for a study of the ablation of Muller glial cells in the retinae of transgenic mice, under *Dr W D Richardson and Professor M C Raff*, Department of Zoology (031528/290/2).

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Department of Biochemistry, University of Cambridge: for three years, for a study of the role of cyclins A and B in the activation of cdc2-kinase in the eggs and oocytes of *Xenopus laevis*, under *Dr M Carrington* (031710/290/2).

**R J Perrins**

Department of Biochemistry, University of Bristol: for three years, for a study of the characterization, function and role of spinal cord neurones in a simple vertebrate, the amphibian tadpole, under *Dr A Roberts* (031620/290/2).

**Anne Marie Picardo**

Department of Cell and Structural Biology, University of Manchester: for three years, for a study of the molecular relationship between chromosomal and temperature dependent sex determination, under *Dr P T Sharpe and Professor M W J Ferguson* (032440/290/2).

**N Pullen**

Department of Biochemistry, University of Southampton: for three years, for a study of protein-protein interactions during visual signalling, under *Professor M Akhtar* (031537/290/2).

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**Kristina Staley**

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**Irene M C Tracey**

Department of Biochemistry, University of Oxford: for three years, for biochemical studies on animal models with genetic diseases, under *Professor G K Radda* (032469/290/2).

**A V Turnbull**

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**V A Tysoe-Calnon**

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**A L Upton**

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**E J Usherwood**

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**Nicola G Wallis**

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**A R Ward**

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**M A Watson**

Department of Genetics, University of Glasgow: for three years, for a study of the molecular mechanism of synapsis and strand exchange during site-specific recombination, under *Professor D J Sherriff* (031687/290/2).

**Deirdre M Williams**

School of Biological Sciences, University of Sussex, Brighton: for three years, for a study of the central influence on the peripheral mechanical response of the human cochlea, under *Professor I J Russell and Dr Ann M Brown* (031649/290/2).

## VACATION SCHOLARSHIPS

### VACATION SCHOLARSHIPS

The Vacation Scholarship scheme was set up by the Trustees to encourage undergraduates to explore the possibilities offered by scientific research, both basic and applied. It has continued to attract a large number of good applicants and a total of 142 awards were made during the year at a cost of £113 180. This figure is 40 per cent higher than last year's and reflects the Trustees' view, based on the results of last year's analysis, that the scheme is catching potentially keen students at a crucial time in their development and giving them a real taste of laboratory work which has led in many instances to a research career.

Several organisations offer similar studentships and it is interesting to note that at least one further body, namely, the Council of Management of the Journal of Reproduction and Fertility, has decided to fund a limited number of equivalent grants following the example set by the Trust.

The benefits of this scheme are often two-way; the sponsor receiving as great a stimulus to future research as the student. Many of the results are written up and frequently the undergraduate is able to present his or her work at scientific meetings.

### RESEARCH SUPPORTED THROUGH TRUST PANELS

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## NEUROSCIENCES PANEL

Professor Sir Stanley Peart, MD, FRCP, FRS, (Chairman, Wellcome Trustee)

J J B Jack, BM, PhD, (Wellcome Trustee), The Wellcome Trust

D Gordon, MA, MB, FRCP, (Scientific Secretary), The Wellcome Trust

This panel has been divided into two groups; the Mental Health and Neurosciences Group as detailed below and the Vision Research Group which is mentioned at page 100.

**Mental Health and Neurosciences Group**

Professor B H Anderton, PhD,  
Institute of Psychiatry, London

Professor D P B Goldberg, DM, FRCP, FRCPsych,  
University of Manchester

Professor Anita E Harding, MD, FRCP,  
Institute of Neurology, London

Professor M H Lader, DSc, MD, FRCPsych,  
Institute of Psychiatry, London

Professor D Lodge, BVSc, DVA, PhD, MRCVS,  
Royal Veterinary College, London

Professor J D McCulloch, PhD,  
University of Glasgow

Professor S R Nahorski, PhD,  
University of Leicester

Professor H P Rang, DPhil, BM, FRS,  
Sandoz Institute for Medical Research, London

Professor E O R Reynolds, MD, FRCP,  
University College London

T W Robbins, PhD,  
University of Cambridge

**Staff members responsible**

Anne Edwards, (Grants Officer)  
Margaret Hurley, BSc, (Grants Officer)

## NEUROSCIENCE RESEARCH

As noted in the Trustees' last report, the Trust's Mental Health Panel and Vision Research Working Party were subsumed into the new Neuroscience Panel, which now considers all applications for research in basic and clinical neuroscience. For the purpose of consideration of grants, the Neuroscience Panel divides into two groups: the Mental Health and Neuroscience Grants Committee, and the Vision Research Working Party (see page 100): The Trustees hope that the research community will recognise, from the names assigned to these two groups, their continuing special interest in developing research in psychiatry, ophthalmology and the other clinical neuroscience subjects, on a solid foundation of high quality basic neuroscience research.

The two Grants Committees considered an unusually large number of applications, and the competition for support was severe. Grants totalling £6.2m were awarded, excluding longer-term support. This represented 28 per cent of the total requests.

The total number of applications for grants during 1989/90 was 288 of which 130 were awarded in part or in full.

**Non-Invasive Studies of the Brain**

The Trust's interest in development of research using the many techniques for non-invasive studies of the brain has been noted in preceding reports. During this year, a notable event was the opening of the Wellcome Biomagnetism Unit in the University of Glasgow, by Mr R G Gibbs, the Chairman of the Trust. This award, to Dr Andrew Weir and Professor Gordon Donaldson and their colleagues in the Department of Neurology in the University of Glasgow, and the Department of Physics and Applied Physics in the University of Strathclyde, was noted in the seventeenth report. A purpose-built wooden research building has been constructed, containing a magnetic shield of thick aluminium. This is now an unique facility in the UK for biomagnetic recordings in a clinical setting. The range of patients, and of clinical neuroscience skills, available in the Institute of Neurological Sciences at the Southern General Hospital in Glasgow will be complemented by the expertise in physics from the University of Strathclyde. The Trust noted with interest the plans to build the new Scottish Spinal Injuries Unit on the Southern General site: patients with spinal injuries will be studied in the research programme of the new Unit, and, in turn, the research will help in the handling of their difficult clinical problems.

In an earlier report, a meeting held at the Neurosciences Institute of the Neuroscience Research Programme in New York was noted. The Trust has maintained its contact with the Neurosciences Institute, and a further meeting was held in January 1990, where a small group of scientists were able to discuss further the continuing development of non-invasive techniques.

**Mental Health Fellowships**

The Trust has, for many years, provided Research Training Fellowships in Mental Health, primarily for clinical psychiatrists in training. Under the new panel structure, these fellowships are still available, and the annual competition continues to attract a number of excellent candidates. The Trustees note with pleasure the progress of former Mental Health fellows into senior positions in academic psychiatry.

## List of grants awarded over £2000

## RESEARCH ASSISTANCE AND EXPENSES

## LONGER-TERM SUPPORT

**Professor D M Armstrong** £23 936  
Department of Physiology, University of Bristol: for additional funds, for a study of cerebellar zonation and movement control, with *Dr Judy R Trott* (019374/896A).

**Professor S G Cull-Candy** £4878  
Department of Pharmacology, University College London: for additional equipment for a patch-clamp analysis of glutamate-receptor channels in mammalian central nervous system (030827/290A).

**Dr D T Delpy** £20 847  
Department of Medical Physics and Bioengineering, University College and Middlesex School of Medicine, London: for additional expenses, for an investigation of cerebral metabolism in newborn infants and animals by magnetic resonance and near infrared spectroscopy and imaging, with *Professor E O R Reynolds*, Department of Paediatrics, University College London and *Professor W J McDonald*, Department of Clinical Neurology, Institute of Neurology, London (018110/290A).

**Dr C G Fairburn** £71 340  
Department of Psychiatry, University of Oxford: for three years, for an extension to his studies of the aetiology, character, prevalence and course of eating disorders (018157/292A).

**Professor A Guz** £350 000  
Department of Medicine, Charing Cross and Westminster Medical School, London: for five years, for a study of cortical control of breathing in man: normal and diseased, with *Dr P A Kirkwood*, and *Professor T A Sears*, both of the Department of Neurophysiology, Institute of Neurology, London (030724/290A).

**Dr T W Robbins** £16 756  
Department of Experimental Psychology, University of Cambridge: for two years, for additional research expenses for his study of the neuropsychology of Parkinson's and Alzheimer's diseases and related disorders: comparative functions of chemically-defined neural systems in rats, monkeys and man, with *Dr J B Everitt*, Department of Anatomy and *Dr Barbara J Sahakian*, Department of Psychiatry, Institute of Psychiatry (018072/290A).

**Dr A I Weir** £16 054  
Department of Neurology, University of Glasgow for additional research expenses, for a study of magnetophysiological/electrophysiological comparison of central nervous system function in health and disease using thin-film planar SQUID gradiometer with *Professor G B Donaldson*, Department of Physics and Applied Physics, and *Dr C M Pagan* and *Dr I Bone* both of the University of Strathclyde, Glasgow (017811/290A).

## EQUIPMENT

**Dr G Heron** £11 032  
Department of Ophthalmic Optics, Glasgow College: for equipment for an investigation into anomalies of ocular accommodation, with *Dr J R Pugh*, Department of Physical Sciences, and *Dr W N Chaman*, Manchester University Institute of Science and Technology, and *Dr G N Dutton*, Tenent Institute of Ophthalmology, Western Infirmary, Glasgow (031158/290A).

**Dr J F Iles** £5900  
Department of Zoology, University of Oxford: for equipment, for a study of cortical control of spinal reflex machinery in man (030836/289Z).

**Dr A J Parker** £4800  
Laboratory of Physiology, University of Oxford: for additional equipment for the computer-aided analysis of physiological systems, with *Professor C Blakemore* and *Professor D Noble* (015578/286A).

**Dr R Reynolds** £60 570  
Department of Biochemistry, Imperial College of Science, Technology and Medicine, London: for equipment, for an image analysis of data from studies on the normal and abnormal development of oligodendrocytes and their response to damage (031392/292Z).

## MAJOR AWARD

**Dr J F Stein** £9600  
Laboratory of Physiology, University of Oxford: for additional equipment, for his study of systems analysis of visomotor functions of posterior parietal cortex and cerebellum in monkeys, brain damaged patients and dyslexic children (018159/290A).

## University of Birmingham

**Dr A R Bradwell** £15 060  
Department of Immunology: for two months, for studies on the treatment and pathophysiology of acute mountain sickness, with *Dr A D Wright* (030916/289Z).

**Dr Christine Dean** £38 016  
Department of Psychiatry: for two years, for an adoption study investigating the effect of rearing children as opposed to bearing children on the prevalence of psychiatric illness in women (031094/290Z).

**Dr M J Moseley** £50 957  
Department of Ophthalmology: for two years, for a study of the development of pupil responses to spatial structure: investigation of a new objective technique for measuring visual acuity in human infants, with *Professor A R Fielder* (030899/289Z).

## University of Sussex, Brighton

**Dr A J Parkin** £43 655  
Laboratory of Experimental Psychology: for two years, for a study of remediation of memory deficits in organic amnesia (031915/290Z).

## University of Bristol

**Dr W J Armitage** £16 633  
Department of Ophthalmology: for one year, for a study of cryobiology of corneal cells (031156/290Z).

**Dr G L Collingridge** £60 809  
Department of Pharmacology: for three years, for a study of excitatory amino acid receptors and calcium regulation in relation to synaptic plasticity in rat hippocampal neurones, with *Dr J G Schofield*, Department of Biochemistry (030683/289Z).

**Professor D L Easty** £10 748  
Department of Ophthalmology: for six months, for an extension of his investigation into the expression of NHC antigens in corneal cells and their relevance in transplantation, with *Dr B Bradley* (016072/286A).

**Dr A Livingston** £8692  
Department of Pharmacology: for two years, for an extension of his investigation of the spinal action of analgesic drugs in sheep using intrathecal application, with *Mrs A E Waterman* (017982/288A).

**Dr O T Phillipson** £5000  
Department of Anatomy: for additional research expenses, for his further studies of reticular afferents to the thalamus in the rat (010234/287B).

**Professor J C Watkins** £100 780  
Department of Physiology: for three years, for a study of synthesis and characterization of kainate receptor antagonists. (031252/290Z).

## University of Cambridge

**Professor D A S Compston** £11 018  
Department of Medicine: for additional research expenses for his study of complement mediated oligodendrocyte injury, with *Professor P J Lachmann* (030552/289A).

**Dr R J Keynes** £84 040  
Department of Anatomy: for three years, for a study of the action of inhibitory glycoproteins in development and regeneration of the vertebrate central nervous system, with *Dr G M W Cook* (031405/290Z).

## University of Wales College of Cardiff

**Dr M H T Roberts** £71 538  
Department of Physiology: for three years, for a study of diencephalic and mesencephalic interactions with the antioceptive nuclei of the anterior pretectum (030621/289Z).

**Professor S A Hodson** £38 726  
Department of Optometry: for two years, for a study of the corneal swelling pressure (031948/290Z).

## University of Wales College of Medicine, Cardiff

**Dr M J Owen** £17 612  
Department of Psychological Medicine: for two years, for the identification of highly polymorphic microsatellite repeat polymorphisms on human chromosome 21 (031388/290Z).

## Trinity College Dublin

**Dr P Humphries** £90 000  
Department of Genetics: for three years, for a study of autosomal dominant retinitis pigmentosa: characterization of localized genes (031214/290Z).

## University of Dundee

**Dr J J Lambert** £12 465  
Department of Pharmacology and Clinical Pharmacology: for additional equipment, for his investigation of the physiological properties of 5-HT<sub>3</sub> receptors - a patch clamp study (018730/288A).

**Dr P R Lowenstein** £62 103  
Department of Anatomy and Physiology: for two years, for a study of plasticity of the developing visual cortex: synaptic stabilization and refinement of corticocortical connections during the postnatal development of the visual cortex of cats and ferrets (031946/290Z).

## University of Edinburgh

**Dr R H Ashley** £65 411  
**Department of Pre-Clinical Veterinary Sciences:** for three years, for a study of location and function of calcium channels from brain microsomes (030649/Z/89/2).

**Professor A W Duggan** £174 988  
**Department of Pre-Clinical Veterinary Sciences:** for three years, for a study of the release, inhibition of release and inactivation of neuropeptides in the dorsal horn, with *Dr A J Hamor, MRC Brain Metabolism Unit and Dr S M Fleetwood-Walker, Department of Veterinary Physiology* (031966/Z/90/2).

**Professor Eve C Johnstone** £68 814  
**Department of Psychiatry:** for five years, for a research registrar training scheme in Edinburgh (031851/Z/90/2).

**Professor J S Kelly** £16 000  
**Department of Pharmacology:** for research expenses, to establish a psychiatric neuroimaging facility at the Royal Edinburgh Hospital, with *Dr N H Oherman and Professor G Fink* (030828/Z/90/1).

**Dr D J Price** £23 633  
**Department of Physiology:** for three years, for an investigation into the development of corticocortical connections in the cat's visual cortex, with *Dr Damita Cair* (031867/Z/90/2).

## University of Glasgow

**Professor A S G Curtis** £52 065  
**Department of Cell Biology:** for two years, for experimental investigations of neural function using novel microfabricated structures, with *Professor C D W Wilkinson, Dr Patricia Connolly and Dr J A T Dow* (032918/Z/90/2).

**Professor G M Teasdale** £65 186  
**Department of Neurosurgery:** for three years, for structural change and functional recovery after closed head injury, with *Dr J T L Wilson, Department of Psychology, University of Stirling, Dr D J Wyper, Department of Neurosurgery Glasgow and with Dr D M Hadley, Department of Neurosurgery* (031436/A/90/2).

**Dr A J Todd** £67 882  
**Department of Anatomy:** for three years, for an ultrastructural and immunocytochemical study of neurones in lamina II of rat dorsal horn (031127/Z/90/2).

## University of Strathclyde, Glasgow

**Professor I G Marshall** £36 707  
**Department of Physiology and Pharmacology:** for two years, for a study of the pharmacology and role in transmitter storage, mobilization and release of the vesicular acetylcholine uptake system, with *Dr C B Prior, Dr S M Parsons, Department of Chemistry and Neuroscience, University of California, USA* (031967/Z/90/2).

## University of Leeds

**Dr K Appenteng** £68 825  
**Department of Physiology:** for three years, for an *in vitro* determination of the electrical geometry and synaptic connexions onto rat V motoneurons (030857/Z/89/2).

**Dr Anne E King** £83 917  
**Department of Philosophy:** for three years, for a study of amino acids and neuropeptides in somatosensory systems in the mammalian spinal cord (031104/Z/90/2).

**Dr C P Lucas** £11 988  
**Department of Psychiatry:** for fifteen months, for the development of an interactive video system for the assessment of childhood psychopathology, with *Dr I Berg* (031392/Z/90/2).

## University of Leicester

**Dr J J A Scott** £15 854  
**Department of Physiology:** for two years, for an investigation of the changes in sensitivity of regenerated muscle-spindle primary afferents (030728/Z/89/2).

**Professor M C R Symons** £207 997  
**Department of Chemistry:** for three years, for the construction of a low-frequency ESR spectrometer for *in vivo* studies—Mark II (030593/Z/89/2).

## University of Liverpool

**Dr R P Bentall** £49 103  
**Department of Psychiatry:** for three years, for a study of the cognitive and motivational aspects of psychotic symptomatology (031069/Z/89/2).

**Professor R D Burgoyne** £113 928  
**Department of Physiology and Pharmacology:** for three years, for a study of the molecular mechanisms of the NMDA receptor stimulation of cerebellar granule cell differentiation and survival (030993/Z/89/2).

**Dr R Morris** £2500  
**Department of Veterinary Preclinical Sciences:** for additional equipment, for a study of postsynaptic receptors mediating the actions of somatosensory primary afferents (019051/Z/88/A).

**Dr G Williams** £19 798  
**Department of Medicine:** for one year, for a study of hypothalamic neuropeptide Y mRNA levels and feeding behaviour (031914/Z/89/2).

## University of Manchester

**Dr M E Boulton** £118 078  
**Department of Ophthalmology, Royal Eye Hospital:** for three years, for a study of the effect of pO<sub>2</sub> on the production of, and response to, growth factors by retinal cells: its relationship to the vasoproliferative retinopathies, with *Professor D McLeod, Dr J B Weiss, Wilfron Angiogenesis Unit, Hope Hospital, Salford and Professor J V Forrester, Department of Ophthalmology, University of Aberdeen* (031539/Z/90/2).

**Dr Ruth F Itzhaki** £44 310  
**Department of Optometry and Vision Sciences:** for two years, for the development of a model system for Alzheimer's disease involving aluminium treatment of cells in culture (031154/Z/90/2).

**Dr I J Mitchell** £49 850  
**Department of Cell and Structural Biology:** for two years, for a study of the role of excitatory amino acid receptors in the globus pallidus, with *Professor A R Crossman* (031849/Z/90/2).

**Dr I J Murray** £49 042  
**Department of Optometry and Vision Sciences:** for two years, for a study of visual changes in Parkinson's Disease, with *Dr J P R Dick, Department of Neurology, Charing Cross Hospital and Medical School, London* (031997/A/90/2).

## University of Newcastle upon Tyne

**Dr S S Bhattacharya** £73 549  
**Department of Human Genetics:** for one year extension and for a contribution towards refurbishment of new laboratory space, for his study of the isolation and identification of candidate genes for X-linked retinitis pigmentosa and for other X-linked eye diseases (017660/Z/87/A).

## University of Nottingham

**Dr G W Bennett** £42 849  
**Department of Physiology and Pharmacology:** for two years, for a study of *in vivo* detection of neuropeptide (TRH) release in CNS, with *Dr R W Clarke* (031076/Z/90/2).

**Dr S J Hill** £114 764  
**Department of Physiology and Pharmacology:** for three years, for a study of the expression of histamine H<sub>1</sub>-receptor subtypes in different cell lines: functional characterization and modification by dithiothreitol (031757/Z/90/2).

**Professor C A Marsden** £5678  
**Department of Physiology and Pharmacology:** for four months, for a study of neurotensin-stimulated inositol phospholipid hydrolysis by dopamine in the brain, with *Dr D A Kendall* (031087/Z/89/2).

**Dr V G Wilson** £15 915  
**Department of Physiology and Pharmacology:** for one year, for studies of the effects of 'clonidine displacing substance' on second messenger generation in the brain, with *Dr D A Kendall* (032460/Z/90/2).

## University of Oxford

**Dr Frances M Ashcroft** £52 577  
**Laboratory of Physiology:** for three years, for a study of the role of metabolically modulated K-channels in the response to cerebral ischaemia, with *Dr D H Bergel* (031925/Z/90/2).

**Professor C Blakemore** £50 000  
**Laboratory of Physiology:** for two years, for a study of factors regulating the differentiation and connectivity of the neocortex studied in organotypic culture, with *Dr P R Lowenstein, Department of Anatomy and Physiology, University of Dundee and Dr D J Price, Department of Physiology, University of Edinburgh* (031402/Z/90/2).

**Professor A J Bron** £49 982  
**Nuffield Laboratory of Ophthalmology:** for two years, for a study of human Meibomian gland secretion: *in vivo* assay and clinical importance, with *Dr J M Tiffany* (031121/Z/90/2).

**Dr C G Fairburn**  
**Department of Psychiatry:** for six months, for an extension of his investigation of the nature of bulimic episodes: a community based study (016712/B/87/2).

**Professor M G Gelder** £234 880  
**Department of Psychiatry:** for five years, for research training posts in academic psychiatry (009376/Z/79/A).

**Dr J J B Jack** £26 955  
**Laboratory of Physiology:** for one year, for a study of the characterization and modelling of synaptic action in the mammalian neocortex (030606/B/89/2).

**Dr R E Passingham** £121 795  
**Department of Experimental Psychology:** for three years, for the control of movement by the basal ganglia: a study with PET, with *Dr D J Brooks, Department of Medicine, Royal Postgraduate Medical School, London* (031949/Z/90/2).

**Dr R E Passingham** £104 797  
**Department of Experimental Psychology:** for three years, for a study of the mechanisms of motor learning: a study with monkeys (031332/Z/90/2).

**Dr V H Perry** £5999  
**Department of Experimental Psychology:** for additional equipment for his study of the role of macrophages and microglia in neurotoxin induced inflammatory responses in the CNS, with *Professor S Gordon, Sir William Dunn School of Pathology* (030042/Z/89/A).

**Dr V H Perry** £4514  
**Department of Experimental Psychology:** for additional expenses for his study of the role of macrophages and microglia in neurotoxin induced inflammatory responses in the CNS, with *Professor S Gordon, Sir William Dunn School of Pathology* (030042/Z/89/A).

- Dr M C Sharpe** £47 115  
Department of Psychiatry: for three years, for a study of chronic fatigue syndrome: psychological characteristics and an evaluation of psychological treatment, with *Dr K Hawton* (031592/2902).
- Dr F Watt** £45 666  
Department of Nuclear Physics: for two years, for an extension of his study of neurodegenerative disorders (017320/287A).
- University of Reading**
- Dr M J C Crabbe** £9700  
Department of Microbiology: for one year, for a study of expression, controlled mutagenesis and modelling of crystallins (032110/2902).
- Professor P J Lowry** £96 730  
Department of Biochemistry and Physiology: for three years, for a study of post-translational processing and intracellular compartmentalization of the human corticotropin releasing-hormone precursor, with *Dr Glenda E Gillies*, Department of Pharmacology, Charing Cross and Westminster Medical School and *Dr P R Lounstein*, Department of Anatomy and Physiology, University of Dundee (031389/2902).
- University of Sheffield**
- Professor R C A Pearson** £40 000  
Department of Biomedical Sciences: for two years, for a study of biochemical correlates of anatomically defined suicide transport agent induced lesions affecting the neocortex of the rat brain, with *Dr D M Bowen*, Department of Neurochemistry, Institute of Neurology, London (031261/2902).
- University of Southampton**
- Professor C Thompson** £50 000  
Department of Psychiatry: for eighteen months, for studies in the aetiology of seasonal affective disorders (031986/2902).
- University of St Andrews**
- Dr M D Rugg** £54 273  
Department of Psychology: for three years, for an investigation of the brain regions and cognitive processes necessary for the generation of the 'P300' brain potential, with *Dr R C Roberts*, Department of Medicine, University of Dundee (031243/2902).
- University of Stirling**
- Dr J T L Wilson** £74 640  
Department of Psychology: for three years, for structural change and functional recovery after closed head injury, with *Professor G M Teasdale*, *Dr D J Wyper* and *Dr D M Hadley*, all of the Department of Neurosurgery, University of Glasgow (031436/2902).
- LONDON**
- Charing Cross and Westminster Medical School**
- Professor S L Lightman** £23 707  
Neuroendocrinology Unit: for two years, for studies of a novel neuroendocrine measure of central oestrogen receptor status in puerperal psychosis, with *Dr S A Checkley*, Department of Psychiatry, Institute of Psychiatry, London (031408/2890Z).
- City University London**
- Dr Susan Golombok** £49 913  
Department of Social Sciences: for two years, for an investigation of children in lesbian families: a follow-up study, with *Professor M L Rutter*, Department of Child and Adolescent Psychiatry, Institute of Psychiatry, London (030816/2890Z).
- Imperial College of Science, Technology and Medicine**
- Professor J O Dolly** £5602  
Department of Biochemistry: for three months, for an extension of his study of the interaction of dendrotoxin with sub-types of voltage-sensitive K<sup>+</sup> channels in relation to its novel convulsive action, with *Dr D G Nicholls* (015291/2886A).
- Dr M B A Djangoz** £7900  
Department of Pure and Applied Biology: for additional expenses for a study of functional characteristics and organisation of amacrine cells in vertebrate retina (016611/287A).
- Institute of Child Health**
- Professor P J Graham** £35 667  
Department of Child Psychiatry: for one year, for a neuropsychiatric study of childhood hemiplegia, with *Dr R N Goodman* (031170/2902).
- Dr R Surtees** £29 956  
Department of Child Health: for two years, for an extension of an investigation into the mechanisms of demyelination (016310/286A).
- Institute of Neurology**
- Dr D M Bowen** £5000  
Department of Neurochemistry: for two years, for a study of biochemical correlates of anatomically defined suicide transport agent induced lesions affecting the neocortex of the rat brain, with *Professor R C A Pearson*, Department of Biomedical Sciences, University of Sheffield (031261/2902).
- Professor C D Maraden** £69 740  
Department of Clinical Neurology: for two years, for a clinical, pathophysiological and genetic study of hereditary essential tremor, with *Dr L J Findley* (031152/2902).

## Institute of Psychiatry

**Professor B H Anderton** £2422  
Department of Neuroscience: for additional expenses, for a study of gene expression and protein metabolism in motor neurone disease and excitotoxin-induced neurodegeneration, with *Professor P N Leigh*, Department of Neurology (030516/2891A).

**Professor B H Anderton** £7856  
Department of Neuroscience: for additional expenses, for an investigation of an abnormal phosphorylation in the microtubule-associated protein tau in Alzheimer's disease (031410/2900A).

**Professor B H Anderton** £203 176  
Department of Neuroscience: for three years, for an investigation of an abnormal phosphorylation in the microtubule-associated protein tau in Alzheimer's disease, with *Dr N Tötty*, Ludwig Institute for Cancer Research, London (031410/2902).

**Dr S A Checkley** £35 682  
Department of Psychiatry: for two years, for studies of a novel neuroendocrine measure of central oestrogen receptor status in puerperal psychosis, with *Professor S L Lightman*, Neuroendocrinology Unit, Charing Cross and Westminster Medical School, London (031408/2902).

**Dr P Hajek** £15 333  
Addiction Research Unit: for two years, for a study of occasional smoking: nicotine intake determinants and stability, with *Dr R West*, Department of Psychology, Royal Holloway and Bedford New College, Egham (030735/2892).

**Dr A J Holland** £9000  
Department of Psychiatry: for additional research expenses, for a prospective study of clinical and biochemical changes associated with dementia in adults with Down's Syndrome, with *Dr M J Brammer*, Department of Neuroscience (018145/288A).

**Professor P N Leigh** £15 584  
Department of Neurology: for three years, for additional expenses for a study of the specificity, distribution, morphology and pathogenic significance of ubiquitin-immunoreactive inclusions in motor neurone disease, with *Professor B H Anderton*, Department of Neuroscience, Institute of Psychiatry, London (019157/2891A).

## King's College London (KQC)

**Dr P A M Eagles** £8840  
Department of Biophysics: for six months, for an extension of his structural studies on normal and abnormal filamentous proteins in axoplasm (014657/285A).

**Professor P G Jenner** £61 284  
Department of Pharmacology: for two years, for a study of the interactions between D-1 and D-2 in the receptors in the production of motor behaviours in primates (031032/2902).

## London Hospital Medical College

**Dr C Kennard** £93 540  
Department of Neurology: for three years, for an information processing analysis of reaction times in Parkinson's disease, with *Professor Leslie Henderson*, Department of Psychology, Hailfield Polytechnic (030473/2892).

## Queen Mary College

**Dr D M Hunt** £5569  
School of Biological Sciences: for additional research expenses, for his study of the molecular genetics of vision, with *Dr J K Boumaker*, Department of Visual Science, Institute of Ophthalmology, London (017016/287B).

## Royal Free Hospital School of Medicine

**Dr M E Appleyard** £30 888  
Department of Physiology: for two years, for a study of a novel role for acetylcholinesterase within the mammalian brain, with *Dr J D Priddle*, Institute of Molecular Medicine, University of Oxford (030811/2892).

**Dr C D Richards** £40 081  
Department of Physiology: for one year, for a study of the action of anaesthetics on neuronal potassium channels (031244/2902).

## School of Pharmacy

**Dr A Constanti** £12 000  
Department of Pharmacology: for one year, for a study of electrical and pharmacological properties of acutely isolated adult mammalian cortical neurones (030667/2892).

## St George's Hospital Medical School

**Dr A M Davies** £120 730  
Department of Anatomy: for three years, for a study of the onset and specificity of neurotrophic factor dependency in the developing vertebrate nervous system (031222/2902).

**Professor Annette C Dolphin** £39 618  
Department of Pharmacology: for eighteen months, for an investigation into the molecular biology of long-term potentiation in the rat hippocampus, with *Dr T V Bliss*, Neurophysiology and Neuropharmacology Division, NIMR, London (018751/2881A).

## St Mary's Hospital Medical School

**Dr Alison M Goate** £190 083  
Department of Biochemistry and Molecular Genetics: for three years, for a study of the use of gene targeting to develop models for neurodegenerative disease, with *Dr S D M Brown* (030893/2892).

**Dr J A Hardy** £243 481  
Department of Biochemistry and Molecular Genetics: for three years, for an investigation of the frequency, nature and clinical significance of mutations in the prion protein gene, with *Dr J Collinge* (031976/2902).



**Dr Margaret B Lowrie** £73 666  
**Department of Anatomy and Cell Biology:** for three years, for a study of the target in the development of motoneurone dendrites (030978/Z/89/2).

**Professor R C A Pearson** £9289  
**Department of Anatomy and Cell Biology:** for six months, for an extension to his study of neuronal hypertrophy, axonal sprouting and changes in gene expression in the nervous system in response to injury or disease (01817/Z/88/A).

**Dr A Shiels** £39 087  
**Department of Haematology:** for one year, for a study of structure and expression of the gene coding for major intrinsic cell-membrane protein of the vertebrate eye lens (032849/Z/90/2).

University College and Middlesex School of Medicine

**Dr S R Bolsover** £65 552  
**Department of Physiology:** for three years, for a digital imaging microscope facility for a study of localized calcium changes within cells, with *Dr Lynn J Bindman, and Lillian Patterson, Department of Physiology, University College London* (031429/Z/90/2).

**Dr S R Bolsover** £125 832  
**Department of Physiology:** for three years, for a study of intracellular calcium in growth cone function (031876/Z/90/2).

**Dr H M D Gurling** £31 509  
**Department of Psychiatry:** for one year, for a molecular genetics study in schizophrenia (031527/Z/90/2).

**Professor A P Haines** £4300  
**Department of Primary Health Care:** for six months, for a study of essential fatty acids and antioxidant nutrients in patients with age related macular change and matched controls (030894/Z/89/2).

University College London

**Dr D I Attwell** £21 539  
**Department of Physiology:** for one year, for an extension to his study of electrical properties of retinal Muller cells (014983/Z/85/A).

**Professor D A Brown** £4208  
**Department of Pharmacology:** for fifteen months, for a study of dendrotoxin-sensitive K<sup>+</sup>-channels in mammalian neurones (018132/Z/88/A).

## EXPEDITIONS

**M J O'Byrne** £2000  
**Royal Veterinary College, Hatfield, Herts:** for three months, for an expedition to study the ways and means of improving health, production and welfare in the camel - Royal Veterinary College African Research Team 1990, under *Professor L E Lanyon, Department of Anatomy, Royal Veterinary College, London* (031810/Z/90/2).

**Professor A R Lieberman** £14 202  
**Department of Anatomy and Embryology:** for six months, for a study of the regeneration of adult mammalian CNS axons into peripheral nerve grafts (031402/Z/90/2).

**Professor M C Raff** £32 695  
**Department of Biology:** for one year, for an extension of his study of the mechanisms of cell diversification in rat retina (019146/Z/88/A).

**Professor Gerta Vrbova** £119 210  
**Department of Anatomy and Developmental Biology:** for three years, for an investigation into the survival and development of grafted embryonic motoneurons in the spinal cord of adult rats (031160/Z/90/2).

**Professor S M Zeki** £289 819  
**Department of Anatomy and Embryology:** for three years, for a study of the mapping of visual functions in normal and pathological human brains, with *Dr R S J Frackowiak, Institute of Neurology, London* (030924/Z/89/2).

UMDS Guy's and St Thomas's Hospital

**Dr J V Priestley** £59 260  
**Sherrington School of Physiology:** for three years, for a study of primary afferent inputs to identified trigeminal 2nd order neurones (031149/Z/90/2).

Zoological Society

**Dr D H Abbott** £21 487  
**Gamete Biology Unit:** for one year, for an extension of his study to determine the pheromonal signals which result in hypothalamic suppression of reproduction and growth, with *Professor J P Heam* (016289/Z/86/A).

**Dr D H Abbott** £23 214  
**Gamete Biology Unit:** for one year, for a study of the suppression of GnRH secretion in female naked mole-rats: a neuroendocrine basis for natural infertility, with *Dr C H V Coen, Department of Anatomy and Human Biology, King's College London (KQC), London* (031403/Z/90/2).

## SYMPOSIA

**Dr N Joan Abbott** £2000  
**Department of Physiology, King's College London (KQC):** for a meeting on glial-neuronal interaction to be held in Cambridge from 4-7 September 1990 (032473/Z/90/2).

**Dr D Dawbarn** £2000  
**Department of Medicine (Care for Elderly), University of Bristol:** for a contribution towards the Fifth International Symposium 'Molecular Sciences in Neurodegeneration and Regeneration' to be held at the University of Bristol in September 1991 (032381/Z/90/2).

**Dr Jennifer Dennis** £2000  
**Behavioural Phenotypes Study Group, Park Hospital for Children, Headington, Oxford:** for a behavioural phenotypes study group (031834/Z/90/2).

**Dianne Hayter** £2000  
**Alcohol Concern, London:** to enable Alcohol Concern to hold a symposium on 'The Review of Methodology of Measuring Outcome of Treatment/Interventions' (031228/Z/90/2).

**Dr V Molony** £2000  
**Department of Pre-Clinical Veterinary Sciences, University of Edinburgh:** for a symposium on somatic and visceral afferent systems: the Edinburgh connection (031228/Z/90/2).

**Dr F D Rose** £2000  
**Department of Psychology, Goldsmiths College, University of London:** for a contribution towards the European Brain and Behavioural Society workshop on recovery of function following brain damage (032169/Z/90/2).

## RESEARCH TRAINING SCHOLARSHIPS

**Sabrina Davis**  
**Department of Pharmacology, University of Edinburgh:** for six months, for an extension of her investigation of the possible role of N-methyl-D-aspartate receptors in behavioural learning and memory, under *Dr R G M Morris* (016142/Z/86/A).

**Dr Carole M Hackney**  
**Department of Communication and Neuroscience, University of Keele:** for nine months, for an investigation into anatomical correlates of threshold recovery following kanamycin ototoxicity: a preliminary study, with *Dr Hilary C Dodson, Department of Anatomy, United Medical Dental School of Guy's and St Thomas's Hospital, London and J R Walliker, Department of Clinical Physics, Guy's Hospital, London* (031523/Z/90/2).

## UNIT

**Professor J McCulloch** £266 954  
**University of Glasgow:** for one year, for an extension of his study of the pathogenesis of senile dementia of the Alzheimer type, with *Professor D N Brooks, Department of Psychological Medicine, University of Glasgow* (030607/Z/91/2).

## UNIVERSITY AWARDS

**Dr Helen Hodges** £128 818  
**Department of Psychology, Institute of Psychiatry, London:** for five years, for a study of the mechanisms of recovery from ischaemic brain damage: topical and ectopic allografts within rat hippocampus, under *Professor J A Gray* (031409/Z/90/2).

**Dr I J Mitchell** £86 717  
**Department of Cell and Structural Biology, University of Manchester:** for five years, for an experimental study of movement disorders, under *Professor A R Crossman* (030943/Z/89/2).

**Dr Janice M Kay** £98 807  
**Department of Psychology, University of Exeter:** for five years, for a cognitive neuropsychological investigation of word retrieval disorders and its potential for diagnosis and remediation, under *Professor J R Eiser* (031472/Z/90/2).

## VISION RESEARCH TRAINING FELLOWSHIPS

**Dr Usha Chakravarty**

Department of Ophthalmology, Queen's University of Belfast: for six months, for an extension of her study of the effects of ionising radiation on normal and abnormal retinal and choroidal blood vessels, under Professor D B Archer (0166947/287A).

**S J Charles**

Department of Pathology, University of Cambridge: for two years, for an investigation into clinical and molecular genetic studies in X-linked ocular albinism, under Dr J R W Yates (032266/290Z).

**Dr R A Harrad**

Physiological Laboratory, University of Cambridge: for three months, for an extension of his study of binocular function in amblyopia, under Dr R F Hess (017113/287B).

**Dr P S Hiscott**

Department of Pathology, Institute of Ophthalmology, London: for additional research expenses, for a study of the behaviour of specific cell types in epi-retinal membranes, under Professor J Grierson (017095/287A).

**Dr Anne C Hurlbert**

Laboratory of Physiology, University of Oxford: for one year, for a study of the detection and use of specular reflections as cues to object recognition by the human visual system, under Dr A J Parker (032305/290Z).

**Dr M Katami**

Department of Ophthalmology, University of Cambridge: for six months, for an extension of his study of mechanisms of corneal allograft rejection and the development of methods of immuno-suppression, under P G Watson (014812/289E).

**Dr Janet Liversidge**

Department of Ophthalmology, University of Aberdeen: for three years, for a study of processing and presentation of retinal autoantigens: identification of the relevant *in vivo* uveitogenic epitopes and selection of potential immunoregulatory peptides, under Professor J V Forrester (032267/290Z).

**Dr P A R Meyer**

Department of Ophthalmology, University of Cambridge: for three years, for an extension of his study of the immune aggregate deposition in the eye *in vivo*, under P G Watson (014227/285C).

**Dr J Prydal**

Physiological Laboratory, University of Cambridge: for one year, for an extension of his study of precocular tear film thickness, under Professor F W Campbell (017111/287D).

**Dr J S H Taylor**

Department of Human Anatomy, University of Oxford: for additional expenses, for studies of development and organization of visual pathways, under Professor R W Guillery (030460/289A).

## RESEARCH LEAVE FELLOWSHIP

**Pamela J Shaw**

Department of Neurology, University of Newcastle upon Tyne: for three months, for an extension to her study to characterise and quantify the distribution of the N-methyl-D-aspartate (NMDA) receptor complex in the motor system of normal human subjects and motor neurone disease patients, under Dr N E F Carlidge (030506/289A).

## MENTAL HEALTH FELLOWSHIPS

**Dr Ruth C Maxwell**

School of Biological Sciences, University of Sussex, Brighton: for one year, for a study of isolation and *in vitro* growth of sensory neurons from nasal epithelium: a model system for studying the cellular changes leading to Alzheimer's disease, under Dr Lyne V Mayne (031082/289Z).

**Dr L Mynors-Wallis**

Department of Psychiatry, University of Oxford: for three years, for an evaluation of brief psychological treatment for depressive disorders in general practice, under Dr D Gath (030988/289Z).

**Dr H Series**

Department of Psychiatry, University of Oxford: for three years, for the characterization of two distinct ascending serotonergic projections in rats by anatomical pharmacological and functional methods, under Professor M G Gelder, and Professor D G Graham-Smith, Department of Clinical Pharmacology (031011/289Z).

**Dr P C Sham**

Department of Psychiatry, Institute of Psychiatry, London: for three years, for an investigation of genetic epidemiology in psychiatry: a family study on the roles of genes and obstetric complications in subtypes of psychosis, under Professor R M Murray (031016/289Z).

## POSTDOCTORAL RESEARCH FELLOWSHIPS

**Dr S M Fleetwood-Walker**

Department of Veterinary Physiology, Royal (Dick) School of Veterinary Studies, University of Edinburgh: for two years, for a study of the role of Neurokinin A (NKA) - containing primary afferents in nociception in the spinal dorsal horn, under Professor C R Housie, Department of Pre-Clinical Veterinary Sciences and with Dr A J Hammar, MRC Brain Metabolism Unit and Dr J A Russell, Department of Physiology (030789/289Z).

**Dr C A Ingham**

Department of Pre-Clinical Veterinary Sciences, University of Edinburgh: for three years, for a study of morphological changes in the rat neostriatum after removal or blockage of dopamine input, with Professor H J Evans, MRC Human Genetics Unit and Dr P A T Kelly, Department of Clinical Neurosciences (031917/290Z).

**Dr Emily A Simouoff**

Department of Child and Adolescent Psychiatry, Institute of Psychiatry, London: for six months, for an extension to a follow-up study of twins with conduct disorder (016403/286A).

**Dr J Turk**

Department of Child Psychiatry, Institute of Child Health, London: for three years, for a study of hyperactivity, disorders of conduct and social functioning, and the fragile X syndrome - a possible association, under Professor P J Graham (031006/289Z).

**Dr A J Wood**

Department of Psychiatry, University of Oxford: for one year, for a study of the molecular genetic mechanisms which regulate cation transport in manic-depressive psychosis, under Professor M G Gelder (030914/289Z).

**Dr D G Lewis**

Department of Physics, University College of Swansea: for three years, for an investigation into the development and application of novel methods for the *in vivo* analysis of body-elements, under Professor J Dutton (031975/290Z).

**Dr R A Shiells**

Department of Physiology, University College London: for three years, for a study of whether glutamate receptors linked to second messengers mediate synaptic transmission from rods to on-bipolar cells in dogfish retina, under Professor R C Hóledge (030704/289Z).



## SENIOR LECTURERSHIP — MENTAL HEALTH

**Dr D H Skuse**

**Department of Child Psychiatry, Institute of Child Health, London:** for six months, for an extension to his study of the limits to growth: new perspective on the environmental constraints upon physical and psychological development, under *Professor P J Gillham* (014230/285/A).

## LECTURESHP — MENTAL HEALTH

**Dr A L Stein**

**Department of Psychiatry, University of Oxford:** for additional expenses, for his study of the infants of mothers with an eating disorder: a controlled study, under *Professor M G Gelder* (017716/287/A).

## LECTURESHIPS

**Dr M J Parkes**

**Department of Biochemistry and Physiology, University of Reading:** for three months, for an extension to his studies in reproductive physiology (013478/284/B).

**Dr Judith A Pratt**

**Department of Physiology and Pharmacology, University of Strathclyde, Glasgow:** for additional expenses, for her study of mechanisms of action of benzodiazepines (014393/285/A).

## ROYAL SOCIETY OF EDINBURGH FELLOWSHIP

**Dr J R Seckl**

**Department of Medicine, University of Edinburgh:** for additional expenses, for his molecular biological studies of corticosteroid receptors and steroid metabolism in brain, under *Professor C R W Edwards* (019332/288/A).

## INFECTION AND IMMUNITY PANEL

C E Gordon Smith, CB, MD, FRCP, FRCPath, (Chairman, Wellcome Trustee), Wellcome Trust

Professor R M Anderson, PhD, FRS, Imperial College of Science, Technology and Medicine, London

G E Griffin, PhD, FRCP, St George's Hospital Medical School, London

W E Gutteridge, PhD, ScD, C Biol, FIBiol, Wellcome plc, Beckenham

# Professor R E Howells, PhD, FIBiol, Liverpool School of Tropical Medicine

R P Lane, PhD, ARCS, London School of Hygiene and Tropical Medicine

Professor I McConnell, PhD, BVMS, MRCPPath, FRSE, University of Edinburgh

# Professor E R Moxon, MB, FRCP, University of Oxford

# Professor E H O Parry, OBE, MD, FRCP, Distance Learning Programme, Wellcome Tropical Institute, London

M Elaine Rose, OBE, ScD, MRCPPath, FRCVS, AFRC Institute for Animal Health, Houghton Laboratory

J J Skehel, PhD, FRS, National Institute for Medical Research, London

**Staff members responsible**

# J G Howard, MD, PhD, FIBiol, FRS, (Scientific Secretary),

★ R E Howells, PhD, FIBiol, (Scientific Secretary),

★★ Rebecca Fitt, BA, (Grants Officer)

C D J Sainty, BA (Econ), (Grants Officer)

# Until June 1990

★ From June 1990

★★ From October 1989

## INFECTION AND IMMUNITY

The Infection and Immunity Panel took over responsibility in October 1989 for all aspects of the clinical and basic science of these subjects, including relevant immunology. The programme subsumes the major part of the Trust's activities previously considered by the Veterinary, Tropical Medicine and Infectious Diseases sections; the majority of which were in these subject fields.

Applications for awards in infection and immunity are reviewed by a panel of ten external scientists representing the many and diverse subjects covered by this programme, including two veterinarians. In addition to their essential role in the assessment of grant requests, panel members provide valuable advice on policy issues and research fields requiring special attention. During the year the Panel's expenditure amounted to £6.6 million, including longer-term support, equivalent to 12.3 per cent of the Trust's overall research support expenditure.

187 project grant applications were considered by the Panel and 57 per cent were funded. The £5.0 million allocated to project grants represented 39 per cent of the total amount requested.

Eleven proposals for Wellcome programme grants were considered by the Panel during the report period, from which the Trustees made four awards. One award was for £4 million, to Professor R M Anderson at Imperial College London for the support of a new research Unit in parasitic diseases and the biology of helminths. The Unit will focus on diseases caused by parasitic worms. These parasites, which are amongst the most common of human infections, add significantly to the public health problems in the Third World where the human immune system can provide only a weak level of protection against them. The total cost of the five longer-term awards was £5.9 million.

In February 1990 a workshop on the 'Molecular and Physiological Basis of Vector Parasite Interactions and its Epidemiological Implications' was held at the Dormy House Hotel, Broadway. 49 scientists from the UK and overseas attended this successful meeting, which was organised by Dr R P Lane, Professor D H Molyneux and Jilly Steward. The workshop was jointly funded by the Wellcome Trust and the UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases.

Dr A H Fairlamb was awarded a personal chair in Molecular Parasitology, at the London School of Hygiene and Tropical Medicine from 1 August 1990. Dr Fairlamb is currently in receipt of funding for a study of trypanothione surrogates: a series of chemical compounds which may provide a lead to treatments for leishmaniasis and trypanosomiasis.

Dr M A J Ferguson was awarded the Colworth Medal for 1991, which is awarded by the British Biochemical Society for work of an outstanding nature to a biochemist under 35 years of age. Dr Ferguson is a lecturer in the Department of Biochemistry at the University of Dundee. He holds a Wellcome Trust longer-term award for research into the role of glycoconjugates in parasite survival and host-parasite interactions.

Dr J G Howard, who was Scientific Secretary to the Tropical Medicine and Infectious Diseases Panel prior to becoming Programme Director for Infection and Immunity, retired in June 1990.

The Trustees were pleased to learn that Dr M Elaine Rose, who is a member of the Trust's Infection and Immunity Panel and the Veterinary Interest Group, was awarded an OBE in the Queen's Birthday Honours list.

## List of awards over £2000

## LONGER-TERM SUPPORT

**Professor R M Anderson** £3 998 614  
Department of Pure and Applied Biology, Imperial College of Science, Technology and Medicine, London: for five years, for the Wellcome Trust Parasitic Diseases and Biology of Helminths Research Unit, with Dr D A P Bundy, Dr R M Maizels, and Dr M E Selkirk, Department of Biochemistry and Dr Deborah F Smith (031283/2592).

**Dr R M Batt** £288 906  
Department of Medicine and Animal Husbandry, Royal Veterinary College, North Mymms, Herts: for five years, for an investigation of the molecular interactions between damage and repair of the intestinal microvillar membrane, with Dr J R Saunders, Department of Genetics and Microbiology, University of Liverpool (031024/2592).

**Dr Jenefer M Blackwell** £891 364  
Department of Medical Parasitology, London School of Hygiene and Tropical Medicine: for four and a half years, for a study of the genetic regulation of immune response to infection with, and vaccination against, mycobacterial and leishmanial diseases — studies in mice and man, with Dr S D M Brown, Department of Biochemistry and Molecular Genetics, St Mary's Hospital Medical School, London and Dr H M Dockrell, Department of Clinical Sciences (031110/2592).

**Dr M J Doenhoff** £250 000  
School of Biological Sciences, University of North Wales, Gwynedd, Bangor: for five years, for a study entitled 'Why are schistosome vaccines not fully protective?': An immunological, pharmacological and haematological analysis of factors controlling migration of schistosome larvae through skin and lung tissue (031540/2592).

**Professor K T Douglas** £73 087  
Department of Pharmacy, University of Manchester: for additional research assistance for four years, additional research expenses and equipment for his study of rational drug design in trypanosomiasis — molecular recognition and mechanism-based inhibitors for trypanothione reductase, with Dr A H Fairlamb, Department of Medical Parasitology, London School of Hygiene and Tropical Medicine (019094/2592).

**Professor C A Hart** £125 050  
Department of Medical Microbiology, University of Liverpool: for five years, for an investigation of the molecular interactions between damage and repair of the intestinal microvillar membrane, with Dr J R Saunders, Department of Genetics and Microbiology (031024/0902).

**Dr T R Hirst** £350 000  
Biological Laboratory, University of Kent, Canterbury: for five years, for a study of biogenesis and molecular engineering of toxins responsible for cholera and related diarrhoeal diseases, with Dr R F L James, Department of Surgery, University of Leicester and Dr C E Hornaache, Department of Pathology, University of Cambridge (032215/2592).

## EQUIPMENT

**Dr Jane E Grundy** £73 609  
Department of Virology, Royal Free Hospital School of Medicine, London: for one year, for a study of alterations in three dimensional cell structure and intracellular localisation of macromolecules associated with particular physiological and disease states, with Dr Gillian E Francis, Department of Haematology, Dr T Coven, Department of Anatomy, Dr A Akbar, Department of Immunology and Dr P Amiot, Department of Immunology (031944/2592).

**Professor P J Guillou** £60 265  
Academic Surgical Unit, St Mary's Hospital Medical School, London: for one year, for a study of leucocyte activation markers in surgical patients at high risk of morbidity and mortality from sepsis, with Professor H C Thomas, Department of Medicine and Dr P J M Openahan, Department of Medicine (031528/2592).

## MAJOR AWARDS

**Professor I McConnell** £16 809  
Department of Veterinary Pathology, University of Edinburgh: for two years, for additional research expenses and equipment for his study of the molecular pathology of ruminant lentivirus infections, with Dr D Sargani and Dr N Watt (015742/2586A).

**Professor Soad Tabaqchali** £9520  
Department of Medical Microbiology, St Bartholomew's Hospital Medical College, London: for three years and six months, for additional equipment for her study of the molecular cloning and genetic analysis of virulence determinants and key antigens from *Clostridium difficile* (018643/2586A).

## RESEARCH ASSISTANCE AND EXPENSES

## University of Aberdeen

**Dr A J P Brown** £156 378  
**Department of Genetics and Microbiology:** for three years, for a study of the control of gene expression during morphogenesis in *Candida*, with *Professor G W Gooday and Dr N A R Gow* (031097/2/90/2).

## University College of Wales, Aberystwyth

**Professor J Barrett** £29 072  
**Department of Biological Sciences:** for one year, for a study of transmembrane signalling in parasite helminths (030675/2/89/2).

## University of Bath

**Dr R V Brunt** £2500  
**Department of Biochemistry:** for additional expenses, for his studies of calmodulin related systems in cestodes and the cestocidal properties of calmodulin antagonists (phenothiazines) (016159/2/87/8).

**Dr M J Danson** £11 809  
**Department of Biochemistry:** for additional expenses, for a study of dihydroipoamide dehydrogenase from African trypanosomes: a target for drug development (030669/2/89/1).

**Dr R S Eisenthal** £12 500  
**Department of Biochemistry:** for three years, for additional expenses for a study of the molecular characterization of the sugar transporter of African trypanosomes: A drug-targeting strategy, with *Dr G D Holdman and Dr P Turner* (01840/2/88/1).

## University of Birmingham

**Dr D Catty** £23 670  
**Department of Immunology:** for one year, for a study of the mechanisms of host protection against *Pneumocystis carinii* (032340/2/90/2).

**Dr S Knutton** £44 007  
**Institute of Child Health:** for three years, for a study of the pathogenesis of *Campylobacter* diarrhoea, with *Mr H Goveens, WHO Centre for Enteric Campylobacter, St Pieters Hospital, Brussels and Dr P H Williams, Department of Genetics* (030463/2/88/2).

**Dr C W Penn** £42 039  
**School of Biological Sciences:** for two years, for a study of the surface structure and pathogenesis of *Helicobacter pylori*, with *Dr T S J Elliot, Department of Bacteriology* (031498/2/90/2).

## University of Bristol

**Professor F J Bourne** £5500  
**Department of Veterinary Medicine:** for 11 months, for an extension of his study of the role of tsetse fly lectins in the epidemiology of sleeping sickness in West Africa (017961/2/88/1).

**Dr N J Maitland** £20 751  
**Department of Pathology:** for one year, for a study of tissue specific control of human papilloma virus gene expression, with *Dr A R Clarke, Department of Biochemistry* (032166/2/90/2).

## University of Cambridge

**Dr M Carrington** £92 385  
**Department of Biochemistry:** for three years, for a study of the expression and role in variable surface glycoprotein turnover of the glycosyl phosphatidylinositol specific phospholipase C of *Trypanosoma brucei* (030650/2/89/2).

**Dr B T Grenfell** £80 950  
**Department of Zoology:** for three years, for a study of the mathematical models of the epidemiology and control of the lymphatic filariasis (030109/2/90/2).

**Dr I B Kingdon** £19 697  
**Department of Parasitology:** for one year, for an extension of his study of the genetic control of cuticular collagen in *Acartis lumbricoides* (015903/2/86/1).

**Professor P J Lachmann** £3303  
**Department of Pathology:** for two years, for studies of the role of late acting complement components and specific anti-Neisserial antibodies in the pathogenesis of Neisserial disease, with *Dr Angela Orren* (030882/2/89/1).

**Dr R W F Le Page** £81 646  
**Department of Pathology:** for three years, for a study of the molecular biology of the pentose phosphate pathway in *Trypanosoma brucei*, with *Dr H P Vovleis, Department of Biochemistry, Trinity College Dublin* (030792/2/89/2).

**Dr A C Minson** £138 051  
**Department of Pathology:** for three years, for a study of the characterization of glycoprotein H of herpes simplex virus (031091/2/90/2).

**Dr J H Sinclair** £124 788  
**Department of Medicine:** for three years, for a study of the mechanisms of persistent human cytomegalovirus (HCMV) infection — analysis of HCMV gene expression and regulation in peripheral blood mononuclear cells, with *Professor J G P Sissons* (031877/2/88/2).

**Professor J G P Sissons** £2841  
**Department of Medicine:** for two months, for an extension of a study of the role of human cytomegalovirus in suppression and modulation of immunity (014297/2/85/1).

## Frere Hospital, South Africa

**Dr J I G Strang** £2135  
**Department of Medicine, Cape Province:** for two years, for a comparative study of bacteriology, serology and DNA probing in diagnosing TB pericarditis, with *Dr W J M Kenna, Department of Cardiological Sciences, St George's Hospital Medical School, London* (031463/2/90/2).

## University of Warwick, Coventry

**Professor N J Dimmock** £28 861  
**Department of Biological Sciences:** for 23 months, for an extension of a study of the mechanisms of neutralization of influenza virus (017927/2/88/1).

**Professor N J Dimmock** £3515  
**Department of Biological Sciences:** for two months, for a study of monoclonal antibodies which function as T cell receptors (031260/2/90/2).

## Trinity College, Dublin

**Dr C J Smyth** £49 090  
**Department of Microbiology:** for three years, for a study of the CFAR fibriar enterotoxigenic *Escherichia coli* of human origin, with *Dr D C Coleman* (031810/2/90/2).

## University of Edinburgh

**Dr Mary Norval** £76 859  
**Department of Bacteriology:** for three years, for a study of the immune responses to orf virus and orf-vaccinia recombinants, with *Dr D McEwan Jenkinson, Department of Physiology, University of Glasgow and Dr H R P Miller, Department of Pathology, Moredun Institute, Edinburgh* (030778/2/89/2).

**Dr Patricia M Preston** £3486  
**Department of Zoology:** for four months, for an extension of her study of macrophage-derived tumour necrosis factor/cachectin in the pathogenesis of and protective immunity to bovine tropical theileriosis, with *CGD Brown, Centre for Tropical Veterinary Medicine* (017831/2/87/1).

## University of Glasgow

**Professor G H Coombs** £9439  
**Department of Zoology:** for five months, for a study of the characterization of alpha-ketobutyrate-synthesizing enzymes in anaerobic protozoan parasites (032347/2/90/2).

**Dr J G Coote** £9132  
**Department of Microbiology:** for three years, for additional expenses for an analysis of the cell invasive properties of *Bordetella pertussis* adenylate cyclase toxin, with *Dr R Parton, Department of Microbiology and Professor J H Freer* (031517/2/90/1).

**Dr J G Coote** £94 001  
**Department of Microbiology:** for three years, for an analysis of the cell invasive properties of *Bordetella pertussis* adenylate cyclase toxin, with *Dr R Parton and Professor J H Freer* (031517/2/90/2).

**Dr M W Kennedy** £5668  
**Department of Zoology:** for four months, for an extension of a study of the genetic control of the immunological repertoire in experimental and human ascariasis, with *Dr D A P Bundy* (016752/87/1).

**Dr D P Leader** £17 412  
**Department of Biochemistry:** for three years, for a study of vaccinia virus protein kinase (031133/89/90/2).

**Professor R S Phillips** £11 020  
**Department of Zoology:** for six months, for an investigation of the biology of antigenic variation in *Plasmodium chabaudi*, and of the biochemistry and the molecular biology of the antigens involved, with *Professor A Tait, Molecular Parasitology Unit* (031117/2/90/2).

**Professor R S Phillips** £161 271  
**Department of Zoology:** for three years, for an extension of his investigation of the biology of antigenic variation in *Plasmodium chabaudi* and of the biochemistry and the molecular biology of the antigens involved (031117/2/90/1).

## University of Strathclyde, Glasgow

**Professor R H Burdon** £10 026  
**Division of Biology:** for six months, for an extension of a study of the surface antigen genes of *Toxoplasma gondii* (015642/2/86/1).

## University of Surrey, Guildford

**Dr A D T Barrett** £15 296  
**Department of Microbiology:** for one year, for a study of the molecular basis of flavivirus pathogenesis, with *Dr P D Minor, National Institute for Biological Standard and Control, Peterborough* (031988/2/90/2).

## University of Leeds

**Dr P M Hawkey** £54 866  
**Department of Microbiology:** for three years, for a study of the molecular biology of netilmicin resistance in *Serratia marcescens*, with *Dr J Heritage and Dr P M Bennett, Department of Microbiology, University of Bristol* (031272/2/90/2).

**Dr R E Isaac** £18 506  
**Department of Pure and Applied Biology:** for one year, for an investigation into PCR-derived DNA probes for G protein-coupled receptors in parasitic helminths, with *Dr D Coates* (031966/2/90/2).

## University of Liverpool

**Professor R E Howells** £53 455  
**Department of Parasitology:** for 16 months, for a study of drug pharmacokinetics and efficacy in the chemotherapy and chemophrophylaxis of falciparum malaria (030719/2/89/1).

**Professor H H Rees** £5312  
**Department of Biochemistry:** for three months, for a study of lipid components of the epicuticle in filarial nematodes (031772/2/90/2).

**P K H Tam** £13 340

**Department of Child Health:** for one year, for a molecular biological investigation into the relationship between Cytomegalovirus and Hirschsprung's disease, with Professor D Van Velsen and Dr W G P Quint, Department of Molecular Biology, SSDZ Laboratories, Delft, The Netherlands (030998/2/89/2).

**Dr P C Turner** £11 457

**Department of Biochemistry:** for three years, for additional research expenses for his molecular studies on feline calicivirus, with Dr M J Carter, Department of Virology, Medical School, University of Newcastle upon Tyne (030544/8/89/A).

**University of Manchester****Dr W N Hunter** £135 453

**Department of Chemistry:** for five years, for an investigation into the structural characterization of trypanothione reductase (031588/A/90/2).

**University of Newcastle upon Tyne****Dr R A L Brewis** £5000

Royal Victoria Infirmary for six months, for a study of pneumonia in Ethiopia (031047/2/90/2).

**Professor C R Madeley** £60 872

**Department of Virology:** for two years, for a longitudinal study of Human Herpes Virus 6 and Cytomegalovirus infections in renal transplant patients using the polymerase chain reaction, with Dr J S M Peiris, Dr C E Taylor and Dr M J Carter (031533/2/90/2).

**Dr D E Minnikin** £69 390

**Department of Chemistry:** for three years, for the detection of specific lipids in clinical specimens for the rapid diagnosis of mycobacterial disease, with Dr P A Jenkins, Mycobacterium Reference Unit, University Hospital of Wales, Cardiff and Dr N F Lightfoot, Public Health Laboratory Service, Newcastle upon Tyne (030923/2/89/2).

**University of Nottingham****Professor J F Peberdy** £5001

**Department of Botany:** for three months, for an evaluation of protoplasts as a model system for the assessment of anti-cytoskeletal drugs in *Aspergillus* (031490/2/90/2).

**Professor D Wakelin** £127 356

**Department of Zoology:** for three years, for an analysis of T cell- and cytokine-mediated immunity in coccidiosis, with Dr M Elaine Rose, Agricultural and Food Research Council, Huntingdon (031118/2/90/2).

**Professor D Wakelin** £48 619

**Department of Zoology:** for one year, for functional and genetic studies of murine mucosal mast cells (016609/2/87/A).

**University of Oxford****Dr A V S Hill** £57 445

**Nuffield Department of Clinical Medicine:** for two years, for a study of genetic susceptibility to malaria in East Africa, with Dr K Marsh, Institute of Molecular Medicine and Dr C I Newbold (032251/2/90/2).

**Dr J M Hopkin** £3000

**Oxler Chest Unit:** for additional research expenses, for his study of *Pneumocystis carinii*: DNA hybridisation in the diagnosis of pulmonary colonisation and opportunistic pneumonia, with Professor S J G Sempé, Department of Medicine, University College and Middlesex School of Medicine, London (030136/2/89/A).

**Dr J S Kroll** £97 067

**Department of Paediatrics:** for three years, for a study of superoxide dismutase by *Haemophilus influenzae* and its role in pathogenicity in upper respiratory and systemic infections in man (032148/2/90/2).

**Dr C I Newbold** £2900

**Institute of Molecular Medicine:** for one month, for a study of the role of parasite derived red cell surface antigens in the pathology of and immunity to malaria infection, with Dr K Marsh (018368/2/88/A).

**Dr T E A Peto** £7788

**Nuffield Department of Clinical Medicine:** for four months, for a study of the development of iron chelators as antimalarials (031129/2/90/2).

**Dr G L Smith** £88 503

**Sir William Dunn School of Pathology:** for three years, for a study of vaccinia virus protein kinase (031113/A/90/2).

**University of Salford****Professor D H Molyneux** £12 058

**Department of Biological Sciences:** for six months, for an extension of his studies on development and transmission of *Bartonella bacilliformis* in sandflies, with Dr H Guerra, Instituto de Medicina Tropical, Universidad Peruana Cayetano Heredia, Lima, Peru and Dr A G Taylor, Division of Microbiology, Public Health Laboratory Service, London (018709/2/88/B).

**University of Sheffield****Dr S L Kelly** £18 115

**Department of Pharmacology and Therapeutics:** for eight months, for an investigation of the cytochrome P450 system of *Aspergillus fumigatus* and the activity of antifungal azole compounds (031092/2/90/2).

**University of Stirling****Dr M J North** £139 636

**Division of Biochemistry and Cell Biology:** for three years, for a study of the release of hydrolases by *Trichomonas vaginalis*, with Professor G H Coombs, Department of Zoology, University of Glasgow and Dr L Teley, Electron Microscopy Centre, University of Glasgow (030656/2/89/2).

**Dr M J North** £53 417

**Division of Biochemistry and Cell Biology:** for two years, for a study of the characterization of cysteine proteinases of parasitic protozoa, with Professor G H Coombs, Department of Zoology, University of Glasgow (031201/2/90/2).

**University of York****Dr F R Hall** £124 157

**Department of Biology:** for three years, for a study of the characterization of proteases and protease genes of *Thelazia annulata*, with Mrs J Fletcher, Centre for Tropical Veterinary Medicine, Roslin (031219/2/90/2).

**LONDON****Charing Cross Sunley Research Centre****Professor M Feldmann** £26 123

**Department of Cellular Immunology:** for one year, for a study of the role of the immune system in the pathogenesis of gastritis and peptic ulcer (possible role of infection by *Campylobacter pylori*), with Dr M Loudi, Department of Medicine, Dr J M Hoban, Department of Medical Microbiology, University College and Middlesex School of Medicine, London and Dr C Haworth, Department of Haematology (030991/2/89/2).

**Imperial College of Science, Technology and Medicine****Professor R M Anderson** £6168

**Department of Pure and Applied Biology:** for three months, for an extension of his genetic analysis of the antigenic basis for cross immunity between *Schistosoma bovis* and *Schistosoma haematobium* (014877/2/85/C).

**Professor Elizabeth U Canning** £12 723

**Department of Pure and Applied Biology:** for four months, for a study of human microsporidiosis (032693/2/90/2).

**Dr R M Maizels** £6955

**Department of Pure and Applied Biology:** for three months, for an extension of his study of the biology of parasitic nematodes: Characterization of antigenic products and their interaction with the host (016262/2/86/D).

**London Hospital Medical College****Dr Lucinda M C Hall** £105 550

**Department of Medical Microbiology:** for three years, for a study of mosquito acetylcholinesterase genes and insecticide resistant variants (031978/2/89/2).

**Dr K W Taylor** £4605

**Department of Biochemistry:** for three months, for an extension of his study of the effect of diabetogenic virus on the function of human and rodent islets of Langerhans (015942/2/86/A).

**London School of Hygiene and Tropical Medicine****Dr M J Allday** £116 823

**Department of Clinical Sciences:** for three years, for a study of molecular interactions in EBV infected cells, with Dr Dorothy H Crauford (031943/2/90/2).

**Dr A H Fairlamb** £47 375

**Department of Medical Parasitology:** for two years, for a study of trypanothione surrogates: new leads to drugs for leishmaniasis and trypanosomiasis, with Dr S L Croft, Electron Microscopy Laboratory and Professor E M Kosower, School of Chemistry, Tel-Aviv University, Israel (031538/2/90/2).

**Dr A H Fairlamb** £143 833

**Department of Medical Parasitology:** for five years, for an investigation into the structural characterization of trypanothione reductase (031588/B/90/2).

**Professor R J Hay** £3000

**Department of Medical Microbiology:** for a comparative study of classical and African forms of histoplasmosis using immunological and recombinant DNA techniques (016779/2/87/A).

**Professor G A T Targett** £28 773

**Department of Medical Protozoology:** for six months, for an extension of his study of the biochemical and immunological characterization of natural and synthetic peptides associated with transmission-blocking immunity in *Plasmodium falciparum* malaria (030293/2/89/A).

**Dr D C Warhurst** £102 090

**Department of Medical Protozoology:** for three years, for a study of protein synthesis inhibitors as potential antimalarial drugs (032156/B/90/2).

**Professor P G Smith** £12 400

**Department of Epidemiology and Population Sciences:** for three months, for studies of the immunoepidemiology of infectious diseases (032398/2/90/2).

## Natural History Museum

**Dr D Rollinson** £96 435  
 Department of Zoology: for three years, for a study of the phylogenetic relationships of schistosomes based on rDNA sequence analysis, with *Dr V R Southgate* and *Dr A J G Simpson*, Division of Parasitology, National Institute for Medical Research, London (030643/2/89/2).

## Royal College of Surgeons of England

**Dr R R B Russell** £6281  
 Hunterian Dental Research Unit: for three months, for an extension of his genetic analysis of degradative enzymes of oral spirochaetes (015377/2/86/A).

## Royal Free Hospital School of Medicine

**Dr Jane E Grundy** £92 104  
 Department of Virology: for three years, for a study of cytomegalovirus infection on the expression of HLA antigens and cell surface adhesion molecules (030769/2/89/2).

## Royal Postgraduate Medical School

**Professor Beverly E Griffin** £159 292  
 Department of Virology: for three years, for a study of the production of infectious papova viruses, their structures and the role of myristylation in the virus life cycle (030647/2/89/2).

## School of Pharmacy

**Professor J D Phillipson** £3932  
 Department of Pharmacology: for two months, for an extension of his study of quassinoids as potential antimalarial drugs (015993/2/86/A).

## RESEARCH TRAINING SCHOLARSHIP

## Dr H A O Ondolo

Tropical Child Health Unit, Institute of Child Health, London: for three years, for a study of the cultural and ecological determinants of mortality differentials in infants in the Nyanza Province of Kenya, under *Professor G J Ebradim* (031220/2/90/2).

## St Mary's Hospital Medical School

**Dr L Fry** £10 000  
 Department of Dermatology: for two years and two months, for additional research expenses for his study of the isolation of streptococcal antigen specific and autoreactive T cell clones from psoriatic lesions, with *Dr Barbara S Baker* (019063/2/89/B).

## University College and Middlesex School of Medicine

**Dr R S Tedder** £6278  
 Department of Virology: for additional research expenses, for his studies of the epidemiology of human herpes virus type 6, with *Dr Ruth B Fens* (018666/2/88/A).

## United Medical and Dental Schools of Guy's and St Thomas's Hospital

**Professor R J Hay** £136 943  
 Department of Dermatology: for three years, for the characterization of immunoreactive antigens of *Histoplasma capsulatum* and *Cryptococcus neoformans* (032250/2/90/2).

## Universiti Sains Malaysia

**Dr Mary J Cardoso** £30 000  
 Department of Medical Microbiology, Penang: for one year, for a study of the role of the dimeric and monomeric forms of dengue virus NS1 in the pathogenesis of dengue haemorrhagic fever (030636/2/89/2).

## SYMPOSIA

**Professor G H Coombs** £2000  
 Department of Zoology, University of Glasgow: for a symposium on biochemical protozoology as a basis for drug design to be held at the University of Stirling, 26-29 August 1990, with *Dr M J North*, Division of Biochemistry and Cell Biology, University of Stirling (031228/2/90/2).

**Dr J M Crampton** £2000  
 Royal Entomological Society of London: towards the cost of the Royal Entomological Society of London Symposium — 1991 — Insect Molecular Science, with *Dr P Eggleston*, Department of Genetics, University of Liverpool (032333/2/90/2).

**Dr Harlyn O Halvorson** £12 000  
 Marine Biological Laboratory, Woods Hole, Massachusetts, USA: for three years, for a contribution towards the costs of the 1990, 1991 and 1992 Woods Hole Course on The Biology of Parasitism. (031486/2/90/2).

## UNIVERSITY AWARDS

**Dr Barbara S Baker** £82 249  
 Department of Dermatology, St Mary's Hospital Medical School, London: for three years, for a study of the isolation of streptococcal antigen-specific and autoreactive T cell clones from psoriatic lesions, under *Dr L Fry* (030793/2/89/2).

**Dr I J Johnstone** £34 000  
 Department of Genetics, University of Glasgow: for a meeting entitled *Caenorhabditis elegans*: lessons for the study of parasitic nematodes and vice versa to be held at Dorny House in October 1990. (032101/2/90/2).

**Dr J Nokes** £6000  
 Department of Biology, Imperial College of Science, Technology and Medicine, London: for a contribution towards the costs of 'Modern approaches to the epidemiology and control of infectious diseases' — A short intensive course. 3-21 September 1990 (032795/2/90/2).

**Dr G J Bancroft** £186 874  
 Department of Clinical Tropical Medicine, London School of Hygiene and Tropical Medicine: for five years, for a study of the role of cell mediated immunity in resistance to *Cryptococcus neoformans*, under *Professor K P W J McAdam* with *Professor R J Hay*, Department of Dermatology, United Medical and Dental Schools of Guy's and St Thomas's Hospitals, London (031071/2/90/2).

## RESEARCH LEAVE FELLOWSHIPS

**Dr M W Kennedy**  
 Department of Zoology, University of Glasgow: for three years, for a study of the molecular genetics of Ascaris antigens, stage-specificity and variability within the parasite population, under *Professor R S Phillips* (031539/2/90/2).

**Professor E R Moxon**  
 Department of Paediatrics, University of Oxford: for one year, for a study of the cell biology of invasiveness and cytotoxicity during infections caused by encapsulated bacteria, under *Professor Sir David Weatherall*, Nuffield Department of Clinical Medicine (031597/2/90/2).

## TROPICAL FELLOWSHIPS

**Dr M L Blaxter**  
 Department of Pure and Applied Biology, Imperial College of Science, Technology and Medicine, London: for three years, for a study of the expression of cuticle gene products of parasitic nematodes in transgenic *Caenorhabditis elegans*, under *Dr R M Maizels* (032122/2/90/2).

**Dr P J McCall**  
 Department of Veterinary Parasitology, University of Liverpool: for three years, for a study of the isolation and identification of chemical attractants in *Simulium*, under *Dr A J Tives* and *Professor J H Tunlison*, Department of Biochemistry, University of Arizona, Tucson, Arizona, USA (031508/2/90/2).

**Dr D Jefferies**  
 Department of Biological Sciences, University of Salford: for one year, for additional expenses for the development of a system for the introduction of plasmid constructs into *Trypanosoma brucei*, under *Professor D H Molyneux* and *Professor M Steiner*, Department de Biologie Moléculaire, Université Libre de Bruxelles, Brussels, Belgium (017028/2/87/A).

**Dr A Suhrbier**  
 Department of Biology, Imperial College of Science, Technology and Medicine, London: for three years, for the identification of T cell epitopes in vaccine candidates, under *Professor R E Sinden*, Department of Pure and Applied Biology and *Dr A Saul*, Queensland Institute of Medical Research, Australia (031570/2/90/2).



INFECTIOUS DISEASES FELLOWSHIPS

**Dr D W K Acheson**  
 Department of Medicine, University of Manchester: for one year, for an extension of his study of the structure and function of shiga-like toxin II, under Professor L A Timberg (0171332/287/8).

**Dr K Marsh**  
 Institute of Molecular Medicine, University of Oxford: for one month, for an extension of his study entitled 'the identification and characterisation of neoantigens on *Plasmodium falciparum* infected rat blood cells', under Professor Sir David Weatherall (0165672/286/C).

TROPICAL OVERSEAS FELLOWSHIPS

**Dr A Akinsola**  
 Department of Medicine, Obafemi Awolowo University, Ile-Ife, Nigeria: for one year, for a study of the immunopathogenesis of filarial-induced glomerulonephritis, under Dr R M Maizels, Department of Pure and Applied Biology, Imperial College of Science Technology and Medicine, London (0307572/289/2).

**Dr S Kumar**  
 Department of Zoology, University of Nottingham: for one year, for an extension to his investigation into the immunology, biochemistry and molecular biology of the infective (L3) larva of *Necator americanus*, under Dr D I Pritchard (0183292/288/A).

**Professor R A L Bayoumi**  
 Department of Genetics, University of Edinburgh: for one year, for a study of the genetic basis of chloroquine resistant *Plasmodium falciparum* in rural eastern Sudan, under Dr D E Anot (0323432/290/2).

**Dr L Santos-Argumedo**  
 National Institute for Medical Research, London: for one year, for an extension to his study of the role of phosphotyrosyl proteins in B-lymphocyte activation, under Dr R M E Parkhouse (0303532/289/A).

POSTDOCTORAL FELLOWSHIPS

**Dr D V Holberton**  
 Department of Zoology, University of Nottingham: for three years, for studies of cytoskeleton proteins from *Giardia*: their gene sequences, structure, interactions and antigenicity, under Professor D Wakelin and with Dr M N Marsh, Department of Medicine, University of Manchester and Professor Anne Ferguson, Gastro-Intestinal Unit, University of Edinburgh (0307572/289/2).

**Dr W M Spice**  
 Department of Medical Parasitology, London School of Hygiene and Tropical Medicine: for three years, for an investigation of mucolysis by *Entamoeba histolytica*, under Professor G A T Targeti, Department of Medical Protozoology (0310352/290/2).

LECTURESHIP IN TROPICAL MEDICINE

**Dr C R Davies**  
 Department of Medical Parasitology, London School of Hygiene and Tropical Medicine: for three years, for a study of virulence polymorphisms in the epidemiology of *Leishmania peruviana*, under Dr C M Dye and with Dr Jennifer M Blakevell and Dr H Guerra, Instituto de Medicina Tropical, Universidad Peruana Cayetano Heredia, Lima, Peru (0306532/289/2).

MOLECULAR AND CELL PANEL

I Helen Muir, CBE, DSc, FRS, (Chairman, Wellcome Trustee), Kennedy Institute of Rheumatology, London

Professor J J T Owen, MA, MD, FRS, (Deputy Chairman), University of Birmingham

Professor R J Cherry, MA, PhD, University of Essex

Professor A Colman, MA, DPhil, University of Birmingham

Kay E Davies, BA, PhD, University of Oxford

Professor M A Ferguson-Smith, FRS, FRSE, University of Cambridge

R F Irvine, PhD, Institute of Animal Physiology and Genetics Research, Cambridge

Professor D C Linch, MB, FRCP, University College and Middlesex School of Medicine, London

Professor A J McMichael, MB, PhD, FRCP, University of Oxford

Professor T F Slater, DSc, FRSCHEM, FIBiol, Brunel University, Middlesex

J R Tata, DSc, FRS, National Institute for Medical Research

Jean O Thomas, MA, ScD, FRS, University of Cambridge

Staff members responsible

M J Morgan, BA(Mod), PhD, (Scientific Secretary)

I G Scott, PhD, (Scientific Officer)  
 R J Blake, BA, (Grants Officer)  
 Laura Chambers, (Grants Officer)  
 S A Herst, BSc, ACIS, (Grants Officer)

## MOLECULAR AND CELL

In the summer of 1989 a major re-organisation of the Trust panel structure took place resulting in the demise of the Biochemistry and Cell Panel and the establishment of the Molecular and Cell Panel which, in addition to the former responsibilities of the Biochemistry and Cell Biology Panel became responsible for the clinical, veterinary and tropical interests which use the tools of molecular and cell science in their investigations. A major consequence of this re-organisation, coupled with a realisation in the scientific community that the Wellcome Trust is a major funder of research in this area, was a greatly increased number of grant applications such that the work load almost doubled. This was also reflected in an increased number of meetings from four to six per annum.

Panel membership was adjusted to take account of this change in responsibility and now includes both basic and clinically qualified scientific advisers. The Trust has also established a series of special interest groups to look after the concerns of groups such as clinical researchers which were formerly the business of the Clinical Panel.

The total number of applications for grants, excluding longer-term support, during 1989/90 was 301, of which 151 were awarded in part or in full.

The panel was able to meet 31 per cent of the £26.4m total request for the year. The total amount awarded was therefore £8.2m.

The following three awards for longer-term support are of particular interest. In two instances scientists have been assisted in their objective of relocating from foreign bases back to the UK. Thus Professor Adrian Bird leaves the Institute of Molecular Pathology in Vienna to take up the Buchanan Chair of Genetics at the University of Edinburgh. The Trust has provided funds to help refurbish his laboratory space and to help establish his research group. Professor Bird is well known for his studies on methylation of DNA and its role in the regulation of gene expression. Professor Jonathan Lamb presently at the University of Stanford is taking up the Chair of Immunology at St Mary's Hospital Medical School and has been provided with assistance to establish his laboratory and to set up a research group. Professor Lamb has made a fundamental contribution in establishing atopy on a scientific basis.

In recognition of his seminal discoveries on calcium transients in single cells and the application of novel approaches, Professor Cobbold at the Department of Biochemistry, University of Liverpool has also been provided with long-term support for his research group. Such major project grants are intended to provide the principal investigators with sufficient funds so that they do not need to spend so much time applying for smaller short-term grants.

It is likely that by the time this report is published the Wellcome and Cancer Research Campaign Institute of Cancer and Developmental Biology in Cambridge will have opened its doors to the principal investigators who will we hope have established their research groups. The official opening will take place in the summer of 1991. As part of the setting-up phase of the Institute, the Trustees considered applications from Dr Michael E Akam (Department of Genetics, University of Cambridge) and Professor Brigid L M Hogan (Department of Cell Biology, Vanderbilt University, USA) to provide Principal Research Fellowships for their own support and long-term support for their staff who are to establish research programmes within the Institute. Dr Akam will be investigating the developmental genetics in the fruit fly *Drosophila melanogaster* and the locust. Professor Hogan will be establishing a major programme (in collaboration with Dr Martin Evans) on the molecular genetics of development in the mouse. (Professor Hogan has unfortunately now decided to stay in the United States.)

It is a special pleasure to be able to report such a major "reverse brain drain" which returns to the UK scientific community such outstanding scientists.

## Summer Schools

Two Summer Schools were held in conjunction with the biochemistry department at the United Medical and Dental Schools of Guy's and St Thomas's Hospitals. The first, on Molecular Parasitology was directed by Drs Julian Crumpton, Debbie Smith, and Murray Selkirk; the second on DNA related methods in human genetics: YAC cloning in genome analysis was directed by Dr William Brown, Dr David Bentley and Dr Tony Monaco. The participants came from all over the world and both courses were heavily over-subscribed.

## Meetings

Two one-day meetings were organised on topics of some immediate interest to the clinical and molecular genetics community. The first on malignant hyperthermia was organised to assist in the co-ordination of the search for the gene responsible for this life threatening condition which is revealed during anaesthesia. The second meeting on gene therapy was of particular interest as it highlighted the need for this interdisciplinary topic to be served by annual meetings of a workshop type. The Trustees have agreed therefore to support a further meeting on gene therapy in May 1991.

Dr I Helen Muir retired at the end of September as a Trustee and as the Chairman of the Molecular and Cell Panel. Helen's warm, but firm chairmanship was appreciated by all who served on this Panel and its predecessor, the Biochemistry and Cell Panel, and I am sure they would wish to join with us in wishing her a happy and long retirement.

## List of grants awarded over £2000

## LONGER-TERM SUPPORT

<b>Dr J I Bell</b>	<b>£594 134</b>	<b>Dr P H Cobbold</b>	<b>£649 279</b>
Institute of Molecular Medicine, University of Oxford: for five years, for a study of the genetics of autoimmune disease	(032442/299/2).	Department of Human Anatomy and Cell Biology, University of Liverpool: for five years, for a study of single cell signalling	(032360/291/2).
<b>Professor A P Bird</b>	<b>£803 071</b>	<b>Dr J R Lamb</b>	<b>£487 985</b>
Department of Genetics, University of Edinburgh: for five years, for a study of the significance of DNA methylation and of non-methylated CpG islands for genome organization and function	(031581/291/2).	Department of Immunology, St Mary's Hospital Medical School, London: for five years, for a study of the cellular and molecular basis of the induction of T cell energy in the regulation of allergic diseases, with Dr Robyn E O'Heir	(032192/291/2).
<b>Professor B Burchell</b>	<b>£15 228</b>	<b>Professor Sir David Weatherall</b>	<b>£1 000 000</b>
Department of Biochemical Medicine, University of Dundee: for one year, for continued studies of the molecular pathology of drug-induced illness and related inherited hepatic diseases	(031721/291/1A).	Institute of Molecular Medicine, University of Oxford: for five years, for core funding for the Institute of Molecular Medicine	(031813/290/2).

## EQUIPMENT

**Dr D A Hartley** £36 311  
Department of Biochemistry, Imperial College of Science, Technology and Medicine, London: for three years, for a study of the molecular and cellular biology of slit, a *Drosophila* gene implicated in axonal pathfinding and neural pattern formation (031920Z/90Z).

**Dr A P Jackson** £16 125  
Department of Biochemistry, University of Cambridge: for one year, for studies of 1) the function of clathrin light-chain polymorphism: a direct test *in vivo*; and 2) biochemical functions of *Drosophila* toll protein and the generation of embryonic dorso-ventral polarity, with *Dr N J Gay* (032377Z/90Z).

**Professor R N Maini** £40 837  
Charing Cross and Westminster Medical School, London: for one year, for research into molecular medicine at Charing Cross and Westminster Medical School, with *Professor Julia C Buckingham*, Department of Pharmacology, *Professor A Guz*, Department of Medicine, *Professor M Fridmann*, Charing Cross Sunley Research Centre, London and *Dr S E Humphries*, Charing Cross Sunley Research Centre, London (030917Z/89Z).

## RESEARCH ASSISTANCE AND EXPENSES

## University of Birmingham

**Dr A H Barnett** £14 820  
Department of Medicine: for two years, for a study to assess the contribution of the class II HLA region genes to susceptibility to insulin dependent diabetes using a trans-racial approach - Chinese study (03177Z/92Z).

**Dr R Coleman** £80 000  
Department of Biochemistry: for three years, for a study of the development and use of hepatocyte couplets in hepatobiliary and hepatotoxicity studies, with *Dr J K Chipman*, *Dr P McMaster*, Queen Elizabeth Hospital, Birmingham (030949Z/88Z).

**Dr Alicia J El Haj** £21 335  
School of Biological Sciences: for one year, for a study of the regulation of gene expression in response to mechanical loading in bone cells (030779Z/89Z).

**Dr I P Trayer** £91 669  
Department of Biochemistry: for three years, for a study of the molecular mechanisms of cellular regulation processes with *Dr Ewa J Hyde*, *Dr R Jefferts*, Department of Immunology and *Dr S P Young*, Department of Rheumatology (030748Z/89Z).

## University of Bristol

**Dr A P Halestrap** £84 945  
Department of Biochemistry: for three years, for a study of the molecular mechanisms of monocarboxylic acid transport across the plasma membrane of erythrocytes and other cells, with *Dr M J A Towner* (031194Z/90Z).

**Dr S E Halford** £73 997  
Department of Biochemistry: for three years, for a study of DNA-assembly at synapsis by resolvase (030926Z/89Z).

**Dr C H Holmes** £80 455  
Department of Obstetrics and Gynaecology: for two years, for a study of the expression of complement regulatory proteins in normal human pregnancy and in pregnancy pathologies, with *Dr P Morgan*, Department of Medical Biochemistry, University of Wales College of Medicine, Cardiff and *Dr M J A Tanner*, Department of Biochemistry (032197Z/89Z).

**Dr E P Kelly** £86 251  
Department of Pharmacology: for three years, for a study of the role of altered G-protein mRNA levels in agonist-induced desensitization of hormone-stimulated adenylate cyclase activity (031215Z/90Z).

**Dr Hilary Muirhead** £72 038  
Department of Biochemistry: for three years, for a detailed kinetic and structural study of the control and catalysis of the allosteric enzyme pyruvate kinase, with *Dr H Gutfeind* and *Dr A R Clarke* (031940Z/90Z).

## Strangeways Research Laboratory, Cambridge

**Dr Gillian Murphy** £83 695  
Department of Cell Physiology: for three years, for an assessment of the role of two newly discovered matrix metallo-proteinases and a specific inhibitor in connective tissue destruction (032299Z/90Z).

## University of Cambridge

**Dr M E Akam** £36 193  
Department of Genetics: for nine months, for the molecular analysis of pattern formation in insect and crustacean embryos (030589Z/89Z).

**Dr A Martinez Arias** £86 011  
Department of Zoology: for two years, for cellular and biochemical studies of the function of the wingless gene product of *Drosophila*, with *Dr M Bate* and *Dr F Gonzalez* (032289Z/90Z).

**Dr J M Edwardson** £24 941  
Department of Pharmacology: for one year, for a study of the insertion of a newly-synthesized protein into the plasma membrane of a new cell-free system (031842Z/90Z).

**Dr N J Gay** £12 180  
Department of Biochemistry: for additional expenses, for studies on the biochemical functions of homeobox and dorsal group gene products during early embryogenesis of *Drosophila* (017955Z/88A).

**Professor I A Hughes** £77 782  
Department of Paediatrics: for three years, for a study to classify androgen insensitivity disorders by clinical, biochemical and genetic analysis (031968Z/90Z).

**Dr R J Jackson** £116 781  
Department of Biochemistry: for three years, for an investigation of the novel mechanism of initiation of picornaviral RNA translation: determinants specifying the internal ribosome entry site of cardio-, entero- and rhinoviruses (032330Z/90Z).

**Dr M H Johnson** £41 897  
Department of Anatomy: for two years, for an analysis of the effects of cryoprotectant and low temperature on the oocyte of the mouse (030551Z/89Z).

**Dr Y W Loke** £8171  
Department of Pathology: for three months, for bridging support, for his study of the cellular constituents of the endometrial and decidual stroma and their relevance to implantation (016641Z/87B).

**Dr A C Minson** £26 853  
Department of Pathology: for one year, for an extension to a study of the genetic response controlling normal cell proliferation, with *Dr J Milner* (016513Z/87A).

**Dr L C Packman** £44 358  
Department of Biochemistry: for three years, for automated synthesis of oligonucleotides and oligopeptides, with *Dr P J F Henderson* (031579Z/90Z).

**Dr Margaret S Robinson** £110 102  
Department of Clinical Biochemistry: for four years, for a study of the diversity and targeting of adaptors (031732Z/90Z).

**Dr C W Taylor** £93 628  
Department of Pharmacology: for three years, for a study of the mechanisms underlying oscillatory changes in intracellular concentration, with *Dr M J Berridge*, Department of Zoology (030960Z/89Z).

**Dr A P Weetman** £116 210  
Department of Medicine: for three years, for a study of the autoreactive T cell repertoire in Autoimmune Thyroid Disease (031632Z/90Z).

## University of Wales College of Medicine, Cardiff

**Professor G H Elder** £38 667  
Department of Medical Biochemistry: for eighteen months, for a study of the molecular genetics of porphyria cutanea tarda and related disorders, with *Professor P Jordan*, School of Biological Sciences, Queen Mary College, London (031297Z/90Z).

**Professor G H Elder** £12 764  
Department of Medical Biochemistry: for six months, for an extension of a study of the molecular pathology of acute intermittent porphyria, with *Dr N Kalsheker* (016279Z/86A).

## University of Essex, Colchester

**Dr G S Bailey** £55 236  
Department of Chemistry and Biological Chemistry: for two years, for an investigation of tissue kallikrein: Design of specific inhibitors, with *Dr M T Wilson* and *Dr G R Moore*, School of Chemical Sciences, University of East Anglia, Norwich (031570Z/90Z).

## University of Warwick, Coventry

**Dr R W Old** £79 403  
Department of Biological Sciences: for three years, for a study of retinoic acid, retinoic acid receptors and their target genes in development of the nervous system, with *Dr Elizabeth A Jones* (032290Z/90Z).

## University of Dundee

**Professor C P Downes** £46 728  
Department of Biochemistry: for two years, for an identification and characterization of a phosphatidylinositol synthase in turkey erythrocyte membranes (030681Z/89Z).

## University of Durham

**Dr D L H Williams** £42 516  
Department of Chemistry: for three years, for an investigation of reactions of nitric oxide with haem and related reactions with reference to the mechanism of vasodilation, with *Dr A R Butler*, Department of Chemistry, University of St Andrews and *Dr F W Flitney*, Department of Biology and Pre-Clinical Medicine, University of St Andrews (032173Z/90Z).

## University of Edinburgh

**Dr D K Apps** £3640  
Department of Pre-Clinical Veterinary Sciences: for one year, for biochemical and immunological analysis of the secreted proteoglycans of bovine adrenal chromaffin cells, with *Dr J Hayward* (031010Z/89Z).

**Dr W D Donachie** £87 048  
Department of Molecular Biology: for two years, for an investigation of post-transcriptional regulation of cell division gene expression (030947Z/89Z).



**Dr R S Hayward** £91 375  
**Department of Molecular Biology:** for two years, for a study of the interdependent regulation of the genes encoding the major subunits of RNA polymerase in *Escherichia coli* (030733/289/2).

**Dr H Kaeser** £72 856  
**Department of Genetics:** for three years, for a control analysis of biological systems, with *Dr H M Saun, Department of Biological Sciences, University College of Wales, Aberystwyth* (032342/290/2).

**Professor M H Kaufman** £6248  
**Department of Anatomy:** for one year, for the genetic basis of digynic triploidy in the LIT/Sv strain mouse, with *Dr J D West, Department of Obstetrics and Gynaecology* (032409/290/2).

**Dr Millicent Masters** £56 055  
**Department of Molecular Biology:** for two years, for a study of *E. coli* genes required for plasmid maintenance: characterisation of *pcnB* and its product and identification of further *pcn* genes, with *Dr R D Orjás, Centro de Investigaciones Biológicas, Instituto Maranon, Madrid* (031563/290/2).

**Dr S W Walker** £5800  
**Department of Clinical Chemistry:** for additional expenses, for a study of membrane phosphoinositide metabolism in steroidogenesis and cell growth in cultured zona fasciculata/reticularis cells from bovine adrenal cortex (018198/288/1A).

**Dr J D West** £88 729  
**Department of Obstetrics and Gynaecology:** for three years, for *in situ* hybridization studies for prenatal diagnosis and analysis of mosaicism and polyploidy in human and mouse conceptuses, with *Professor D T Baird* (030616/289/2).

#### University of Glasgow

**Dr R L P Adams** £74 119  
**Department of Biochemistry:** for three years, for a study of site specific methylation and the control of gene expression with *Dr J P Goddard* (031120/290/2).

**Dr J H Brock** £45 788  
**Department of Bacteriology and Immunology:** for two years, for a study of transferrin as an autocrine or paracrine growth factor during the immune response (030629/289/2).

**Dr H V Smith** £26 188  
**Department of Bacteriology:** for one year, for an extension to the study of the allergenicity of house dust mites in relation to atopic diseases, with *Dr M J Colloff, Department of Zoology* (018208/288/2A).

**Dr M J O Wakelam** £84 017  
**Department of Biochemistry:** for three years, for a study of the mechanisms of hormonal regulation of phospholipase D activity in Swiss 3T3 cells, with *Dr M A J Ferguson, Department of Biochemistry, University of Dundee* (031280/290/2).

#### University of Leeds

**Dr S Baumberg** £17 471  
**Department of Genetics:** for one year, for a study of the effect of changes in DNA supercoiling on genes of streptomycin biosynthesis in *Streptomyces griseus* (030257/289/2).

**Dr P G Stockley** £5000  
**Department of Genetics:** for one year, for a study of the structure determination of the HIV tar region (030868/289/2).

**Dr A J Turner** £65 766  
**Department of Biochemistry:** for three years, for a study of the structure, function and biosynthesis of glycolipid membrane anchors on mammalian proteins, with *Dr N M Hooper* (031465/290/2).

#### University of Leicester

**Dr J D Cavieses** £33 802  
**Department of Physiology:** for three years, for a study of pre-steady state kinetics of immobilized Na, K-ATPase (031578/290/2).

**Dr D R Critchley** £102 266  
**Department of Biochemistry:** for three years, for a study of alpha-actinin: An analysis of the structure of the protein, and the gene(s) encoding the skeletal muscle isoform(s) (031963/290/2).

**Professor E Cundliffe** £91 093  
**Department of Biochemistry:** for three years, for studies of DNA gyrase and promoters responsive to changes in DNA topology in the novobiocin-producer, *Streptomyces sphaeroides* (030767/289/2).

**Dr A Maxwell** £24 953  
**Department of Biochemistry:** for one year, for a study of the over-production of a GroEL-like protein in quinolone-resistant bacteria, with *Dr Angela Mehler, Department of Biochemistry, University of Dundee* (031441/290/2).

**Dr P A Meacock** £80 063  
**Leicester Biocentre:** for three years, for an analysis of a new eukaryotic cytoplasmic transcription system (030692/289/2).

**Dr Elisha Orr** £46 630  
**Department of Genetics:** for two years, for a study of the structure and functions of the yeast myosin II, with *Dr C R Bagshaw, Department of Biochemistry and Dr A J Rowe, Electron Microscope Laboratory* (032359/290/2).

**Dr Elisha Orr** £20 148  
**Department of Genetics:** for additional equipment, for a study of the roles of cytoskeletal novobiocin proteins in *Saccharomyces cerevisiae* (030128/289/1A).

**Dr A J Rowe** £20 042  
**Department of Biochemistry:** for one year, for a study of the preliminary characterization of a newly discovered RNA from vertebrate muscle thick filaments, with *Dr Jennifer M Farley* (030793/289/2).

**Dr A J Rowe** £30 125  
**Department of Biochemistry:** for three years, for an investigation of subcellular localization of newly defined species of contractile proteins in muscle and yeast and of bacterial virulence-related antigens, by means of cryoultramicrotomy, with *Professor G J Beuhols, Department of Microbiology and Dr Elisha Orr, Department of Genetics* (032129/290/2).

**Dr J Sampson** £63 382  
**Department of Biochemistry:** for two years, for a study of the generation and analysis of polymorphic loci that can be used to study linkage in the canine genome, with *Professor A J Jeffreys, Department of Genetics* (030972/289/2).

**Dr P H Williams** £51 025  
**Department of Genetics:** for two years, for a study of structure function analysis of haemolysin B and its interrelationship with mdr and other members of a novel family of membrane translocators (030769/289/2).

#### University of Liverpool

**Dr P C Turner** £107 553  
**Department of Biochemistry:** for three years, for a study of altering the processing specificity of the U7 small nuclear ribonucleoprotein particle (030602/289/2).

#### University of Manchester

**Dr Joan M Braganza** £9889  
**Department of Gastroenterology:** for equipment, for a pilot study of the BT PABA/PAS test in tropical pancreatitis (019256/289/1A).

**Dr M J Dixon** £87 797  
**Department of Cell and Structural Biology:** for three years, for a molecular genetic analysis of a candidate gene for non syndromic, autosomal dominant, orofacial clefting, with *Dr P J Scambler, Department of Biochemistry and Molecular Genetics, St Mary's Hospital Medical School, London, Dr R M Winter, Kennedy Galton Centre, Clinical Research Centre, Harrow and Dr S E Holden, Kennedy Galton Centre, Clinical Research Centre, Harrow* (032344/290/2).

**Professor M E Grant** £22 503  
**Department of Biochemistry and Molecular Biology:** for one year, for an extension of a study of microfibrillar structures of elastic tissues, with *Dr C A Shuttleworth* (014339/285/1A).

**Dr M J Humphries** £53 342  
**Department of Biochemistry and Molecular Sciences:** for two years, for a study of chondrocyte-cartilage collagen adhesion: ligand specificity and receptor identification, with *Professor M E Grant and Dr Shirley R Ayud* (030561/289/2).

**Dr M J Humphries** £20 000  
**Department of Biochemistry and Molecular Biology:** for one year, for an investigation of the adhesion-promoting and cation-binding activities of the LDV adhesive recognition sequence, with *Dr A Brass* (031962/290/2).

**Dr A G Lowe** £16 171  
**Department of Biochemistry and Molecular Biology:** for one year, for an extension to his study of the effects of temperature and pressure on nucleoside transport in human erythrocytes (018715/288/1A).

**Dr J K P Sheehan** £28 777  
**Department of Biochemistry and Molecular Biology:** for one year, for a study of the molecular biology of the human cervical mucin core proteins, with *Dr R P Bow-Handford* (031939/290/2).

**Dr T Strachan** £10 986  
**Department of Medical Genetics:** for six months, for an extension to a study of the molecular genetics of congenital adrenal hyperplasia, with *Dr P A Dyer and Professor R Harris* (017182/287/1A).

#### University of Newcastle upon Tyne

**Dr T Jowett** £107 655  
**Department of Biochemistry and Genetics:** for three years, for studies of the cloning, characterization and mutation of genes involved in early development of the zebra fish *Brachydanio rerio*, with *Dr P W Igham, Department of Zoology, University of Oxford* (031382/290/2).

**Dr Louise V B Nicholson** £10 776  
**Muscular Dystrophy Group Research Laboratory:** for one year, for the production of monoclonal antibodies to amino and carboxy termini of dystrophin using synthetic peptides, with *Professor J B Harris* (032307/290/2).

**Professor R H Pain** £38 028  
**Department of Biochemistry and Genetics:** for two years, for a study of alpha 1 antitrypsin Z variant: the molecular basis of the associated secretion defect (031100/290/2).

**Dr C P F Redfern** £27 022  
**Department of Dermatology:** for one year, for a study of somatic mutation and clonality in skin disease, with *Professor S Shuster and Dr Celia Moss* (031809/290/2).

**Dr E J Thomas** £21 344  
**Department of Obstetrics and Gynaecology:** for one year, for a study of the cellular origins and control of cell function in endometriosis, with *Dr C P F Redfern, Department of Dermatology and Dr B H Hirst, Department of Physiological Sciences* (030789/290/2).

**Dr S J Yeaman** £70 739  
**Department of Biochemistry and Genetics:** for two years, for a study of primary biliary cirrhosis: reactivity and possible pathogenicity of anti-mitochondrial autoantibodies, with *Dr Margaret F Basendean, Department of Medicine and Professor O F W Jones, Department of Medicine* (030855/289/2).

## University of Nottingham

**Dr R E Glass** £79 373  
 Department of Biochemistry: for three years, for a genetic investigation of the multifunctional vitamin B12-dependent homocysteine transmethylease (031682Z/90Z).

**Professor F W Hemming** £40 697  
 Department of Biochemistry: for one year, for an investigation of abnormal glycosylation of fibronectin by cultured skin cells of tuberculous sclerosis patients and possible cell biological consequences, with *Dr Zhila Ellis* (032406Z/90Z).

**Dr P J Scotting** £86 839  
 Department of Biochemistry: for three years, for a study of the role of the homeobox genes in neural development during chick embryogenesis (030801Z/89Z).

## University of Oxford

**Dr Judith P Armitage** £91 423  
 Department of Biochemistry: for three years, for a study of the control of bacterial flagellar rotation by environmental stimuli (032093Z/90Z).

**Dr G K Brown** £66 852  
 Department of Biochemistry: for three years, for a study of the human pyruvate dehydrogenase complex: genetic and biochemical studies of patients with genetic defects of the E1a subunit (031423Z/90Z).

**Professor A J McMichael** £33 870  
 Institute of Molecular Medicine: for three years for a FACScan for analytical cell sorting, with *Dr J M Austyn*, *Nuffield Department of Surgery* and *Dr J I Bell* (031679Z/89Z).

**Professor P J Morris** £50 685  
 Nuffield Department of Surgery: for one year, for a study of genetic mapping of murine susceptibility genes for insulin-dependent diabetes mellitus, with *Dr J A Todd*, *Nuffield Department of Surgery and Clinical Medicine*; and *Dr L Wicker* and *Dr L Peterson* of the *Department of Cell Immunology*, *Merck, Sharp, and Dohme, New Jersey, USA*, (030865Z/89Z).

## Portsmouth Polytechnic

**Dr K Firman** £43 562  
 Department of Biological Sciences: for two years, for a recombinational analysis of the DNA specificity domains to type IC restriction and modification endonucleases (032396Z/90Z).

**Dr G G Kneale** £43 631  
 Biophysics Laboratories: for two years, for a structural and mutagenic analysis of the FD gene 5 protein, with *Dr C Nave*, *SERC Synchrotron Laboratory, Daresbury, Warrington* (032372Z/90Z).

## University of Reading

**Dr D S Leake** £89 742  
 Department of Biochemistry and Physiology: for three years, for a study of the oxidative modification of low density lipoproteins by macrophages in relation to atherosclerosis (031519Z/90Z).

## University of Sheffield

**Dr P C Engel** £59 934  
 Department of Molecular Biology and Biotechnology: for two years, for a study of inborn errors of fatty acid oxidation as a cause of sudden infant death syndrome (SIDS): the molecular biology of the ACADM deficiency, with *Dr Diana Curtis*, *Department of Medical Genetics* (030912Z/89Z).

**Dr Amyra Treffry** £68 331  
 Department of Molecular Biology and Biotechnology: for three years, for studies on the function and assembly of ferritin using FAB fragments produced by generating a large combinatorial library of the ferritin immunoglobulin repertoire cloned in phage lambda, with *Professor Pauline M Harrison* (032089Z/90Z).

## University of Southampton

**Dr T P Fleming** £6185  
 Department of Biology: for three years, for additional expenses for a study of the development of epithelial tight junctions using the mouse preimplantation embryo as a model system (019366Z/89A).

## LONDON

## Birkbeck College

**Dr P J Sadler** £78 781  
 Department of Chemistry: for three years, for NMR studies of the metal-binding sites of serum albumin (032119Z/90Z).

## Charing Cross and Westminster Medical School

**Dr D A Lane** £22 780  
 Department of Haematology: for one year, for an extension to his detection of a tendency towards thrombosis: the hypercoagulable state (016655Z/87A).

## Charing Cross Sunley Research Centre

**Dr S E Humphries** £86 837  
 Arterial Disease Research Group: for three years, for a determination of the mechanisms whereby variation in the apolipoprotein (APO) AI-III-AIV gene cluster determines serum APO AI and HDL-cholesterol concentration (031072Z/90Z).

## Imperial College of Science, Technology and Medicine

**Dr D A Hartley** £115 688  
 Department of Biochemistry: for three years, for a study of the molecular and cellular biology of slit, a Drosophila gene implicated in axonal pathfinding and neural pattern formation (030851Z/89Z).

## Kennedy Institute of Rheumatology

**Dr Elizabeth M Andrew** £100 000  
 Division of Immunology: for three years, for a study of the development of and relationships between 'natural' anti-phosphatidyl choline and 'haemolytic' anti-erythrocyte autoantibodies in New Zealand Black lupus mice, with *Professor R N Maini*; *Professor A D B Malatou* and *Dr Gwyneth A Haynes*, both of the *Department of Biochemistry, Charing Cross and Westminster Medical School* (030903Z/89Z).

## King's College School of Medicine and Dentistry

**Dr M F Scully** £49 125  
 Thrombosis Research Unit: for two years, for a study of the structural and functional properties of the cell receptor for urokinase type plasminogen activator (030866Z/89Z).

## King's College London (KQC)

**Professor H Baum** £9562  
 Department of Biochemistry: for six months, for an extension to a study of the isolation and purification of vascular adenosine diphosphatase with studies of its physiological role (015889Z/88A).

**Dr P J Butterworth** £65 342  
 Department of Biochemistry: for three years, for an investigation of plasma membrane transport of Pi in liver and of its role in regulating metabolism (030697Z/89Z).

**Dr P A M Eagles** £82 072  
 Department of Biophysics: for three years, for studies to clone and sequence the cDNA coding for kinesin in mammalian liver (030751Z/89Z).

**Professor Hannah J Gould** £60 989  
 Department of Biophysics: for two years, for a study of the mechanism of erythroid cell differentiation and globin switching, with *Dr G Fretzfeld*, *Laboratory of Molecular Biology, National Institutes of Health, Bethesda, Maryland, USA* and *Dr J Allan*, *Division of Biomolecular Sciences* (030852Z/89Z).

**Dr R K Patient** £72 274  
 Department of Biophysics: for two years, for a study of transcription factor localization during amphibian development, with *Dr B J Sutton*, *Division of Biomolecular Sciences* and *Dr N H K Holder*, *Department of Anatomy and Human Biology* (032135Z/90Z).

**Professor N A Staines** £47 857  
 Department of Biophysics, Cell and Molecular Biology: for one year, for an extension of a study of the natural history of DNA-binding produced in the course of systemic lupus erythematosus in humans and mice, with *Dr D A Isenberg*, *Department of Rheumatology and Immunology, University College and Middlesex School of Medicine, London* (017269Z/87A).

## London Hospital Medical College

**Dr H L J Makin** £24 431  
 Department of Chemical Pathology: for one year, for an extension of his metabolism of 5E.7E isomers of vitamin D: studies on a new non-renal metabolite and its relation to the calcemic response (017534Z/87A).

## Royal Free Hospital School of Medicine

**Dr J F Hancock** £85 546  
 Academic Department of Haematology: for three years for an investigation of the molecular genetics of factor II deficiency (031182Z/90Z).

**Dr R M Handisty** £6973  
 Katherine Dormandy Haemophilia Centre: for three months, for a study of the mechanisms of platelet activation and their disorders, with *Dr Alison H Goddall* (016594Z/87A).

**Professor J A Lucy** £65 781  
 Department of Biochemistry and Chemistry: for three years, for a study of surface exposure of phosphatidylserine as a control factor in myoblast fusion (031511Z/90Z).

**Dr S J Perkins** £4146  
 Department of Biochemistry and Chemistry: for three months, for a study of the molecular modelling of the components of the complement cascade (016548Z/87A).

## Royal Postgraduate Medical School

**Dr R I Lechler** £24 923  
 Department of Immunology: for one year, for an analysis of the expressed repertoire of HLA-D region gene products, and their recognition by T cells, using DNA-mediated gene transfer (015941Z/86A).

**Professor L Luzzatto** £107 801  
 Department of Haematology: for three years, for a study of the relationship between the fucosyltransferases encoded by the Lewis (Le) blood group gene and the X gene, with *Professor Winifred M Watkins*, *Clinical Research Centre, Harrow, Middlesex*; *Dr Yvonne Edwards*, *MRC Human Biochemical Genetics Unit, University College London* and *Dr Sue Power*, *MRC Human Biochemical Genetics Unit, University College London* (011671Z/90Z).

**Dr C D Pusey** £8198  
**Department of Medicine:** for additional expenses, for a study of T lymphocyte responses to autoantigenic components of glomerular basement membrane, with *Professor C T Dollery, Department of Clinical Pharmacology* (019176Z/88/1).

**Dr C D Pusey** £48 712  
**Department of Medicine:** for two years, for a study of the role of T lymphocytes in experimental autoimmune glomerulonephritis in the rat, with *Dr R I Lehler, Department of Immunology* (031217Z/90/2).

**Dr J N Thompson** £94 320  
**Department of Surgery:** for three years, for a study of the cellular and molecular biology of peritoneal fibrinolysis, with *Dr K A Fleming, Nuffield Department of Pathology and Bacteriology, University of Oxford and Dr Elizabeth M Thompson, Department of Histopathology* (031338Z/90/2).

#### Royal Veterinary College

**Professor G E Goldspink** £141 946  
**Unit of Veterinary Molecular and Cell Biology:** for three years, for a study of the molecular mechanisms involved in myosin heavy chain gene regulation in skeletal muscle (030645Z/89/2).

#### St Mary's Hospital Medical School

**Dr P J Scambler** £60 627  
**Department of Biochemistry and Molecular Genetics:** for two years, for a study of chromosome mediated gene transfer of human chromosome 21q22 sequences: creation of a mouse model for Down's Syndrome, with *Dr R H Lovell-Badge* (031332Z/90/2).

#### St George's Hospital Medical School

**Dr M J Clemens** £133 232  
**Department of Cellular and Molecular Science:** for three years for a characterization of eukaryotic RNA species with extensive double stranded structure (031488Z/90/2).

#### University College and Middlesex School of Medicine

**Dr P M Brickell** £95 028  
**Department of Biochemistry:** for three years, for a study of the role of nuclear retinoic acid receptors in chick limb and face development, with *Dr Cheryl Tickle and Professor L Wolpert, both of the Department of Anatomy and Biology* (031791Z/90/2).

**Dr D S Latchman** £62 898  
**Department of Biochemistry:** for two years, for a study of the tissue specific RNA splicing protein Smn: regulation of expression and role in the control of alternative RNA splicing (030747Z/89/2).

**Dr T Lund** £148 591  
**Department of Immunology:** for three years, for an analysis of the influence of MHC Class II genes on IDDM using transgenic animals, with *Dr Anne Cooke, Department of Pathology, University of Cambridge and Dr Elizabeth Simpson, Clinical Research Centre, Harrow* (030835Z/89/2).

#### University College London

**Professor P H W Butterworth** £69 303  
**Department of Biochemistry:** for three years, for a study of the molecular mechanisms involved in myosin heavy chain gene regulation in skeletal muscle (030645Z/89/2).

**Dr S E Moss** £111 688  
**Department of Physiology:** for three years, for a study of molecular cloning of the gene for the p68 calcium-binding protein (031546Z/90/2).

**Dr P S Quinn** £28 275  
**Department of Experimental Pathology:** for one year, for an extension of the use of enveloped viruses to study the transport of newly synthesised lipids to the plasma membrane, with *Dr D Allan* (019039Z/88/1).

**Dr E B Robson** £181 734  
**Department of Genetics and Biometry:** for three years, for a study of the localisation and cloning of the chromosome 11-linked gene for tuberous sclerosis, a genetically heterogeneous disorder, with *Professor M Bobrow, Paediatric Research Unit, UMDS of Guy's and St Thomas's Hospital, London* (031530Z/90/2).

**Professor A W Segal** £97 273  
**Department of Medicine:** for three years, for structural and functional studies of p47 of the neutrophil oxidase (031229Z/90/2).

#### United Medical and Dental Schools of Guy's and St Thomas's Hospitals

**Professor M Adinolfi** £52 148  
**Paediatric Research Unit:** for one year, for cloning of alpha-iduronate-sulphate-sulphatase gene and studies on Hunter Discase, with *Professor F B Giannelli and Dr D R Bentley* (030850Z/89/2).

**Dr D M Kemeny** £10 939  
**Department of Medicine:** for one year, for a study of the development of allergic disease in babies (016305Z/86/1).

**Dr D M Kemeny** £50 948  
**Department of Allergy and Respiratory Disorders:** for two years, for a study of the role of CDB + T cells in the regulation of rat IgE responses, with *Professor T H Lee* (030670Z/89/2).

**Professor F S Walsh** £20 768  
**Department of Chemical Pathology:** for additional equipment, for a study of cellular analysis of skeletal muscle development (016181Z/86/2).

**Dr C Mathew** £95 398  
**Division of Medical and Molecular Genetics:** for three years, for an investigation of the development of gene amplification procedures for the preimplantation diagnosis of Duchenne muscular dystrophy, with *Professor M Bobrow, Paediatric Research Unit* (031488Z/90/2).

#### SYMPOSIUM

**Professor M Bobrow** £5000  
**Paediatric Research Unit, United Medical and Dental Schools of Guy's and St Thomas's Hospital, London:** towards expenses for the Malignant Hyperthermia Meeting to be held on the 23 September 1989 at Guy's Hospital Medical School, London (031017Z/89/2).

**Professor M Feldmann** £2000  
**Charing Cross Sunley Research Centre, London:** for a contribution to a symposium on T cell activation in health and disease: Discrimination between immunity and tolerance, to be held at Trinity College Oxford (032514Z/90/2).

**Professor W G Hill** £2000  
**Institute of Animal Genetics, University of Edinburgh:** for a congress on 'Genetics Applied to Livestock Production' to be held in Edinburgh on 23-27 July 1990 (031083Z/90/2).

**Professor J B Gurdon** £6700  
**Department of Zoology, University of Cambridge:** for the inaugural scientific meeting of the Wellcome/Cancer Research Campaign Institute to be held in July 1991 (031495Z/90/2).

#### UNIVERSITY AWARD

**Dr S J Perkins** £189 045  
**Department of Biochemistry and Chemistry:** for three years, for a study of molecular modelling and functioning of medically-important plasma proteins, with *Professor J A Lucy; Dr K B M Reid, MRC Immunchemistry Unit, University of Oxford and Professor D Chapman, Department of Protein and Molecular Biology* (031096Z/90/2).

#### UNIT

**Professor J B Gurdon** £301 004  
**University of Cambridge:** for additional expenses, to set up the Wellcome Trust and Cancer Research Campaign Institute of Cancer and Developmental Biology (018138Z/91/1).

#### Zoological Society

**Dr H D M Moore** £98 810  
 for three years, for a characterization of the role of a serine protease inhibitor and other sperm acrosomal antigens involved in human sperm-egg interactions: Development of an immunocontraceptive vaccine, with *Dr D S Latchman, Department of Biochemistry, University College and Middlesex School of Medicine, London* (031905Z/90/2).

**Dr J Kendrick-Jones** £5000  
**University of Cambridge:** for an international workshop on the Dynamics of Cellular Motor Proteins to be held at Robinson College, Cambridge on the 12-18 September 1990 (031179Z/90/2).

**Dr Bernadette Modell** £2000  
**Department of Obstetrics and Gynaecology, University College London:** for the 5th International Congress on Early Fetal Diagnosis (Recent Progress and Public Health Implications) to be held in Prague from 8 to 14 July 1990 (031966Z/90/2).

**Dr H D M Moore** £2000  
**Zoological Society, London:** for a conference on 'Biotechnology and the Conservation of Genetic Diversity' to be held in Edinburgh on 23-27 July 1990 (031545Z/90/2).

**Dr I Helen Muir** £5000  
**Department of Biochemistry, Kennedy Institute of Rheumatology, London:** for The Kennedy Institute's 25th Anniversary Symposium (031487Z/90/2).

## RESEARCH LEAVE FELLOWSHIPS

**Dr C C Ford**  
School of Biological Sciences, University of Sussex,  
Brighton: for one year, for a study of replication and mitosis  
in cell-free extracts from *Xenopus* eggs, with *Dr R T Hunt*,  
Department of Biochemistry, University of Cambridge  
(030606/2/89/2).

**Dr Julia M Goodfellow**  
Department of Crystallography, Birkbeck College  
London: for three years, for a study of molecular modelling  
of macromolecular interactions (030797/2/89/2).

## POSTDOCTORAL RESEARCH FELLOWSHIPS

**Dr J A Armour**  
Department of Genetics, University of Leicester: for  
three years, for a molecular analysis of spontaneous mutation  
in human DNA, under *Dr P H Williams* and *Professor A J Jeffreys*  
(032357/2/90/2).

**Dr R M Aspdin**  
Department of Orthopaedics, University of Aberdeen:  
for eleven months, for a study of the effects of impact loads  
on articular cartilage (032939/2/90/2).

**Dr A D Bates**  
Department of Biochemistry, University of Leicester:  
for three years for a study of DNA supercoiling:  
conformation, thermodynamics and their effects on protein-  
DNA interactions (030766/2/89/2).

**Dr I Gabrielle M Brons**  
Department of Surgery, University of Cambridge: for  
one year, for a study of monoclonal antibody treatment in  
pancreatic islet cell grafting using the dog model, under  
*Professor Sir Roy Calne*, Department of Surgery, and with *Professor*  
*H Waldmann*, Department of Pathology (031833/2/90/2).

**Dr Jane H Gould**  
Department of Biological Sciences, University of  
Warwick, Coventry: for one year, for an analysis of ricin  
A chain's interactions with ribosomal components by  
mutagenesis of, and expression of ricin A chain in,  
*Saccharomyces cerevisiae*, under *Professor R Whittenbury*  
(031748/2/90/2).

**Dr D J S Hulmes**  
Department of Pre-Clinical Veterinary Sciences,  
University of Edinburgh: for three years, for a study of the  
structural aspects of procollagen processing and cross-linking  
in extracellular matrix assembly, with *Dr R A Crowther*, *MRC*  
*Laboratory of Molecular Biology, Cambridge* and *Dr L W Fisher*,  
*Benc Research Branch, National Institute of Dental Research,*  
*Bethesda, Maryland, USA* (031989/2/90/2).

**Dr J T Hancock**  
Department of Biochemistry, University of Bristol: for  
three years for a study of cloning, sequencing and site-directed  
mutagenesis of the flavoprotein of the oxygen radical  
producing enzyme of phagocytes, with *Dr G Banting*  
(031977/2/90/2).

**Dr Catherine M Kielty**  
Department of Biochemistry and Molecular Biology,  
University of Manchester: for three years, for a study of  
type VI collagen microfibrils: structure and role in cell-matrix  
interactions, under *Professor M E Grant* and *Dr M J Humphries*,  
and with *Dr K E Kadler* and *Dr A Brass* (032086/2/90/2).

**Dr Patricia L Lakin-Thomas**  
Department of Botany, University of Cambridge: for  
three years, for a study of the role of inositol metabolites in  
light-induced phase-shifting of the *Neurospora* circadian  
oscillator, with *Dr M A Tester* and *Dr D E Hanke* (031239/2/90/2).

**Dr Sarah Newbury**  
Department of Biochemistry, University of Dundee: for  
three years, for a study of the role of mRNA stability in the  
control of *Drosophila* development, under *Dr A Flavell*  
(031292/2/90/2).

**Dr V J Norris**  
Department of Genetics, University of Leicester: for one  
year, for a voltage-gated analysis of calcium transport in *E*  
*coli* characterization of transport minus mutants and cloning  
of transport genes, under *Dr P H Williams* and with *Dr R I*  
*Norman*, Department of Medicine (031562/2/90/2).

## LECTURESHIP

**Dr J P Banga**  
Department of Medicine, King's College School of  
Medicine and Dentistry, London: for two years, for the  
characterisation of the human thyroid microsomal auto-  
antigen (031819/2/86/A).

## PHYSIOLOGY AND PHARMACOLOGY PANEL

★ Professor Sir Stanley Peart, MD, FRCP, FRS, (Chairman, Wellcome Trustee), Wellcome Trust

J J B Jack, BM, PhD, (Deputy Chairman, Wellcome Trustee), Wellcome Trust

Professor T B Bolton, BVetMed, PhD, St George's Hospital Medical School

Professor G J Dockray, PhD, University of Liverpool

Professor C R W Edwards, MD, FRCP, University of Edinburgh

Professor A Guz, MD, FRCP, Charing Cross and Westminster Medical School, London

Professor D J Jenkinson, PhD, University College London

H R P Miller, PhD, BVMS, Moredun Institute, Edinburgh

Professor K M Spyer, DSc, Royal Free Hospital School of Medicine, London

Professor J D Swales, MD, FRCP, University of Leicester

## Staff members responsible

L H Smaje, MB, PhD, (Scientific Secretary)

Mary Phillips, PhD, (Scientific Officer)

★ Siân Doughty, (Grants Officer)

★ Kathryn Drake, BA, (Grants Officer)

# Elizabeth Shaw, BSc, (Grants Officer)

★ From October 1989

# Until October 1989

## PHYSIOLOGY AND PHARMACOLOGY

The revised panel structure was outlined in the last report where it was announced that the existing seven panels were to be reduced to four; this has now been in operation for a year. The expansion of the range of responsibility to cover both basic science and human and veterinary clinical science, whilst helpful in emphasising the unity of biomedical science, has meant that panel members have had to deal with a wide range of subjects: from broken teeth in sheep and bone disease in horses via epidemiology of diabetes in India through immunology and molecular biology of endocrine and vascular disease to the biochemical control of the opening of cell membrane channels. This difficult task has been performed conscientiously and with good humour by our expert panel members to whom the Trust and the scientific community owe a great debt of gratitude.

Another factor increasing the work load has been the number of applications received, 271 in 1989/90 as opposed to 186 in the previous year. The success rate in competing for funds was 33 per cent of amount requested as opposed to 37 per cent last year (these figures exclude longer-term support). In order to find time to properly discuss the number of applications now being received, meetings are starting earlier and finishing later and the July meeting was held over two days. Next year the number of meetings has been increased to five, and two of these are scheduled over two day periods. The pressure on the referees, panel members and the administrative structure of the Trust is considerable.

One issue that gave rise to concern during the year was the condition of osteoporosis. This is becoming a major problem in our ageing population and may give rise to fractures. 50 per cent of cases result in a need for long-term institutional care at great cost to the individual and the community. The panel was receiving a number of applications for studies in osteoporosis, some of which seemed to imply very long-term studies. A special working group was consequently set up with the brief to explore what ought to be the Trust's policy, in view of the fact that the Medical Research Council was also considering the matter. A paper suggesting that an effective treatment is possible appeared at about the time the working group met, thereby simplifying its task. It was agreed that no special initiative was needed and that applications should continue to be accepted and judged on their own merits. A careful watch on the situation will be maintained.

Toxicology is a subject which was identified by the Trustees for special development as long ago as 1978. A scheme of Advanced Training Fellowships in Toxicology was introduced in 1986/87. This scheme together with a protected budget for toxicology was handled by the Physiology and Pharmacology Panel. An increasing number of grant applications were in the biochemical area however and it was decided that in future applications should go to the most appropriate panel, whether this were Physiology and Pharmacology or Molecular and Cell, while fellowships will continue to be administered by the Physiology and Pharmacology Panel. Only 11.5 per cent of project grant applications in toxicology were successful compared with nearly three times as many in physiology and pharmacology. It is not clear whether this is due to an inadequate budget or to poor applications. The new arrangements should clarify this. Furthermore, applications for Advanced Training Fellowships in Toxicology suffered a sharp decline this year. Only four applications were received, none of which was considered suitable. A working group consisting of Trust advisors, external advisors including industry, and Trust staff met to discuss this situation and concluded that training ought to start earlier than the postdoctoral level. The Trustees have agreed to this and a special scheme of Prize Studentships in Toxicology has been agreed.

## List of grants awarded over £2000

## LONGER-TERM SUPPORT

Professor R J Flower £362 196  
Department of Biochemical Pharmacology, St Bartholomew's Hospital Medical College, London: for five years, for investigations into lipoprotein biochemistry, cell biology and pharmacology (031317Z/90Z).

## EQUIPMENT

Dr A J Levi £19 800  
Department of Physiology, University of Bristol: for six months, for an investigation of intracellular sodium and contraction in rabbit ventricular myocytes (031723Z/90Z).

Dr D Claire Wathes £16 808  
Department of Anatomy, University of Bristol: for one year, for a study of oxytocin and fertility in domestic ruminants and man (031032Z/90Z).

Professor M J Rennie £98 500  
Department of Anatomy and Physiology, University of Dundee: for studies of human metabolism using stable-isotope tracers: further studies of tissue protein turnover and development of new approaches to fat, glycogen and RNA turnover (031985Z/90Z).

Dr S J White £7426  
Department of Physiology, University of Leeds: for additional expenses, for his electrophysiological investigation of transport of sodium, and potassium by renal collecting duct in primary culture (019703Z/89A).

## RESEARCH ASSISTANCE AND EXPENSES

## University of Aberdeen

Professor C Kidd £84 442  
Department of Physiology, Aberdeen: for three years, for a study of the effects of raised pressure and increased gas density on human cardiovascular function, with Dr F Bousser-Riley, Dr J M Rawles, Department of Medicine, University of Leeds (030837Z/89Z).

Dr C J Lote £160 244  
Department of Physiology: for three years, for a study of renal mechanisms determining aluminium excretion and how these can be modified, with Dr M P Osborne and Dr S D Combs (031237Z/90Z).

Dr J A S Ross £19 771  
Department of Environmental and Occupational Medicine: for one year, for a study of the influence of compression in a helium and oxygen environment upon pulmonary oxygen toxicity, with Dr P W Johnston, Department of Pathology and Dr F Bousser-Riley, Department of Physiology (030172Z/89Z).

Dr Janice M Marshall £18 940  
Department of Physiology: for six months, for a study of peripheral vascular responses in sickle cell disease, with Dr I M Franklin, Department of Haematology (032628Z/90Z).

## University of Bath

Dr J Westwick £142 540  
School of Pharmacy and Pharmacology: for three years, for the examination of interleukin 8 induced eosinophil infiltration of airways and their reactivity to spasmogens (032527Z/90Z).

Dr S J Publicover £73 712  
School of Biological Sciences: for three years and one month, for an investigation into the mechanisms of myofibril and sarcolemma breakdown in experimental myopathy (030661Z/89Z).

## University of Birmingham

Dr Mary Keen £66 531  
Department of Pharmacology: for three years, for an investigation of the relationship between agonist binding and response for adenylate cyclase coupled receptors in cloned cell lines (031222Z/90Z).

Dr Margaret E Smith £21 796  
Department of Physiology: for one year, for a study of corticotropin receptors in skeletal muscle (030828Z/89Z).



## University of Bristol

**D C C Bartolo** £36 491  
**Department of Surgery:** for one year, for a study of ambulatory monitoring of somatic and visceral nociceptive function, with *Dr V Barley, Bristol Radiotherapy and Oncology Centre* (0308339/289/2).

**Dr F Carswell** £100 000  
**Department of Child Health:** for two and half years, for a study of maternal allergen exposure during pregnancy and cord blood IgE, with *Dr Jean M Golding* (031433/290/2).

**Dr M A Geeves** £64 551  
**Department of Biochemistry:** for three years, for a study of the use of rapid pressure perturbation to study elementary events in muscle contraction, with *Dr K W Ranatunga, Department of Physiology* (030588/289/2).

**Dr A J Levi** £10 300  
**Department of Physiology:** for one year, for a study of spatial inhomogeneity of intracellular sodium and digitalis inotropy in cardiac muscle, with *Dr J G Schofield, Department of Biochemistry* (032195/290/2).

**Dr S J W Linsley** £51 120  
**Department of Physiology:** for two years, for a study of axon reflexes involving small myelinated (A) cutaneous sensory nerve fibres (030868/289/2).

**Dr K W Ranatunga** £70 312  
**Department of Physiology:** for three years, for a study of the transformation of contraction speed, myosin composition and gene expression in rat muscle after cross-reinnervation, with *Dr L Hall and Dr M A Geeves* (030975/289/2).

## University of Buckingham

**Dr K L Shephard** £78 196  
**Department of Biological Sciences:** for three years, for hydration mechanisms in mammalian airway mucus, with *Dr E Alton, National Heart and Lung Institute, London* (031337/290/2).

## University of Cambridge

**Professor D M Broom** £165 275  
**Department of Clinical Veterinary Medicine:** for three years, for a study of human skin volatiles as individual identifiers and indicators of stress (031416/290/2).

**Dr A V Edwards** £62 526  
**Physiological Laboratory:** for three years, for a study of the role of neuropeptides in the control of salivary function, with *Dr D A Titcher, Department of Veterinary Physiology, University of Sydney, NSW, Australia* (031036/290/2).

**Professor K T Khaw** £158 787  
**Clinical Gerontology Unit:** for three years, for a study of the determinants of osteoporosis and hip fracture: a prospective population study (031437/290/2).

**Dr V L Lew** £106 388  
**Physiological Laboratory:** for three years, for a study of  $Ca^{2+}$ -induced monophosphate accumulation in normal and sickle cell anaemia red cells (030699/289/2).

**Dr E K Matthews** £116 883  
**Department of Pharmacology:** for three years, for an investigation using dynamic laser-light spectroscopy of single secretory cells (031169/290/2).

## University of Wales College of Cardiff

**Dr J G Jones** £34 147  
**Department of Biochemistry:** for two years, for an investigation of problems associated with mixed blood-filtration as a method of assessing the rheological properties of erythrocytes and leukocytes, with *Dr C A J Wardrop, Department of Haematology* (030699/289/2).

## University of Wales College of Medicine, Cardiff

**Dr M A McPherson** £8895  
**Department of Medical Biochemistry:** for six months, for an extension of an examination of submandibular fluid in cystic fibrosis, with *Dr M C Goodchild, Department of Child Health* (016954/287/A).

## University of Dundee

**Dr H J McArdle** £86 153  
**Department of Child Health:** for three years, for a study of zinc uptake by the placenta and transfer to the developing fetus (031973/290/2).

## Royal (Dick) School of Veterinary Studies, Edinburgh

**Professor R E W Halliwell** £9533  
**Department of Veterinary Clinical Studies:** for three years, for a study of the isolation and functional properties of canine mast cells proteinases (019268/288/A).

## University of Edinburgh

**Dr D K Apps** £55 533  
**Department of Pre-Clinical Veterinary Sciences:** for three years, for a study of ion channels in chromaffin granule membranes, with *Dr R H Ashley, Department of Chemistry and Dr J H Phillips* (032084/289/2).

**Professor C R House** £124 862  
**Department of Pre-Clinical Veterinary Sciences:** for three years, for optical studies of mammalian fertilization (030666/289/2).

**Dr R J Martin** £57 441  
**Department of Pre-Clinical Veterinary Sciences:** for two years, for single-channel studies of a nematode acetylcholine receptor (030905/289/2).

**Dr Patricia M Warren** £57 705  
**Department of Respiratory Medicine:** for two years, for studies of the dynamic ventilatory response to hypoxia in humans (031424/290/2).

## University of Exeter

**Dr J E Tooke** £7618  
**Clinical Microvascular Laboratory:** for four months, for an extension to a study of the hormonal modulation of tissue fluid balance (017513/287/A).

**Professor D J Woollons** £53 982  
**Department of Engineering Science:** for three years, for a study of dual-sensor diagnostic anti-tachycardia pacemakers, with *Dr D B Shaw, Department of Cardiology and Dr M Horwood* (030974/289/2).

## University of Glasgow

**Dr W R Ferrell** £30 897  
**Autonomic Physiology Unit:** for one year, for an investigation of the effect of joint disease on synovial and bone blood flow, with *Dr W J Angerson, Department of Surgery* (032128/290/2).

**Professor J C McGrath** £16 865  
**Autonomic Physiology Unit:** for one year, for studies of vascular responsiveness employing on-line image analysis of microvascular networks, with *Dr V A Moss* (031970/290/2).

**Dr J P Renton** £4345  
**Department of Veterinary Surgery:** for two and half years, for additional expenses for *in vivo* and *in vitro* studies of the process of maturation and fertilization of canine ova (019679/287/A).

**Dr G L Smith** £92 993  
**Autonomic Physiology Unit:** for three years, for an investigation of the process of controlling  $Ca^{2+}$  release from the sarcoplasmic reticulum of mammalian smooth muscle (031377/290/2).

## University of Strathclyde, Glasgow

**Professor J R Parratt** £53 610  
**Department of Physiology and Pharmacology:** for two years, for a study of platelet involvement in the early stages of experimental myocardial ischaemia (030624/289/2).

**Dr R M Wadsworth** £7495  
**Department of Physiology and Pharmacology:** for two years, for additional expenses, for a study of the effect of ageing on noradrenaline release and on neuro-transmission in a human artery, with *Dr P J W Scott, Department of Geriatric Medicine, Stobhill General Hospital, Glasgow* (019295/289/A).

## KEM Hospital, India

**Dr C S Yajnik** £19 200  
**Pune:** for one year, for a study to characterize and investigate diabetes among Indians in Pune (032476/A/99/2).

## Lancashire Polytechnic

**Dr J Singh** £12 230  
**School of Applied Biology:** for eight months, for an extension of a study of the cellular mechanism of action of phorbol ester on secretagogue-evoked secretory responses in pancreatic acinar cells (014732/288/A).

**Dr J Singh** £4300  
**School of Applied Biology:** for 15 months, for an investigation into the evidence for a non-cholinergic, non-adrenergic nervous control of rat lacrimal secretion, with *Dr R W Lea* (018136/288/A).

**Dr J Singh** £46 433  
**School of Applied Biology:** for three years, for a study of the mechanism of action of magnesium on secretagogue-evoked amylase secretion in rat pancreatic acinar cells, with *Dr R W Lea* (031425/290/2).

## University of Leeds

**Dr M Hunter** £46 398  
**Department of Physiology:** for one year, for a study of the role and regulation of potassium transport in renal epithelia (032381/290/2).

**Dr F Karim** £3890  
**Department of Physiology:** for one year, for a study of adenosine and coronary functional hyperaemia (031739/290/2).

**Professor J F B Morrison** £55 474  
**Department of Physiology:** for three years, for a study of receptors in the lower urinary tract in patients with urodynamic abnormalities, with *Dr D E Neal, Department of Urology, University of Newcastle upon Tyne* (031934/290/2).

**Dr C H Orchard** £78 388  
**Department of Physiology:** for three years, for the short-term regulation of contractility in cardiac muscle (031796/290/2).

**Dr H W Symonds** £46 015  
**Department of Animal Physiology and Nutrition:** for two years, for an extension of a study of the pharmacological action of alpha 2 agonists in stimulating the excretion of copper in the bile of sheep (017739/287/A).

**Professor D W Wray** £20 000  
**Department of Pharmacology:** for 17 months, for additional equipment for an investigation of the structure and function of calcium channels using peptide-specific antibodies (018611/288/A).

## University of Leicester

**Dr M R Boarder** £5319  
 Department of Pharmacology and Therapeutics: for one year, for a study of the stimulation of phosphatidic acid production by bradykinin in adrenal chromaffin cells (031034/Z/90/2).

**Dr M R Boarder** £78 764  
 Department of Pharmacology and Therapeutics: for three years, for receptors for ATP (P2 receptors) on endothelial cells derived from different vascular beds: characterization of binding and second messengers (030882/Z/89/2).

**J S Budd** £53 417  
 Department of Surgery: for two years, for a study of endothelial cell seeding of vascular grafts (031030/Z/89/2).

## University of Manchester

**Professor P H Adams** £42 069  
 Department of Medicine: for two years, for a study of the characterization of the acid base transport systems in a human colon cancer cell line (Caco-2) grown as a polarised monolayer, with Dr D C Gleeson, Department of Gastroenterology and Dr R F T McMahon, Department of Pathological Sciences (032895/Z/90/2).

**Dr R J Balment** £20 297  
 Department of Physiological Sciences: for six months, for an extension of a study of the role of oxytocin and vasopressin in the physiological regulation of renal sodium excretion, with Dr Mary L Forsling, Department of Physiology, University College and Middlesex School of Medicine, London (016304/Z/87/A).

**Dr R J Balment** £49 310  
 Department of Physiological Sciences: for two years, for a study of adrenal steroid modulation of the renal action of peptide hormones (031117/Z/90/2).

**Professor R D H Boyd** £67 862  
 Department of Physiological Sciences: for three years, for patch clamp and microelectrode studies of ion transport in isolated human placental villi, with Professor R Green and Dr P D Brown (030830/Z/89/2).

**Dr G I Sande** £63 159  
 Department of Medicine: for three years, for a study of corticosteroid-induced cation conductances in colonic epithelia (031335/Z/90/2).

**Dr M C Steward** £72 726  
 Department of Physiological Sciences: for three years, for NMR studies of water and non-electrolyte transport across secretory epithelia (031052/Z/90/2).

## University of Newcastle upon Tyne

**Dr P G Blain** £7000  
 Respiration and Exercise Laboratory: for respiratory impairment and disability with Dr J E Cotes, Dr D J Chinn and C Elliott (031064/Z/90/2).

## University of Nottingham

**Dr E Joan Bayse** £118 686  
 Department of Physiology and Pharmacology: for three years, for controlled studies on the effects of feasible exercise regimes on bone density in women, with Professor W A Wallace, Department of Orthopaedic and Accident Surgery and Dr D J Hosking, Department of Medicine (031762/Z/90/2).

**Dr Sheila M Gardiner** £4959  
 Department of Physiology and Pharmacology: for three months, for a study of the involvement of the central pressor action of peptides of the hypothalamo-pituitary-adrenal axis in the development of adrenal regeneration hypertension in the rat, with Professor T Bennett (017191/Z/87/A).

**Dr I A Macdonald** £96 137  
 Department of Physiology and Pharmacology: for three years, for an investigation of dietary and endocrine factors affecting the control of thermogenesis in man, with Dr S P Allison, Dr R B Tattersall, Professor M J J Reuille, University of Dundee and Dr N K Fukagawa, Department of Medicine, Beth Israel Hospital, Boston, USA (032230/Z/90/2).

## University of Oxford

**Dr Frances M Ashcroft** £65 000  
 Laboratory of Physiology: for three years, for patch-clamp and fluorescence studies of pancreatic Beta-cells (032219/Z/90/2).

**Dr J C Ellory** £36 298  
 Laboratory of Physiology: for two years, for a study of the role of passive cation transport in sickle cell disease, with Dr A C Hall (030720/Z/89/2).

**Dr T D R Hockaday** £5800  
 Sheikh Rashid Diabetes Unit, Oxford Radcliffe Infirmary: for one year, for a study to characterize and investigate diabetes among Indians in Pune (032476/Z/90/2).

**Professor M K Sykes** £11 040  
 Nuffield Department of Anaesthetics: for one year, for a study of extra-corporeal carbon dioxide removal using haemofiltration circuits (031157/Z/89/2).

**Dr Ann G Taylor** £7190  
 Laboratory of Physiology: for three months, for additional expenses for a study of combined functional and ultrastructural studies on the role of microtubules in the water permeability response to vasopressin in isolated perfused collecting tubules (019603/Z/89/A).

**Dr D A Terrar** £12 500  
 Department of Pharmacology: for six months, for a study of actions of cardiac glycosides in normal and low potassium solutions (031262/Z/90/2).

**Dr R D Vaughan-Jones** £151 512  
 Laboratory of Physiology: for three years, for a study of the effect of acidosis and hypoxia on pH, Ca<sup>2+</sup> and Na<sup>+</sup> regulation in carotid body type 1 cells of rat and rabbit, with Dr C S Peers, Department of Pharmacology, University of Leeds (032384/Z/90/2).

## University of Sheffield

**Dr R J Levin** £81 926  
 Department of Biomedical Sciences: for three years, for a study of enterotoxin stimulated secretion in undernourished intestine with Professor B L Brown, Department of Human Metabolism and Clinical Biology and Dr P C Engel, Department of Molecular Biology and Biotechnology (031288/Z/90/2).

## University of Southampton

**Dr C J Garland** £5130  
 Department of Physiology and Pharmacology: for a study of the mechanism of neuromuscular transmission in rabbit and human cerebral arteries (017601/Z/87/A).

**Professor N R Saunders** £96 479  
 Department of Physiology and Pharmacology: for three years, for a study of the effects of hypercapnia on barrier permeability in the developing and adult brain (030850/Z/89/2).

## University of St Andrews

**Dr F W Flitney** £4829  
 Department of Biology and Preclinical Medicine: for three months, for an extension of an investigation of myosin filament architecture in decapod crustacean muscles (018009/Z/88/C).

## Sunderland Polytechnic

**Dr J M Sneddon** £40 348  
 School of Pharmacology: for three years, for a study of the transport and metabolism of L-arginine in nitric oxide producing mammalian cells under basal and stimulated conditions (032204/Z/90/2).

## LONDON

## Charing Cross and Westminster Medical School

**Dr L Adams** £18 990  
 Department of Medicine: for one year, for an extension of a study to determine how different ventilatory stimuli interact in the genesis of the sensation of breathlessness, with Professor A Guz (018183/Z/88/A).

**Professor Julia C Buckingham** £110 346  
 Department of Pharmacology: for three years, for a study of the post-natal development of the hypothalamo-pituitary-adrenal axis in the rat, with Dr Glenda E Gillies (031812/Z/90/2).

**Dr W A Seed** £45 483  
 Department of Medicine: for two years, for a study of mechanical factors involved in the development of coronary atherosclerosis, with Dr T J Pedley, Department of Applied Mathematics, University of Leeds and Dr L D R Smith, Department of Cardiology, St Thomas's Hospital, London (031290/Z/90/2).

**Dr Nancy A Curtin** £16 446  
 Department of Physiology: for two years, for a study of power for locomotion: force and movement by muscle fibres from the lamprey, with Dr Thelma L M Williams, Department of Physiology, St George's Hospital Medical School, London (032022/Z/90/2).

## Chelsea College of Science and Technology

**Professor A Howe** £5356  
 Department of Physiology: for three months, for an extension of a study of chemoreceptor reflexes from the abdomen (014122/Z/85/D).

## Imperial College of Science, Technology and Medicine

**Dr J M Squire** £185 959  
 Biophysics Section: for three years, for a study of the ultrastructure and extent of the glycocalyx on endothelial cell surfaces, with Professor C C Mitchell, Department of Physiology and Biophysics, St Mary's Hospital Medical School, London (031982/Z/90/2).

## Institute of Urology

**Dr G H Neild** £28 651  
 Department of Renal Medicine: for one year, for an extension of a study of the role of endothelium-derived relaxant factor (EDRF) in pathological glomerular filtration; a study to investigate EDRF in early diabetic nephropathy and cyclosporin nephrotoxicity, with Dr J Westwick, School of Pharmacy and Pharmacology, University of Bath (037535/Z/87/A).

## King's College School of Medicine and Dentistry

**Dr W N Gardner** £2969  
 Department of Physiology: for two months, for an extension of his study of respiratory control mechanisms in hypnocapnic man (013947/Z/84/A).

## King's College London

**Dr T J B Simons** £73 375  
 Physiology Group: for three years, for a study of zinc transport across cell membranes (031147/Z/90/2).

**Dr D E Knight** £11 538  
 Department of Physiology: for six months, for an extension of a study of the mechanism and control of acetylcholine release at the Torpedo neuromuscular junction (016309/Z/86/A).

**Professor D L Yudilevich** £5000  
 Department of Physiology: for five months, for an extension to a study of the isolation of microvascular endothelial cells from human placenta, with Dr J D Pearson, Section of Vascular Biology, Clinical Research Centre, Harrow (014376/Z/86/A).

## London Hospital Medical College

**Dr P W Thompson** £100 000  
**Bone and Joint Research Unit:** for three years, for a study of the relationship of biochemical and hormonal markers of bone metabolism with bone mineral density and rates of bone loss in the early menopause, with *Dr T D Spector, Department of Environment and Preventive Medicine, St Bartholomew's Hospital Medical College, London* and *Dr L Perry, Department of Reproductive Physiology, St Bartholomew's Hospital Medical College, London* (031155/290/2).

## National Heart and Lung Institute

**Dr G J Laurent** £46 529  
**Department of Thoracic Medicine:** for two years, for a study of the role of growth factors in the pathogenesis of lung fibrosis in patients with systemic sclerosis, with *Dr Carl M Black, Department of Rheumatology, Royal Free Hospital School of Medicine, London* (031421/290/2).

## Royal Free Hospital School of Medicine

**Dr T Cowen** £8586  
**Department of Anatomy:** for two years, for additional expenses for a study of mechanisms of neuronal ageing: the role of the target organ in ageing of autonomic neurones (019579/289/A).

**Professor K E F Hobbs** £6645  
**Academic Department of Surgery:** for three months, for an extension of a study of vascular graft thrombogenicity: attenuation by biomembrane based polymer coatings, with *Professor D Chapman, Department of Protein and Molecular Biology* (017978/288/A).

**Dr Gillian Pocock** £6778  
**Department of Physiology:** for one month, for an extension of an analysis of the action of anaesthetics on ion channels and neurosecretion, with *Dr C D Richards* (019048/288/B).

**Professor P K Thomas** £53 232  
**Department of Neurological Science:** for two years, for a characterization and localization of insulin receptors in peripheral nerve and the effects of diabetes, with *Professor G Burnstock, Department of Anatomy and Developmental Biology, University College London* and *Dr Rosalind H M King* (031082/290/2).

## Royal Veterinary College

**Dr P M Webbon** £56 002  
**Department of Medicine:** for three years, for a study of heterologous clot models in sheep for the study of fibrin specific monoclonal antibodies, with *Dr P J Gaffney, National Institute for Biological Standards and Control, Putney Bar, Hertfordshire* (032206/290/2).

## St Bartholomew's Hospital Medical College

**G M Rees** £39 338  
**Department of Cardiothoracic Surgery:** for two years, for a study of the prediction of postoperative bleeding in patients undergoing cardiopulmonary bypass, with *Dr Iren Kovacs, Department of Haematology* (032205/290/2).

**Professor R J Flower** £7955  
**Department of Biochemical Pharmacology:** for four months, for an investigation into the mode of action of anti-inflammatory steroids (031536/290/2).

## St George's Hospital Medical School

**Dr M D Bain** £69 428  
**Department of Child Health:** for two years, for a study of placental permeability with disordered fetal growth, with *Professor T E Stacey* (030804/289/2).

**Dr W A Large** £107 663  
**Department of Pharmacology:** for three years, for a study of calcium-activated non-selective cation channel in vascular smooth muscle (031722/290/2).

**Dr J R Levick** £67 520  
**Department of Physiology:** for three years, for a quantitative investigation of the glycosaminoglycans in the synovial lining of the joint, with *Dr R M Mason, Department of Biochemistry, Charing Cross and Westminster Medical School, London* (031333/290/2).

**Professor J G Widdicombe** £108 868  
**Department of Physiology:** for three years, for a study of drug absorption through the respiratory epithelium (032124/290/2).

**Dr Catherine A J Wilson** £23 075  
**Department of Obstetrics and Gynaecology:** for one year, for a study of the biological and immunological activity of gonadotrophin isoforms during development, with *Dr A J Chapman, Department of Medicine, University of Birmingham* and *T R Varma* (031021/289/2).

## St Mary's Hospital Medical School

**Professor J A Firth** £35 162  
**Department of Anatomy and Cell Biology:** for two years, for a study of the role of endothelial cell glycocalyx in vascular physiology (032183/A90/2).

**Professor S Franks** £103 551  
**Department of Obstetrics and Gynaecology:** for three years, for a study of the regulation of endometrial growth and function by steroid hormones and growth factors (032298/290/2).

**Professor C C Michel** £17 253  
**Department of Physiology and Biophysics:** for nine months, for an investigation into interactions between serum albumin and endothelial cell matrix in an *in vitro* model of vascular permeability, with *Dr P Knox, Department of Biochemistry* (018196/286/A).

## University College and Middlesex School of Medicine

**Dr J W Honour** £41 490  
**Department of Medicine:** for one year, for a study of adrenal function in preterm infants, with *Dr J C L Shaw, Department of Paediatrics* (018153/288/A).

## University College London

**Professor A Boyde** £57 849  
**Department of Anatomy and Developmental Biology:** for eighteen months, for a study of the window on bone healing and cell responses to strain, with *Dr Sheila J Jones* (032236/290/2).

**Dr Sheila J Jones** £98 424  
**Department of Anatomy and Developmental Biology:** for three years, for a study of craniofacial bone structure and bone grafts: cell and tissue survival, vault remodelling and remoulding, with *Professor A Boyle and Professor D A McGrouther* (031912/290/2).

**Dr B Lynn** £51 130  
**Department of Physiology:** for two years, for neuro-inflammatory interactions in the skin (030702/289/2).

**Dr Dianne J Newham** £11 441  
**Department of Physiology:** for one year, for a study of the cause and effect of human skeletal muscle fatigue (030964/289/A).

**Dr F L Pearce** £16 200  
**Department of Chemistry:** for three years, for a study of functional characterization of mast cells from different sources (032433/290/2).

**Professor Gerta Vrbova** £15 635  
**Department of Anatomy and Developmental Biology:** for one year, for a study of the regulation of nerve muscle contacts by activity (031089/290/2).

## SYMPOSIUM

**Dr L H Srnaje** £2000  
**Wellcome Trust, London:** for the European Society for Microcirculation: XVII European Conference, London (031654/290/2).

**Professor Anne E Warner** £75 388  
**Department of Anatomy and Developmental Biology:** for three years, for a study of the relationship between gap junction communication and compaction at pre-implantation stages of development in normal and genetically defective mice, with *Dr C R Green* (032207/290/2).

## United Medical and Dental School of Guy's and St Thomas's Hospitals

**Dr P I Aaronson** £2600  
**Pharmacology and Toxicology Division:** for one year, for a study of sodium metabolism in isolated human resistance vessels, with *Dr Lucilla Peston, Sherrington School of Physiology and Dr J P T Ward, Department of Physiology* (032233/290/2).

**Professor T H Lee** £78 316  
**Department of Allergy and Respiratory Disorders:** for three years, for a study of the antagonism of the LTD<sub>4</sub> receptor, with *Dr B W Spur, Paris* (031169/290/2).

**Dr T S Padayachee** £70 694  
**Division of Radiological Sciences:** for two years, for a study of magnetic resonance techniques for measuring quantitative blood flow: validation by electromagnetic flowmetry in an animal model, with *Professor M N Maisey* (030992/289/2).

**Dr R M Palmer** £19 122  
**Department of Periodontology:** for two years, for an immunocytochemical investigation of guided tissue regeneration using Teflon membranes, with *Dr P R Morgan, Department of Oral Medicine and Pathology and P D Floyd* (031232/290/2).

**Dr D M Band** £16 200  
**Sherrington School of Physiology:** for two years, for a study of the effect of potassium on the dynamic sensitivity of the carotid chemoreceptor, with *Dr R A F Lintow* (031039/290/2).

## UNIVERSITY AWARD

**Dr P W Watt** £69 755  
**Department of Physiology, University of Dundee:** for two years, for a further investigation of the regulation of pig muscle protein turnover by amino acid and insulin availability, under *Professor M J Rennie, Department of Anatomy and Physiology* (031506/290/2).



**Dr J. B. Tooke**  
Clinical Microvascular Laboratory, University of Exeter:  
for seven months, for a study of dynamic  
capillary pressure measurement in man in health and disease.  
(01795/2859).

## SENIOR LECTURESHIP

SPECIAL INTEREST GROUPS  
CLINICAL INTEREST GROUP  
TROPICAL MEDICINE INTEREST GROUP  
VETERINARY INTEREST GROUP  
VISION RESEARCH WORKING PARTY

88  
90  
95  
100

## RESEARCH LEAVE FELLOWSHIPS

**Dr N. B. Standen**  
Department of Physiology, University of Leicester: for  
two years, for a study of the properties and regulation of ATP-  
sensitive potassium channels and calcium channels in arterial  
smooth muscle and skeletal muscle.  
(031508/2902).

influence of nitrous oxide  
(01926/2888).

**Dr N. L. Simmons**  
Department of Physiological Sciences, University of  
Newcastle upon Tyne: for one year, for a study of Cl<sup>-</sup> (sal)  
secretion by mammalian renal epithelial cells; a novel  
mechanism for underlying control of renal NaCl balance;  
with Dr B. Aigimi  
(030636/2892).

## POSTDOCTORAL FELLOWSHIPS

**Dr M. Accevedo**  
Department of Anatomy and Physiology, University of  
Dundee: for three years, for a study of the regulation of the  
pH of the perilymph fluid in airway epithelium, under  
(031930/2902).

**Dr Susan Nounhagh**  
Department of Applied Pharmacology, National Heart  
and Lung Institute, London: for three years, for a study  
of mechanisms of neurophyl and monoqcy extravasation in  
vivo, under Professor T. J. Williams  
(032103/2902).

## LECTURESHIP

**Dr M. Lackie**  
Department of Physiology and Pharmacology,  
University of St Andrews: for one year, for an extension  
to his study of muscle physiology with special reference to  
mitoxony and to the sarcose phenomenon (01139/2894).

CLINICAL INTEREST GROUP

Professor Sir Stanley Peart, MD, FRCP, FRS, (Chairman, Wellcome Trustee), Wellcome Trust

Professor M A Ferguson-Smith, FRS, FRSE, FRCPGlas, FRCPath, University of Cambridge

Professor A Guz, MD, FRCP, Charing Cross and Westminster Medical School, London

Professor M H Lader, DSc, MD, FRCPsych, Institute of Psychiatry, London

Professor D C Linch, MB, MRCP, University College, London

Professor E R Moxon, MB, FRCP, University of Oxford

Professor J D Swales, MD, FRCP, University of Leicester

**Staff members responsible**

Dr D Gordon, MA, MB, FRCP, (Scientific Secretary)

Sandra Carpenter, (Grants Officer)

CLINICAL INTEREST GROUP

The main function of this Group is to review clinical research generally within the Trust, and to ensure that the interests of clinical research are served by the various advisory panels which were restructured during 1989/90, and where clinical and basic scientists jointly select applications of the highest merit.

The Group awards Research Training Fellowships for Medical and Dental Graduates (see page 32) and Senior Research Fellowships in Clinical Science (see page 29), and surveys the progress of those on the latter scheme. It is also responsible for dealing with new initiatives, that are singularly clinical.

**Intercalated BSc Degrees in Clinical Science**

The Trustees, as a matter of policy, do not generally provide support for Intercalated BSc Degrees for medical students. However, they have agreed some limited funding for an experimental Intercalated BSc Degree in Clinical Science, based at St Mary's Hospital Medical School, the Medical Faculty of Imperial College. This course is taken as an extra year during the undergraduate clinical course, and is designed to expose clinical students to the methods and practice of clinical research at a time when they may be stimulated to follow these interests after qualification. This experiment is regularly reviewed.

## TROPICAL MEDICINE INTEREST GROUP

C E Gordon Smith, CB, MD, FRCP, FRCPath, (Chairman, Wellcome Trustee),  
Wellcome Trust

Professor R M Anderson, PhD, FRS, Imperial College of Science, Technology and  
Medicine, London

G E Griffin, PhD, FRCP, St George's Hospital Medical School, London

W E Gutteridge, PhD, ScD, FIBiol, Wellcome plc, Beckenham

# Professor R E Howells, PhD, FIBiol, Liverpool School of Tropical Medicine

R P Lane, PhD, ARCS, DIC, London School of Hygiene and Tropical Medicine

# Professor E H O Parry, OBE, MD, FRCP, Distance Learning Programme, Wellcome  
Tropical Institute, London

**Staff members responsible**

# J G Howard, MD, PhD, FIBiol, FRS, (Scientific Secretary),

★ R E Howells, PhD, FIBiol, (Scientific Secretary),

★★ Rebecca Fitt, BA, (Grants Officer)  
C D J Sainty, BA (Econ), (Grants Officer)

# Until June 1990

★ From June 1990

★★ From October 1989

## TROPICAL MEDICINE INTEREST GROUP

The Tropical Medicine Interest Group was established in 1989 to develop policy and consider the special problems of tropical medicine which override the scientific subject interests of the advisory panels of the Trust. This Interest Group will concern itself with such matters as recruitment and careers; the interviewing of candidates for tropically-related fellowships; consideration of the progress and annual budgets of the overseas Units and the case for further development. In the year under review expenditure on tropical fellowships and overseas units was £1.5 million.

A meeting of the Directors of the Tropical Units was held at the Trust in May 1990 at which the following papers were given;

Wellcome Research Unit, Vellore, India

Professor V I Mathan

'Physiology and epidemiology in designing ORS' and

'From a research grant to a national centre: A joint endeavour of the Wellcome Trust and the Christian Medical College'

Dr B S Ramakrishna

'The colon in diarrhoeal diseases'

Wellcome Parasitology Unit, Belem, Brazil

Professor R Lainson

'The leishmaniases of Amazonian Brazil', 'Visceral leishmaniasis:

An overview' and 'Cutaneous and mucocutaneous leishmaniasis'

Dr D W Macdonald

'Canid reservoirs: Foxes and dogs as maintenance and reservoir hosts'

Dr J J Shaw

'Monoclonal antibodies and parasite identification', 'Monkeys as laboratory models in studies on the immunohistopathology of Dermal Leishmaniasis - Dr T F Silveira'

Tropical Metabolism Research Unit, University of the West Indies, Jamaica

Dr M H N Golden

'The pathogenesis of severe malnutrition'

Dr T E Forrester

'Pregnancy induced hypertension in Jamaica'

Wellcome Research Unit, Bangkok, Thailand

Dr N J White

'Studies on malaria, melioidosis and sexually transmitted diseases'

## Wellcome Trust Research Laboratories, Nairobi, Kenya

Dr W M Watkins

'Pharmacokinetics and parasitological studies of antifolate antimalarial drugs.'

Dr P P Nunn

'The impact of Human Immunodeficiency Virus (HIV) on tuberculosis in Kenya'

Dr C F Gilks

'The clinical spectrum of AIDS in Kenya'

Dr K Marsh

'A video film of Kilifi studies in progress'

Dr G Pasvol

'Studies of severe falciparum malaria at Kilifi.'

## UNITS

## Wellcome Trust Research Laboratories, Nairobi, Kenya

For the Trust's unit in Kenya, the past year has been one of exceptional vigour and productivity in research. Two research programmes on AIDS are underway in Nairobi. The first is an in-depth clinical delineation of the disease (Dr C F Gilks and Professor D A Warrell). The second concerns the impact of HIV infection on tuberculosis (Dr P P Nunn, Dr R J Brindle and Professor K P W J McAdam).

Dr W M Watkins, the Unit Director, has successfully integrated the research programmes based in Nairobi and at Kilifi on the coast, with those of the Kenya Medical Research Institute (KEMRI). Dr Watkins' own research programme concerns drug pharmacokinetics and parasite resistance in the chemotherapy and prophylaxis of *Plasmodium falciparum* malaria. This has involved close collaboration with Professors A M Breckenridge (Department of Pharmacology and Therapeutics, University of Liverpool), R E Howells (then at Liverpool School of Tropical Medicine) and Dr P Winstanley, an MRC supported clinical research fellow based at Kilifi.

By the beginning of the report period, the coastal research unit at Kilifi had brought into service a new laboratory/office unit and paediatric ward provided by the Trust. The Unit has continued its programme of research into severe *P. falciparum* malaria in children which was initiated early in 1989. Dr Geoffrey Pasvol who was responsible for developing the coastal unit during this period returned to the UK in May 1990, and took up the Chair of Infectious Diseases and Tropical Medicine at St Mary's Hospital Medical School on 1 October 1990. Dr Kevin Marsh replaced Dr Pasvol as leader of the clinical research team, composed of Drs Charles Newton, Peter Winstanley and Mr Peter Warn (medical technologist). During the year Dr Marsh was awarded a Wellcome Senior Clinical Research Fellowship.

The Trustees were pleased to learn that Dr Watkins was appointed a Chief Research Officer within the Kenyan Medical Research Institute. This is their most senior grade of research officer and is on the same grade as their Director, Dr Davy Koeh.

Dr J G Howard and Professor R E Howells visited Nairobi and Kilifi in March 1990.

## Unidade de Estudos Especiais da Wellcome, Belém, Brazil

This Unit was established in 1965 to study the ecology and epidemiology of human leishmaniasis in the Amazonian region of Brazil. During the past quarter century the Unit's Director, Professor R Lainson FRS and his long-term collaborator Dr J J Shaw have become the foremost authorities on the biology of New World leishmaniasis. They have published many major contributions to the identification and taxonomy of leishmanial parasites, sandfly vectors and animal reservoirs as well as the delineation of four distinct clinical types of the disease in man.

During the period of this report certain of the Unit's research activities entered a period of consolidation to ensure their completion by the time of Professor Lainson's retirement in 1992. The research work of the Unit will be concentrated on visceral leishmaniasis but a major effort will be directed to organising the remarkable collection of cryo-preserved parasite material in the Unit, and the associated records, to ensure their survival after 1992.

The Trust is examining ways in which opportunities afforded by the special location of this Unit can be developed in the future.

## Wellcome/Mahidol University/Oxford Tropical Research Programme, Bangkok, Thailand

Dr N J White has been Director since August 1986. The major emphasis of the Unit's work continues to be on the pathophysiology and clinical pharmacology of severe *Plasmodium falciparum* malaria.

Work is organised predominantly as a co-ordinated series of short, defined, projects. Laboratory studies include metabolic, haematological and immunological aspects associated with clinical investigations. Field stations at Kanchanaburi and Mae Sot function in areas of high disease incidence. Current emphasis is on falciparum malaria in pregnancy and in children and double infection with *P. vivax*.

A clinical study on septicaemic melioidosis is underway at another field station at Ubon Ratchatani with laboratory studies on the antibiotic sensitivity of *Pseudomonas mallei*. Research on sexually transmitted diseases now concentrates on the bacteriology of inguinal buboes.

During the period of this report the Director, Dr N J White visited Cho Quan Hospital, Ho Chi Minh City, Vietnam to explore the opportunity for establishing clinical research projects into malaria and other infectious diseases there. Funds have now been provided for pilot studies.

## Wellcome Trust Research Unit, Vellore

The work in Vellore which was first supported in 1957 came under the Directorship of Professor V I Mathan in 1976. Its original remit was to investigate tropical sprue, but this was subsequently broadened to include diarrhoeal diseases of local importance. The work undertaken involves pathological, microbiological, biochemical and physiological approaches. Field studies in nearby villages have established the striking prevalence of intestinal pathogens (bacteria, viruses and parasites) in an apparently healthy rural population. The basis of this apparent resistance to overt infection, known to be associated with mucosal changes in the intestinal tract, is a major objective of the Unit's research. Long-term epidemiological studies on the prevalence and duration of the phenomenon are in progress.

On 1 April 1990 the Unit was recognised by the Indian Council of Medical Research (ICMR) as an ICMR Advanced Centre. The Trust's financial responsibility for the Unit ceased on that date but some support will continue to be provided to help with the transitional phase.

The Trustees were pleased to learn that Professor Mathan has been elected a Fellow of the Indian National Science Academy.

**Trace Element Research Group (TERG), Tropical Metabolism Research Unit (TMRU), University of the West Indies, Kingston, Jamaica**

This Unit is associated with the University of the West Indies on the Mona Campus, Jamaica. Dr M H N Golden is Director of both the Trust-funded TERG and of the TMRU. This latter appointment is supported jointly by the Trust and the University as are two other scientists there, Dr Sally Grantham-McGregor and Dr T E Forrester.

The TERG investigates the role of defective antioxidant defence in the genesis of the stunted height and retarded mental development of malnutrition states, the role of intestinal helminths in retarded growth, and metabolic abnormalities leading to hypertension in pregnancy. The Unit operates an integrated programme of clinical, laboratory and field studies. It has been notably successful in developing strategies for identifying and treating malnourished children at the community level.

Following a visit by an advisory group from the Trust in April/May 1990 it was decided that the Trust should terminate its direct financial responsibility for TERG and the TMRU. A contribution of £540 000 has been made to the University to help to maintain the momentum of the research of the TMRU. This decision ends a very long period of association between the Trust and the TMRU in Jamaica. A wide variety of support has been provided and Dr Golden has played a significant role over the past 17 years in developing its research programme and administration. He will be returning to the Department of Medicine and Therapeutics at the University of Aberdeen early in 1991, where he holds a Wellcome Senior Lectureship. We wish him and his wife Dr Barbara Golden, who worked in the Unit with Trust support, every success in this new phase of their research.

## VETERINARY INTEREST GROUP

- # The Rt Hon the Lord Swann, FRS, (Chairman, Wellcome Trustee)
- ★ C E Gordon Smith, CB, MD, FRCP, FRCPath, (Chairman, Wellcome Trustee)
- ★★ Professor P M Biggs, CBE, FRCVS, FRS, Formerly Director, AFRC Institute for Animal Health, Houghton Laboratory
- Professor D W Brocklesby, DMedVet, FRCPath, Centre for Tropical Veterinary Medicine, University of Edinburgh
- Professor D Lodge, BVSc, DVA, PhD, MRCVS, Royal Veterinary College, London
- ★★ Professor I McConnell, BVMS, MA, PhD, MRCPath, FRSE, University of Edinburgh
- H R P Miller, PhD, BVMS, MRCVS, Moredun Institute, Edinburgh
- M Elaine Rose, OBE, ScD, MRCPath, FRCVS, AFRC Institute for Animal Health, Houghton Laboratory

**Staff members responsible**

- Bridget M Ogilvie, ScD, FIBiol, (Scientific Secretary)
- Elizabeth Shaw, BSc, (Grants Officer)

- # Until February 1990
- ★ From February 1990
- ★★ From October 1989

## VETERINARY MEDICINE

This year a number of changes were made in the way in which the Trust supports veterinary research. Some of these changes were foreshadowed in the Trust's eighteenth report but came into effect during 1989/90.

Lord Swann retired as a Trustee on 28 February 1990. He had been a Trustee since October 1973 and had chaired the Veterinary Medicine Panel until it was disbanded in September 1989. He chaired the first meeting of the Veterinary Interest Group in November 1989. Lord Swann's special interest in and enthusiasm for veterinary research was appreciated by all those who worked with him at the Trust. We were sad to hear of his sudden death on 22 September 1990. He is succeeded by Dr C E Gordon Smith, Deputy Chairman of the Trustees, as chairman of the Veterinary Interest Group.

Following the death of Dr K B Sinclair in April 1989, who was responsible for the Trust's Veterinary Programme for the decade 1979-1989, Dr Bridget M Ogilvie took charge of the veterinary research programme. Her appointment coincided with the Trustees' decision to alter the arrangements for decision-making on grants. All grants, whether they concern basic science, clinical or veterinary medicine are now considered by one of the four subject-related panels. Membership of these panels reflects all of these interests, and the Trustees are advised on the particular problems of special subject areas by Interest Groups.

In 1989/90, under this new arrangement, grant requests in the veterinary area were as successful in obtaining funds as any other. The success of veterinary applications illustrates that the new arrangements for decision-making do not discriminate against research with a veterinary purpose. Two-thirds of the successful grants were in the area of infection and immunity with the remainder distributed between the other three panels. In the previous three years, awards were divided about 50:50 between infection and immunity and the other three subject areas. Over the past decade, the percentage of funds in the veterinary area awarded to the veterinary schools has dropped from about 80 per cent to between 50 and 60 per cent and in the 1989/90 funding year, 56 per cent of awards went to the schools.

The Veterinary Interest Group adjudicated on applications for scholarship and fellowship awards. The previous report described changes in the Trust's Research Training Scholarships designed to attract veterinary graduates into research. These changes were implemented in January 1990 and the response has been most heartening. There were 27 applicants, many more than in any previous year. 16 applicants sought a three-year PhD award; 10 applied for one of the new four-year awards, which enable the recipients to retain and develop their clinical interests by spending 30 per cent of their time undertaking higher clinical training and 70 per cent on research leading to a PhD; and one applied for the new five-year award, which funds an individual to obtain a PhD in three years in a non-veterinary school laboratory followed by a two-year fellowship in a veterinary school laboratory. The calibre of the six successful candidates was exceptional, and two awards were for three years, three for four years and the single application for a five-year award was also successful. Two awards for postdoctoral fellowships were also made, one for five years and one for three years.

The Veterinary Interest Group had advised that the Project Development Grant available in 1989/1990 in veterinary medicine should be used to fund projects to develop immunological reagents for use in dogs and cats and the awards are detailed below.

On the advice of the Veterinary Interest Group the Trustees had agreed to increase the funds available for the support of veterinary undergraduates wishing to intercalate a year of research training. Although funds were available for 20 awards, in the event only 11 awards were necessary, as most students obtained support from their local authority.

To emphasise further the Trust's commitment to the support of veterinary research, there were two new initiatives this year. Firstly, a leaflet which describes training, fellowship and travel awards in veterinary medicine made by the Agricultural and Food Research Council, the Horserace Betting Levy Board and the Wellcome Trust, has been produced by the Trust and sent by the Royal College of Veterinary Surgeons to all of its UK members. It is available for distribution in each veterinary school.

Secondly, the Trustees have provided funds for the biennial award of a Wellcome Trust Medal for Veterinary Research by the Association of Veterinary Teachers and Research Workers. The first medal will be awarded in 1991 and will be accompanied by a prize of £500 in memory of Dr K B Sinclair, from funds provided by the Trust and his friends and colleagues.

## List of grants awarded over £2000

	UNIT
<b>Professor A Tait</b>	<b>£52 605</b>
<b>Molecular Parasitology Unit, University of Glasgow:</b>	
for additional expenses, for research on the molecular genetics of parasites of veterinary and medical importance	
	(016248/Z91/A).

## RESEARCH ASSISTANCE AND EXPENSES

<b>Veterinary Schools in the UK</b>	<b>£3150:</b>
towards the costs of a careers day at each of the Veterinary Schools over the next three years	(032829/Z90/Z).

## University of Bristol

<b>Professor W P H Duffus</b>	<b>£120 000</b>
<b>Department of Veterinary Medicine:</b> for two years, for a study of the production of monoclonals against canine IgG subtypes and canine IgE for studies on antibody-dependent autoimmune disease and hypersensitivity, with Dr C R Stokes and Dr C J Eilon, Department of Pathology	
	(032181/Z90/Z).

## University of Cambridge

<b>Professor H Waldmann</b>	<b>£178 940</b>
<b>Department of Pathology:</b> for four years, for a study of the development of therapeutic anti-dog leucocyte monoclonal antibodies: identification of antibody specificities by immunofluorescence and the FACSAN, with Dr S P Cobbold	
	(032136/Z90/Z).

## London School of Hygiene and Tropical Medicine

<b>Professor G A T Targett</b>	<b>£68 033</b>
<b>Department of Medical Protozoology:</b> for three years, for a study of feline immunoglobins, under Dr D A Denham	
	(032280/Z90/Z).

## EXPEDITIONS

<b>M J O'Byrne</b>	<b>£2000</b>
<b>Royal Veterinary College, Hatfield, Herts:</b> for three months, for an expedition to study the ways and means of improving health, production and welfare in the camel — Royal Veterinary College African Research Team 1990, under Professor L E Lanyon, Department of Anatomy, Royal Veterinary College, London	
	(031810/Z90/Z).

## VETERINARY RESEARCH TRAINING SCHOLARSHIPS

**A Anderson**

Department of Veterinary Pathology, University of Edinburgh: for four years, for studies on the pathogenesis of inflammatory joint disease induced by lentiviruses in sheep, under *Dr G D Harkiss* (032117/2/90Z).

**Julia A Beatty**

Department of Veterinary Pathology, University of Glasgow: for three years, for a study of cellular immunity to feline immunodeficiency virus, under *Dr M J Browning* (032163/2/90Z).

**Cherida D Hopper**

Department of Veterinary Medicine, University of Bristol: for two years, for an extension of her study of the epizootiology of feline T-lymphotropic lentivirus infections, under *Dr D A Harbour* (018265/2/88A).

**M A Mannan**

Department of Veterinary Basic Sciences, Royal Veterinary College, London: for one year, for a study of steroidogenesis and its control during ovarian follicular development, under *Dr P J O'Shaughnessy* (032331/2/90Z).

**Laura E McCann**

Department of Veterinary Medicine, University of Bristol: for two years, for an extension of her study of diseases of lambs in early lambing flocks, under *Dr K L Morgan* (018262/2/88A).

**Joanna S Price**

Department of Human Metabolism and Clinical Biochemistry, University of Sheffield: for three years, for a study of cytokines, oestrogens and bone cell biology, under *Professor R G G Russell* (031921/2/90Z).

**I K Ramsey**

Department of Veterinary Pathology, University of Glasgow: for three years, for a study of the cellular receptor for feline leukaemia virus, under *Professor O Jarrett* (032164/2/90Z).

**D H Shearer**

Department of Veterinary Medicine, University of Bristol: for three years, for a study into the aspects of the pathogenesis of chronic staphylococcal skin disease in dogs, under *Dr T J Gruffydd-Jones and Dr C R Stokes* (030736/2/89Z).

**K C Smith**

Department of Infectious Diseases, Animal Health Trust, Newmarket, Suffolk: for four years, for studies on the pathogenesis of abortigenic infection by equid herpesvirus 1 (EHV-1) in the pregnant pony mare, under *Dr J A Mumford and Dr N Edington, Department of Veterinary Pathology, University of London, and with Dr W R Allen, Equine Fertility Unit, Thoroughbred Breeder's Association, Cambridge* (031954/2/90Z).

**D L Williams**

Department of Veterinary Basic Sciences, Royal Veterinary College, London: for four years, for an investigation of the normal canine cornea and changes influencing the homing and accumulation of leukocytes in chronic superficial keratitis, under *Dr S D Carrington* (031935/2/90Z).

## VETERINARY RESEARCH FELLOWSHIPS

**Dr K C Chang**

Unit of Veterinary Molecular and Cell Biology, Royal Veterinary College, London: for five years, for a study of the regulation of skeletal muscle myosin genes in horse, pig and dog, under *Professor G E Goldspink* (031868/2/90Z).

**Dr Annelise I Goecke**

Department of Physiology, King's College London (KQC): for six months, for an investigation of potassium and water transport in bovine and ovine colon, under *Dr R J Nafalin* (031053/2/90Z).

**Dr S McOrist**

Department of Veterinary Pathology, University of Edinburgh: for three years, for molecular studies of the intracellular bacteria of the proliferative enteropathies of pigs, under *Dr G H K Lawson* (032178/2/90Z).

**Joanna S Price**

Department of Anatomy, University of Bristol: for two years following her research training scholarship, for a study of cytokines, oestrogens and bone cell biology, under *Professor A E Cookship, Department of Orthopaedic Surgery* (031921/2/90Z).

## INTERCALATED SUPPORT

**G Evans**

Department of Veterinary Medicine, University of Bristol: for one year, for an Intercalated BSc in Anatomical Science, under *Professor P M Keen, Department of Pre-Clinical Veterinary Studies* (032671/2/90Z).

**Julie Harris**

Department of Veterinary Medicine, University of Bristol: for one year, for an Intercalated BSc in Zoology, under *Professor P M Keen, Department of Pre-Clinical Veterinary Studies* (032673/2/90Z).

**Jane Hartland**

Department of Veterinary Pathology, University of Edinburgh: for one year, for an Intercalated BSc in Pathological Sciences, under *Professor A Eggo, Department of Pre-Clinical Veterinary Sciences* (032675/2/90Z).

**Angela Nuack**

Department of Veterinary Medicine, University of Glasgow: for one year, for an Intercalated BSc in Parasitology (032682/2/90Z).

**A D Radford**

Faculty of Veterinary Science, University of Liverpool: for one year, for an Intercalated BSc in Molecular Biology, under *Dr R S Jones, Department of Anaesthesia* (032684/2/90Z).

**Sharon Redrobe**

Department of Veterinary Basic Sciences, Royal Veterinary College, London: for one year, for an Intercalated BSc in Physiology, under *Professor D Lodge* (032678/2/90Z).

**Hattie Symes**

Department of Veterinary Basic Sciences, Royal Veterinary College, London: for one year, for an Intercalated BSc in Physiology, under *Professor D Lodge* (032680/2/90Z).

VISION RESEARCH WORKING PARTY

Professor S M Zeki, PhD, FRS, (Chairman), University College London

Professor A C Bird, MD, FRCS, Institute of Ophthalmology, London

Professor J V Forrester, MD, FRCSEd, University of Aberdeen

Professor R W Guillery, FRS, University of Oxford

R F Hess, PhD, University of Cambridge

T D Lamb, PhD, University of Cambridge

Professor Sir Stanley Peart, MD, FRCP, FRS, Wellcome Trustee

Professor K H Ruddock, PhD, DIC, ARCS, Imperial College of Science, Technology and Medicine, London

**Staff members responsible**

D Gordon, MA, MB, FRCP, (Scientific Secretary)

Anne Edwards, (Grants Officer)

Margaret Hurley, BSc, (Grants Officer)

VISION RESEARCH WORKING PARTY

This group now functions as a grants committee of the Neuroscience Panel. The Trustees retained the old title for the group to emphasize the Trust's uninterrupted support for research in all aspects of vision, including ophthalmology, optometry and neuro-ophthalmology.

The Working Party considered a wide range of grant applications and was encouraged by the standard of proposals submitted for consideration. It is noteworthy that the Trust now supports research in almost all the academic departments of ophthalmology in the UK.

The report of the work of the Neuroscience Panel (at page 42) notes the Trust's interest in research using techniques for non-invasive studies of the brain. The award noted below to Professor S Zeki and his colleagues has led to a definition, using positron emission tomography, of centres responsible for colour processing in the human visual cortex. This work has already been published in the scientific journals, and has attracted wide interest in the popular press both at home and abroad.

**Vision Research Fellowships**

These training fellowships continue to be available under the new panel structure. The annual competition invites applications from young workers in ophthalmology, optometry, neuro-ophthalmology, and the related sciences who wish to begin or advance their research training. The Trustees have been particularly encouraged by increasing numbers of young ophthalmologists of high quality wishing to obtain a serious training in research. Support has also been agreed for a scheme to allow secondment for research of clinical trainees in ophthalmology of the Institute of Ophthalmology.

The Trustees were particularly pleased to learn of the appointment of Dr Susan Lightman, a former Vision Fellow, to the new Duke-Elder Chair of Ophthalmology at the Institute of Ophthalmology.



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## EUROPEAN PROGRAMME

This year has been dominated by the dramatic and revolutionary changes occurring in Eastern Europe. The Trust has responded in a number of ways with the objective of creating a climate conducive to the free exchange of postdoctoral scientists between the UK and Eastern Europe. The model that is being used is the one that has served well for the rest of Europe. Recognising the special needs of this region, the Trustees have agreed to make additional funds available for 1990/91. A total of £1.3m was awarded in grants during the year.

The arrangements that existed previously with the International Cultural Institute in Hungary and the Postgraduate Medical Federation in Prague have been terminated. In future scientists will be expected to approach the Trust directly. The usual pattern will be for them to have made contact with a suitable laboratory in the UK so that the head of the laboratory and the intending fellow will make a joint application to the Trust for a visiting fellowship.

A new arrangement has been agreed with the Norwegian research councils which will enable scientists from all universities and biomedical institutes (including the veterinary school) in Norway to compete for travelling fellowships to the UK. Our previous arrangement with the Anders Jahre Fond (Oslo, Norway) remains, but only covers visits to and from the University of Oslo.

Figure 9

	Summary of European Fellowships Awarded (including awards less than £2000)					
	October 1986 to September 1988		October 1988 September 1989		October 1989 September 1990	
	To	From	To	From	To	From
Austria					1	
Belgium	1	1	2			
Bulgaria		1				3
Czechoslovakia		10		3		4
Denmark	1	3		1		2
East Germany		1				1
Finland		5	1	2		2
France	5	2	7	1	5	3
Greece		3		1		2
Hungary		8	1	1		3
Italy	1	5		2		4
Netherlands	5	1	1	1	3	1
Norway	1	1	1			
Poland		14		2		5
Spain		2		3		1
Sweden	6	3	2	2	3	2
Switzerland	2	1	1		3	
USSR		1		3		5
West Germany	2		2	2	2	2
Yugoslavia		2		1		
	24	64	18	25	17	40

## List of grants awarded over £2000

## RESEARCH ASSISTANCE AND EXPENSES

**Professor H Davson** £9830  
Sherrington School of Physiology, United Medical and Dental Schools of Guy's and St Thomas's Hospital, London: for two years, for an extension of a study on the exchange of solutes of neurological interest in the central nervous system and the mechanism of secretion of the CSF, with Dr B Zolowic, Department of Physiology, University of Belgrade (013421Z/84(A).

## EUROPEAN INTERLABORATORY COLLABORATION

**Dr V Crunelli** £4848  
Department of Visual Science, Institute of Ophthalmology, London: for two years, for an analysis of the late ipsp in the cat lateral geniculate nucleus, with Dr Nathalie Leresche, Department of Visual Neurosciences, University of P and M Curie, Paris, France (017953/B/88(Z).

**Dr V Crunelli** £15 010  
Department of Visual Science, Institute of Ophthalmology, London: for three years, for behavioural state-dependent modulation of amino acid receptor mediated transfer of retinal and sensory information through the thalamus, with Dr G Juhasz, Department of Comparative Physiology, Eotvos Lorand University, Budapest, Hungary (032491Z/90(Z).

**Dr C P Sibley** £14 760  
Department of Child Health, University of Manchester: for three years, for a study of the mechanism and control of sodium transport across the rat placenta, with Dr J Stuller, Department of Pharmacology, Charles University, Prague 2, Czechoslovakia (032571Z/90(Z).

**Professor M Feldmann** £15 000  
Charing Cross Sunley Research Centre, London: for three years, for a study of the role of T cells in the pathogenesis of human insulin dependent diabetes mellitus, with Dr S K Kontiainen, University of Helsinki, Finland (032569Z/90(Z).

## AUSTRIA

## FELLOWSHIP

**Alison J North**  
Department of Zoology, University of Oxford: for two years, for a study of the contractile unit of smooth muscle cells under Dr J V Small, Austrian Academy of Sciences, Salzburg (032358Z/90(Z).

## BULGARIA

## FELLOWSHIPS

**Dr L Kasakov**

**Institute of Physiology, Sofia:** for six months, for a study of the mechanisms of release of sympathetic cotransmitters, under Professor G Burnstock, *Department of Anatomy and Developmental Biology, University College London* (032326/2/90Z).

**Professor N V Naoumov**

**Clinic of Gastroenterology, Sofia Medical Academy:** for four months, for a study of the subcellular localization of hepatitis B viral antigens and DNA in liver of HBsAg carriers, under Dr R Williams, *Liver Unit, King's College of Medicine and Dentistry, London* (030887/2/89Z).

## CZECHOSLOVAKIA

## FELLOWSHIPS

**Dr R Bilek**

**Research Institute of Endocrinology, Prague:** for one year, for a study of the structure and distribution of novel pyroglutanyl-peptides related to TRH, under Dr D G Smyth, *Laboratory of Peptide Chemistry, Medical Research Council, London* (031334/2/90Z).

**Dr H Urbancova**

**Institute of Clinical and Experimental Medicine, Prague:** for three months, for a study of plasma membrane and cytoskeletal changes associated with scatter factor stimulation of endothelial cells, under Dr R M Ham, *School of Biological Sciences, University of East Anglia, Norwich* (032145/2/90Z).

## WELLCOME CZECHOSLOVAK FELLOWSHIP

**Dr R Hovorka**

**Third Medical Clinic of Internal Medicine, Charles University, Prague:** for one year, for an extension of his investigation to develop a computer-based system to assist in the pathophysiology and management of diabetes mellitus, under Professor E Carson, *Centre for Measurement and Information in Medicine, City University, London* (019151/2/88A).

## DENMARK

## WELLCOME CARLSBERG FELLOWSHIPS

**Dr P Kofod**

**Royal Veterinary and Agricultural University, Fredriksberg:** for one year, for a study of organocobal(III) complexes of macrocyclic ligands as models for vitamin B12 (cobalamin) chemistry, under Dr P Moore, *Department of Chemistry, University of Warwick, Coventry* (032316/2/90Z).

**Dr S Nonchev**

**Institute of Molecular Biology, Sophia:** for one year, for an analysis of homeobox gene function in murine embryogenesis, under Dr R Krumlauf, *Laboratory of Eukaryotic Molecular Genetics, National Institute for Medical Research, London* (018651/2/88A).

**Dr D Zicha**

**Institute of Molecular Genetics, Prague:** for one year, for a study of new methods of detecting and quantifying cellular chemotaxis, under Dr G A Dunn, *MRC Muscle and Cell Motility Unit, Kings College, London* (032395/2/90Z).

**L J Muzs**

**Royal Veterinary and Agricultural University, Copenhagen:** for equipment, for a study of the maturation and fertilization of equine gametes *in vitro* utilising co-culture with endometrial tissues, under Dr W R Allen, *Equine Fertility Unit, Thoroughbred Breeder's Association, Cambridge* (018665/2/88A).

## FINLAND

## WELLCOME SIGRID JUSELIUS FELLOWSHIP

**Dr P H Groop**

**Department of Medicine, Helsinki University Central Hospital:** for one year, for a study of microalbuminuria, insulin resistance and sodium-lithium countertransport activity in insulin dependent diabetic patients: the effect of angiotensin converting enzyme inhibition, under Professor G C Viberti, *Unit for Metabolic Medicine, United Medical and Dental Schools of Guy's and St Thomas's Hospital, London* (031604/2/90Z).

## EAST GERMANY

## FELLOWSHIP

**Dr J O Habeck**

**Institute of Pathology, Chemnitz:** for three months, for immunohistochemical and ultrastructural studies of the human carotid body in cases of hypertensive and chronic hypoxaemia, under Dr D J Pallot, *Department of Anatomy, University of Leicester* (032631/2/90Z).

## FRANCE

## FELLOWSHIPS

**Dr B Arveiler**

**Institute of Biological Chemistry, University of Strasbourg Medical School:** for one year, for an investigation of the reverse genetic mapping of human chromosome II, under Dr D J Porteus, *MRC Clinical Cytogenetics Unit, University of Edinburgh* (019011/2/88A).

**Dr Helen C Bodmer**

**Department of Genetics, Institute of Biological Chemistry, Strasbourg:** for one year, for a study of the induction of tolerance to myelin basic protein and resistance to experimental allergic encephalomyelitis in transgenic mice, under Dr Diane Mathis and Dr C Benoist (032350/2/90Z).

**F B Cornelis**

**Centre d'etude du Polymorphisme Humain, Paris:** for one year, for a study of the mapping susceptibility genes for rheumatoid arthritis, with PCR-based probes, under Dr J I Bell, *Institute of Molecular Medicine, University of Oxford* (031370/2/90Z).

**Dr E Keicher**

**Laboratory of Physiology, University of Nice:** for one year, for a study of pH regulation in amphibian oocytes, under Dr W Meech, *Department of Physiology, University of Bristol* (031072/2/90Z).

**M C Taylor**

**Department of Medical Parasitology, London School of Hygiene and Tropical Medicine:** for two years, for an investigation of post-transcriptional processing signals in the variant surface glycoprotein messenger RNA of *Trypanosoma brucei*, under Professor P Borst, *Netherlands Cancer Institute, Amsterdam* (032340/2/90Z).

**Dr H J Wildschut**

**Department of Obstetrics and Gynaecology, University of Amsterdam Medical Centre:** for one year, for an extension of his study of risk assessment of pre-term birth, under Dr Jean M Golding, *Department of Child Health and Obstetrics, Royal Hospital for Sick Children, University of Bristol* (019391/2/89A).

## HUNGARY

## FELLOWSHIP

**Dr Gabriella Csicsai-Szabo**

Department of Biochemistry, University Medical School of Debrecen: for one year, for a study of enzymatic degradation of articular cartilages: isolation and characterization of the fragments in comparison with proteoglycan fragments isolated from arthritic cartilages, under Dr T E Handingham, Department of Biochemistry, Kennedy Institute of Rheumatology, London (032431/2/90/2).

## WELLCOME HUNGARIAN FELLOWSHIPS

**Dr P A Somogyi**

International Cultural Institute, Budapest: for one year, for an analysis of RNA pseudoknot structure in a ribosomal frame-shifting signal, under Dr S C Inglis, Department of Pathology, University of Cambridge (030997/2/88/2).

**Anne-Marit Sponaas**

Department of Clinical Medicine, University of Oxford: for one year, for an extension to her studies to identify T cell epitopes of processed influenza nucleoprotein in individuals carrying differing HLA haplotypes, under Dr G Petanyi, National Institute of Haematology and Blood Transfusion, Budapest (019718/2/88/A).

**Dr Zsuzsanna Varga**

Veterinary Medical Research Institute of the Hungarian Academy of Sciences, Budapest: for three months, for an extension of her identification and study of the pathologic role of mycoplasma strains isolated from geese, under Dr J M Bradbury, Veterinary Field Station, University of Liverpool (018786/2/88/A).

## GREECE

## FELLOWSHIPS

**Dr A Dinopoulos**

Department of Veterinary Medicine, University of Thessalonika: for two months, for a study of a transient population of cells in the subcortical white matter of the rat, under Dr J G Parnavelas, Department of Anatomy and Development Biology, University College London (031778/2/90/2).

**Dr G Papadopoulos**

Department of Veterinary Medicine, University of Thessalonika: for three months, for a study of the development of monoaminergic innervation of the cerebral cortex, under Dr J G Parnavelas, Department of Anatomy and Development Biology, University College London (031779/2/90/2).

## HOLLAND

## FELLOWSHIPS

**Jacqueline A Dempster**

Department of Biology, University of York: for three years, for a study to isolate, purify and characterize vasopressin-responsive water channel proteins from renal collecting ducts, under Professor C H van Os, Department of Physiology, University of Nijmegen (031198/2/90/2).

**Dr R G Feldman**

Department of Medicine, University College London: for two years, for an investigation of the antibody response to the Group B Streptococcus Type III capsular polysaccharide, under Professor B J M Zegers, Department of Pediatric Immunology, University Childrens Hospital, Utrecht (031186/2/90/2).

## ITALY

## FELLOWSHIPS

**Professor F Capasso**

Department of Experimental Pharmacology, University of Naples: for four months, for a study of Paf formation by mammalian intestine. Effects of some intestinal secretagogues, under Dr A Bennett, Department of Surgery, King's College School of Medicine and Dentistry, London (031899/2/90/2).

**Dr A Nazzaro**

Department of Obstetrics, University of Naples: for five months, for an investigation using *in vitro* assays for trophoblast attachment and invasion of decidua, under Dr Y W Loke, Department of Pathology, University of Cambridge (019071/2/88/A).

**Dr Elisa Gionti**

Department of Biochemistry, University of Naples: for ten months, for a study of the regulation of muscle actin gene expression in amphibian embryogenesis, under Dr T J M Molan, Laboratory of Development Biochemistry, NIAR, London (032623/2/90/2).

**Dr M L Sampietro**

University of Milan: for one year, for an analysis of the genetic factors involved in the persistence of fetal haemoglobin synthesis, under Dr Steve Lay Therin, Nuffield Department of Clinical Medicine, University of Oxford (031499/2/90/2).

## POLAND

## FELLOWSHIPS

**Dr D C Gorecki**

Medical Academy of Warsaw: for one year, for a study of the application of antibodies and of dystrophin DNA probes to an analysis of dystrophin gene expression in developing muscle and brain of the mdx mouse mutant, under Professor E A Barnard, MRC Molecular Neurobiology Unit, Cambridge MRC Centre (031324/2/90/2).

**Dr P Radwan**

Clinic of Gastroenterology, Medical Academy of Lublin: for three months, for a study of the consequences of T cell activation and its modulation in ulcerative colitis, under Dr D P Jewell, Gastroenterology Unit, University of Oxford (032194/2/90/2).

**Dr M Grabinski**

Wroclaw Medical Academy: for one year, for a study of the quality of follicle stimulating hormone in physiology and ovulatory disorders; modulation by ovarian steroids, under Professor D C Anderson and Dr W R Robertson, Department of Medicine, University of Manchester (031139/2/90/2).

**Dr Halina Wedrychowicz**

University of Poland: for one year, for a characterization of the immune response to surface and excretory/secretory antigens of the sheep parasite *Ostertagia circumcincta*, under Professor P H Holmes, and Professor A Tait, Molecular Parasitology Unit, University of Glasgow (031721/2/90/2).

**Dr Janusa Marcinkiewicz**

Institute of Microbiology, Cracow: for nine months, for a study of molecular mechanisms in the regulation of contact hypersensitivity to the trinitrophenyl hapten, under Dr B M Chain, Department of Biology, University College London (031938/2/90/2).

## SPAIN

## FELLOWSHIP

**Dr Luis M Corrochano**

University of Seville: for one year, for a study of the evolutionary origin of aminoacyl-tRNA synthetases, under Dr S Brenner, MRC Molecular Genetics Unit, Cambridge MRC Centre (032328/2/90/2).

## SWEDEN

## WELLCOME SWEDISH FELLOWSHIPS

**Dr R F Cowburn**

Department of Biochemistry and Molecular Genetics, St Mary's Hospital Medical School, London: for one year, for an extension of his study of secondary messenger systems in Alzheimer's diseased brain, under Professor B Winblad, Department of Geriatric Medicine, Karolinska Institute (018059/Z/88/A).

**Dr Julia R Davies**

Department of Physiology, St George's Hospital Medical School, London: for one year, for an extension of her study of the nature of the macromolecules in airway mucus and the control of their secretion into the tracheal lumen, under Dr I Carlstedt, Department of Physiological Chemistry, University of Lund, Kemicentrum (018926/Z/88/A).

**Dr Maria G Masucci**

Department of Tumor Biology, Karolinska Institute: for one year, for a study of HLA antigen expression on Burkitt's lymphoma cells, under Professor A B Rickinson, Department of Cancer Studies, University of Birmingham (032457/Z/90/Z).

## SWITZERLAND

## FELLOWSHIPS

**Dr M A Cohen**

Department of Chemistry, University of Exeter: for one year, for an investigation of protein folding prediction from the primary amino acid sequence under Professor S A Benner, Organic Chemistry Laboratory, Zurich (032383/Z/90/Z).

**Dr P Lackie**

Department of Zoology, University of Oxford: for one year, for a study of the distribution of polysialic acid of the neural cell adhesion molecule N-CAM and its role in cell-cell interaction during kidney development and carcinogenesis, under Dr J Roth, Department of Cell Biology, University of Basel (018934/Z/88/A).

**Dr Sabina Rak**

Department of Lung Medicine, University of Lund: for one year, for a study of the interaction between inflammatory cells in the blood and airways of asthmatics, under Professor A B Kay, Department of Allergy and Clinical Immunology, National Heart and Lung Institute, London (032408/Z/90/Z).

**Dr J S Riddell**

Department of Physiology, University College London: for one year, for an extension of combined functional, morphological and pharmacological studies of spinal neuronal pathways from group II afferents to motoneurons, under Dr Elzbieta Jankowska, Department of Physiology, University of Gothenburg (030366/Z/89/A).

**Dr C R Pryce**

Department of Anthropology, University College London: for one year, for an extension of his investigation into the regulation of maternal behaviour in the common marmoset. Effects of (1) female sex steroids (2) vaginal-cervical stimulation and (3) parity, under Professor R D Martin, Institute and Museum of Anthropology, University of Zurich-Itchen (018927/Z/88/A).

## USSR

## FELLOWSHIPS

**Dr A Chanturiya**

Department of Neurochemistry, Institute of Biochemistry, Kiev: for seven months, for a study of the reconstitution of exocytosis in artificial bilayer membranes, under Dr M J Whitaker, Department of Physiology, University College London (032329/Z/90/Z).

**Dr K K Ebralidze**

Laboratory of Molecular Organisation of Chromosomes, Institute of Molecular Biology, Moscow: for three months, for a study of the structure of active nucleosomes, under Professor C Crane-Robinson, Biophysics Laboratories, Portsmouth Polytechnic (030903/Z/89/Z).

**Dr E M Kobrinsky**

Institute of Biological Physics, Moscow: for one year, for a study of the role of different signal transducing GTP binding proteins in various aspects of the response of calcium currents to GTP analogues, under Professor Annette C Dolphin, Department of Pharmacology, St George's Hospital Medical School, London (031216/Z/90/Z).

## WEST GERMANY

## FELLOWSHIPS

**Dr P R Clarke**

Department of Biochemistry, University of Dundee: for two years, for a study of the role of the tyrosine phosphatase that acts on cdc2 kinase in the control of the eukaryotic cell cycle, under Dr E Karsenti, European Laboratory of Molecular Biology, Heidelberg (032261/Z/90/Z).

**Dr F Engelbrecht**

Department of Pathology, University of Tubingen: for one year, for a study of the immunochemical characterization of the surface and cuticular antigens of *Onchocerca volvulus*, under Dr D W Taylor, Department of Pathology, University of Cambridge (030919/Z/89/Z).

**Dr V P Zagorodnyuk**

Institute of Physiology, Kiev: for six months, for a study of the development of autonomic innervation in the guinea-pig and rabbit gastrointestinal tract, under Professor G Burnstock, Department of Anatomy and Developmental Biology, University College London (031264/Z/90/Z).

**Dr I B Zhulin**

Laboratory of Biochemistry, USSR Academy of Sciences, Saratov: for one year, for a study of motility and chemotaxis in *Azospirillum brasilense*, under Dr Judith P Armitage, Department of Biochemistry, University of Oxford (032170/Z/90/Z).

**Dr Claudia Ettliger**

Institute of Plant Physiology, University of Regensburg: for one year, for a study of the regulation of nerve Na<sup>+</sup> - K<sup>+</sup> - ATPase activity in experimental diabetes, under Professor D R Tomlinson, Department of Pharmacology, St Bartholomew's Hospital Medical School, London (019390/Z/89/A).

**Martha J Liley**

Institute of Biotechnology, University of Cambridge: for two years, for studies of the two dimensional organisation of oligonucleotide derivatised phospholipid films, under Dr W Knoll, Polymerforschung, Max Planck Institute, Mainz (031187/Z/90/Z).

## OTHER OVERSEAS AWARDS

Scientists from parts of the world not covered by the Trustees' Tropical and European programmes may, in special circumstances, apply to the Trust for support. In general, the Trustees only consider applications from scientists in developed countries (other than Australia, New Zealand and Japan for which special schemes exist) if they are already in the UK, funded by another agency, and wish to extend their stay to complete a research project. Exceptionally, the Trustees may be willing to accept an application from a fellow elsewhere, but only if he/she is nominated by and is well known to a sponsor in the UK.

**Hitchings-Elion Fellowships**

This new scheme, which will enable postdoctoral scientists from the United States of America to spend up to two years in the UK and then one year back home, was announced in the last report. Discussions on the detailed plans have now reached fruition and applications have been solicited for the first round of fellowships, the deadline for applications being 20 January 1991. It is expected that these fellowships will be taken up in the autumn of 1991. The Trustees are grateful for the enthusiastic support of the Fogarty International Center of the National Institutes of Health which will be advising them on the suitability of candidates, and the Burroughs Wellcome Fund which will be responsible for administration while fellows are in the USA.

**Australia**

During the year two further Australian Scientists were awarded Wellcome Australian Senior Research Fellowships; Dr P J Goadsby for his characterization of central neural pathways involved in migraine and Dr M W Parker for his study of crystal structures of detoxifying enzymes and membrane associating proteins. A total of 14 awards have been made under this scheme since it was set up in 1984.

The Trustees were particularly pleased to learn that Dr D L Healy, one of the first Wellcome Australian Senior Research Fellows, was appointed to a Chair in obstetrics and gynaecology at Monash University, Melbourne from 1 January 1990.

**New Zealand**

During 1990 the Wellcome Trust and the Royal Australasian College of Physicians agreed to set up a scheme to award a Senior Research Fellowship in Medical Science to New Zealand Nationals. The tenure of each fellowship will be for five years and will be held in a New Zealand university department. These awards are open to candidates who are either medically or scientifically qualified, aged over 32 years, and who wish to make their career in New Zealand. It is anticipated that suitable candidates will not be available every year.

The total sums committed for the support of overseas awards (excluding the European and Tropical programmes) amounted to £936 000 (£622 000 for 1988/89).

Figure 10

Summary of Other Overseas Fellowships Awarded (including awards less than £2000)		
	October 1988 to September 1989	October 1989 to September 1990
From		
Australia	2	2
China	3	8
India	1	3
Israel		3
Japan	4	4
New Zealand	2	
Nigeria		1
USA	1	
	<u>13</u>	<u>21</u>

## AUSTRALIA

## AUSTRALIAN SENIOR RESEARCH FELLOWSHIPS

**Dr P J Goadsby**  
Department of Neurology, The Prince Henry Hospital,  
Little Bay, NSW; for five years, for a characterization of  
central neural pathways involved in migraine, under Professor  
J W Lance (0317812902).

**Dr M W Parker**  
St Vincents Institute of Medical Research, Fitzroy; for  
five years, for a study of crystal structures of detoxifying  
enzymes and membrane associating proteins, under Professor  
T J Martin (0317812902).

## FELLOWSHIPS

**Dr J G Colebatch**  
Department of Neurology, Prince Henry Hospital,  
Little Bay, NSW; for six months, for a study of the functional  
anatomy of essential tremor: studies with positron emission  
tomography, under Dr R S J Frackowiak and Professor C D  
Marden, Department of Clinical Neurology, Institute of Neurology,  
London (03108712902).

**Dr Frances A Edwards**  
Department of Pharmacology, University of Canberra;  
for one year, for an investigation of nicotinic receptor channels  
in the central nervous system of patch-clamp recording, under  
Professor D Colquhoun, Department of Pharmacology, University  
College London (0318532902).

## CHINA

## FELLOWSHIPS

**Dr C Q Cao**

**Academy of Traditional Chinese Medicine, Beijing:** for one year, for a determination of neuronal circuitry in the dorsal horn of the spinal cord, under *Professor A G Brown, Department of Pre-Clinical Veterinary Sciences, University of Edinburgh* (032441/2/90/2).

**Professor G G Dodson**

**Department of Chemistry, University of York:** for one year, an extension of X-ray structural studies on monomeric insulin, with *Dr Wanchy-Li, Institute of Biophysics, Beijing* (016753/2/90/2).

**Professor Cai Wen Qin**

**Department of Histology and Embryology, The Third Military Medical College, Chongqing:** for one year, for a study of the role of endothelial cells of umbilical and placental vessels in the regulation of blood flow, under *Professor G Burnstock, Department of Anatomy and Developmental Biology, University College London* (032480/2/90/2).

**Professor Ming-Cai Qui**

**Tianjin Medical College:** for one year, for a study of the role of bone growth factors in the pathophysiology of fluorosis, under *Professor D C Anderson and Dr P T Sharpe, Department of Cell and Structural Biology, University of Manchester* (031140/2/90/2).

## INDIA

## FELLOWSHIPS

**Dr A V Kurpad**

**Department of Physiology, St John's College, Bangalore:** for one year, for a study of the sympathetic nervous system and energy metabolism: mechanisms and site of thermogenesis, under *Dr M Ella, Dunn Clinical Nutrition Centre, MRC, Cambridge* (032370/2/90/2).

## ISRAEL

## FELLOWSHIPS

**Dr Z Arad**

**Israel Institute of Technology, Haifa:** for one year, for a study of the effects of hyperthermia on blood flow and nutrient exchange in the ovary and reproductive tract of the domestic fowl, under *Dr J H Brackenbury, Department of Veterinary Anatomy, University of Cambridge* (031369/2/90/2).

**Dr Roni Laiwand**

**The Hebrew University, Jerusalem:** for one year, for electrophysiological studies on central cholinergic and cholinergic neurons/neuroblastoma hybrid cells, and on synaptic connections between them, *in vitro*, under *Professor D A Brown, Department of Pharmacology, University College London* (031178/2/90/2).

**Dr Yi Sun**

**Institute of Virology, Chinese Academy of Medical Sciences, Beijing:** for one year, for an analysis of herpes simplex virus type 2 (HSV2) mutants which fail to synthesise and synthesise an aberrant form of the glycoprotein gG2, under *Professor J H Subak-Sharpe and Dr S M Brown, Institute of Virology, University of Glasgow* (031168/2/90/2).

**Dr X-C Teng**

**Institute of Hepatology, Beijing General Hospital:** for one year, for an extension of his investigation of the fine specificity for hepatic lectin of activated T cells, clonally expanded from peripheral blood and liver tissue, in autoimmune chronic active hepatitis, under *Professor A L W F Edleston, Liver Unit, King's College School of Medicine and Dentistry, London* (019200/2/88/8).

**Dr J Wu**

**Department of Physiology, Jilin Medical College:** for one year, for a study of neuronal pathways onto spinal motoneurons and the neurotransmitter role of indoleamines, catecholamines and peptides, under *Professor D I Wallis, Department of Physiology, University of Wales College of Cardiff* (032415/2/90/2).

**Dr J X Yao**

**Institute of Physics, Academia Sinica, Beijing:** for one year, for an investigation of direct methods for macromolecular crystal structures, under *Professor M M Woolfson, Department of Physics, University of York* (018668/2/88/8).

**Dr S Tripathi**

**Tata Institute of Fundamental Research, Bombay:** for three months, for a study of the effect of sodium and calcium ions on the water permeability of gramicidin pores, under *Dr S B Hladky, Department of Pharmacology, University of Cambridge* (031512/2/90/2).

**Professor Y Milner**

**The Hebrew University, Jerusalem:** for one year, for a study of mutated yeast PKCs and their characterization, under *Dr E Orr, Department of Genetics, University of Leicester* (032143/2/90/2).

## JAPAN

## FELLOWSHIPS

**Dr T Arai**

**First Department of Internal Medicine, Gunma University School of Medicine:** for one year, for a study of the mechanisms of activation of the human mannose binding protein gene, under *Dr J A Summerfield, Department of Medicine, St Mary's Hospital Medical School, London* (032481/2/90/2).

**Dr Izumi Hide**

**Hiroshima University:** for one year, for a study of the mechanism of exocytotic secretion in eosinophils, under *Dr B D Comperts, Department of Physiology, University College London* (031676/2/90/2).

## NIGERIA

## FELLOWSHIPS

**Professor B Oluwakayode Osuntokun**

**University College Hospital, Ibadan:** for nine months, for cross-cultural epidemiological studies of dementias of the elderly. Development and testing of research protocol, under *Professor D K Peters, Department of Medicine, University of Cambridge* (032453/2/90/2).

**Dr Shin-Ichiro Kitano**

**Department of Physiology, Tokyo Women's Medical College:** for one year, for a study of neural mechanisms controlling induced airway hyper-reactivity, under *Professor J G Widdicombe, Department of Physiology, St George's Hospital Medical School, London* (019338/2/89/8).

**Dr H Matsuo**

**The First Department of Internal Medicine, Nagasaki University School of Medicine:** for one year, for a study of T cell responses to recombinant gamma and epsilon subunits of human acetylcholine receptor in myasthenia gravis, under *Professor J Newson-Davis, Institute of Molecular Medicine, University of Oxford* (031502/2/90/2).

TRAVEL GRANTS

The Wellcome Research Travel Grant Scheme is intended to provide support for postdoctoral scientists and clinically qualified workers who wish to make a short visit to an overseas centre in order to further their research or attend a workshop or symposium in a relevant subject area. The scheme also provides for contributions towards the travelling expenses of younger workers who have been offered research fellowships tenable for at least a year in institutions overseas.

During the year there has been a substantial increase in the number of applications, and the Trustees made 483 awards (438 in 1988/89) at a total cost of £246 000.

**Special Travel Grants (CANZUSA)**

The Trust operates five special schemes relating to research workers in Canada, Australia, New Zealand, South Africa and the USA. The schemes are jointly sponsored by the Trust and collaborating agencies overseas, to provide for short-term (up to three months) working visits by experienced research workers. The Trustees made awards totalling £24 000 during the period under review (£45 000 during 1988/89).



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 ★ Until October 1989  
 # From October 1989

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- ★ Until October 1989
- # From October 1989

## SUPPORT FOR THE HISTORY OF MEDICINE

1989/90 saw exciting new horizons open up for the History of Medicine Programme. At the same time there was a marked increase in the number of grant applications received, especially for the support of larger-scale and longer-term work. Among these was a successful application (from Essex University) for a university award, the first-ever in this field. A precondition of this type of support is an undertaking by the university to provide the grant holder with a permanent post at the end of five years. At a time when new academic posts are so few and far between this has an obvious appeal both to universities and to the Trust, for the continued advancement of the history of medicine as an academic subject depends above all on its becoming an established study in a greater number of places. Moreover, many able scholars have now received training in the subject and too many of these are experiencing difficulty in progressing beyond temporary appointments. Improving the prospects for an academic career in the history of medicine is consequently one of the Trustees' foremost current priorities.

At the same time, the Trustees are keen that interest in the subject should not be confined to academics. The new Centre for Medical Science and History, due to open in 1992, promises to play an important role in reaching that wider audience, through audiovisual and other techniques.

In 1992 there is also the prospect of much closer co-operation between Britain and the other countries in the European Community. The Trust's support for the history of medicine has until now been concentrated within the British Isles but it now seems propitious for support to be extended geographically. Thought is therefore now being given to bringing The Netherlands within the framework of the programme. Such a move would build on established links between British historians of medicine and those in a range of countries on the Continent which have grown up over the years, particularly through the many Wellcome grants awarded to scholars from overseas for periods of study at British centres. These links are now starting to give rise to bilateral initiatives of an increasingly ambitious character. The Wellcome Unit for the History of Medicine at Cambridge University, for example, has entered into a long-term scheme for reciprocal conferences and exchanges with the CSIC history of medicine institute in Barcelona. Similarly, the Unit at Glasgow University has plans to take advantage of its new Director's involvement in the history of medicine in Germany. Links with East Central Europe, by contrast, have up until now inevitably been scanty. To rectify this, the Trustees have decided to make available a few short-term visiting fellowships to enable younger historians of medicine in the newly-emergent democracies to form contacts among their counterparts in Britain and to catch up with Western literature.

In last year's report mention was made of plans to bring together a group with the history of twentieth-century medical science as its focus, to be based at the Royal College of Physicians under the direction of Sir Christopher Booth, the College's current Harveian Librarian. This group, made up of scientists and historians, has made an encouraging start with a programme of seminars and its own newsletter. Twentieth-century medical science is meanwhile featuring more often among the research projects put forward to the Trust for support.

During the year the amount allocated by the Trustees for research in the history of medicine was £3 393 000 (compared with £2 581 000 in 1988/89). £1 816 000, 54 per cent, was expended internally, in maintaining the work of the Trust's principal investment in this field, the Wellcome Institute for the History of Medicine. £464 000 was devoted to supporting the five History of Medicine Units -- a considerable increase on the previous year, now that two of the Units once again have directors and their programmes are recovering momentum accordingly. And £1 013 000 (£613 000 in 1988/89) was awarded in grant support.

Support for each of the Units is now on a 'rolling' basis and renewal is dependent on the outcome of a rigorous, periodic scrutiny by a panel specially appointed for the purpose. In 1989/90 the Unit at Manchester University, after three years in existence, was reviewed under the new system. The report was full of praise for the productivity of this team and the wide range of activities in which it is engaged. The review group particularly noted the introduction of what the Trust intends should be the second of two national courses (the other being at the Wellcome Institute) for medical or other students opting to study the history of medicine for a BSc degree during an intercalated year.

## WELLCOME UNITS FOR THE HISTORY OF MEDICINE

**University College London**

Director Dr W F Bynum

This Unit is virtually coterminous with the Academic Unit of the Wellcome Institute and its activities are covered in the report on the latter (see page 128).

**University of Cambridge**

Director Dr R K French

This Unit continues to grow in both staff numbers and research activities. The problem of accommodation for research fellows, administration and visitors has been solved by the University's provision of four extra rooms in the building the Unit currently occupies.

At the suggestion of the Trust the Unit's administrative back-up has been allotted to a part-time graduate administrator (Dr J P Williams) and a part-time secretary. This rearrangement has the effect of giving the Unit, a sub-department of History and Philosophy of Science, a greater degree of autonomy. The Unit is now also responsible for the presentation of Historical lectures and exhibitions (the first is on the history of Cambridge medicine) at the Clinical School at Addenbrooke's Hospital.

The Unit has three core staff members: the Director, Dr French, Dr A R Cunningham and Dr Harake Kamminga. The number of research fellows is variable, and reached a peak of seven in 1989. With resident research associates the number of active members of the Unit, excluding visitors, was then twelve. Four of the retiring research fellows have now gone into university teaching while Dr Johanna Geyer-Kordesch has been appointed Director of the Glasgow Unit.

During the year under review a major conference was held in Cambridge on the History of Medical Ethics (April 1990), and the first in an international joint series of conferences with CSIC Barcelona, on Medieval Medicine in the Latin West.

The informal series of books with Cambridge University Press continues, with the appearance of volumes on medicine in the seventeenth and eighteenth centuries. The Unit also continues with its extensive undergraduate teaching and the following degree courses of MPhil in the History of Medicine, MLitt and PhD are being undertaken.

**University of Glasgow**

Director Dr Johanna Geyer-Kordesch

Until the new Director, Dr Johanna Geyer-Kordesch, came into post on 1 March 1990, this Unit was administered by Dr Marguerite Dupree.

Dr Dupree continued her teaching (using material relevant to the history of medicine) for the course 'Computing for Historians' and her membership of the teaching committee of DISH (Design and Implementation of Software in History) Project and its History Computing Laboratory, as well as her supervision of research students. She has been invited to offer an honours course, 'Disease, Medicine and Society in Britain 1750-1948' for undergraduates in the Department of Modern History in 1991/92, and has joined the editorial board of *Social History of Medicine*.

Dr Geyer-Kordesch has continued her work for the Cambridge Medical Ethics Forum, together with Dr Harake Kamminga (Cambridge). She organised an international symposium on the 'Future of Medical Ethics' in the grounds of Ampleforth Abbey in Yorkshire with international participation and financial support from the King Edward's Hospital Fund.

Dr Dupree and Dr M A Crowther of the Department of Economic History are co-holders of a Wellcome Research Grant for research into 'The Role of Medical Societies in the Development of the Scottish Medical Profession circa 1700-1939' for two years beginning 1 January 1990. Dr Jacqueline Jenkinson is research assistant for the project. She has already presented a paper on the subject at the annual conference of the Society for the Social History of Medicine.

The Unit's research focuses on European medicine in the eighteenth century (in particular the Scottish Enlightenment), natural law and medicine, the history of medical ethics, women and medicine, voluntary hospitals in Scotland in the nineteenth and twentieth centuries, the development of the medical profession in Scotland in the late nineteenth and twentieth centuries, medical societies in Scotland since 1700, and the history of case histories. The staff of the Unit has published and given public lectures and conference papers on these subjects in the course of the last year. Plans to develop research in eighteenth-century Scottish medicine, psychiatric history in Scotland and the history of biomedical science in twentieth-century Scotland have been made.

The Unit has been successful in initiating a series of six lectures in the Medical Faculty's new curriculum for medical students in their third (clinical) year. It has also been invited to teach a modular course on the history of public health for the Department of Public Health. Close links with the Institute of Law and Ethics in Medicine are about to be formalised.

**University of Manchester**

Director Dr J V Pickstone

In January 1990 the Unit's work was reviewed by a panel of the Trust's History of Medicine Committee. The report was very favourable and the Unit has now been awarded support for a further period. It continues to be part of the University's Centre for the History of Science, Technology and Medicine, and benefits from this close association with historians of physical sciences and technologies. This relationship strengthens the Unit's general programme, which is focused on the history of medical science and on the social history of medicine in industrial societies.

In October 1989, Dr Stephen Jacyna joined the Unit from Glasgow; he is completing a major study of medical education in nineteenth century Edinburgh and maintains his interest in neurosciences. At the end of the year Dr David Cantor and Dr Paolo Palladino, both already associated with the Unit, were awarded Wellcome Research Fellowships. Their respective projects on rheumatology and on British and American genetics, further increase the Unit's strength in recent history of medical sciences.

The size and expertise of the Unit has allowed for the creation of a new degree programme for medical students who wish to study the history of medicine intensively for one year, usually before beginning their clinical studies. For the initial year, the Wellcome Trust is funding five medical students and one dental student. It has been agreed that in future years students from other medical schools will be able to transfer to Manchester for their intercalated year and gain a Manchester degree.

The Unit is also supporting a second new teaching programme, linked to Manchester's recently re-organised School of Biological Sciences. Among the wide range of degrees now offered by the School is a BSc in Life Sciences with History of Science and Medicine, to which Unit staff contribute about one-third of the courses. For biology students who are also interested in history Manchester University is now a prime choice.

Three postgraduates supervised within the Unit gained PhDs. Its resources for postgraduate training, however, are not fully exploited and it is keen to attract some new postgraduates, as well as postdoctoral fellows and visiting scholars.

From its inception in 1986, indeed from its pre-history as a research group at UMIST, the Unit has played a regional role — in archive retrieval, as a provider of lectures, and as a source of informal advice. This regional aspect takes on a new dimension with the appointment of Dr Michael Worboys, of Sheffield City Polytechnic, to undertake research for two days per week, based at the Manchester Unit. This cost-effective development, funded by the Trust, is of a sort to allow concentration of research and postgraduate training, while also facilitating the diffusion of teaching in history of medicine. A second route to this end has been happily demonstrated by the recent appointment of Dr Keith Vernon, after completing three years as a Wellcome Research Fellow in the Unit, to a teaching post in the history of medicine at Lancashire Polytechnic, Preston. Dr Vernon will continue as an associate of the Unit, carrying out research on the history of microbiology.

The Unit is keen to expand its international links and has recently 'twinned' with the distinguished Department of History and Sociology of Science at the University of Pennsylvania.

**University of Oxford**

Director Dr R M Smith

During the year under review this Unit has continued as a productive centre of research and teaching in the history of medicine. On 1 January Dr R M Smith assumed the Readership in the History of Medicine and the Directorship of the Unit, Dr P Weindling having ably acted as interim Director from 1 October 1988.

Six historical dissertations were completed by pre-clinical medical students and three postgraduate doctoral dissertations. Currently members of staff in the Unit supervise 15 doctoral candidates in the history of medicine and related fields.

A major publication this year was Dr P Weindling's *Health, Race and German Politics Between National Unification and Nazism* (October 1989). A further book of his *Darwinism and Social Darwinism in Imperial Germany: The Contribution of Oscar Hertwig (1849-1922)*, is scheduled for publication in late 1990. The following are in press and scheduled for publication early in 1991: Dr M Pelling and Dr R M Smith (eds.) *Life, Death and the Elderly in Historical Perspective* and Dr R M Smith (ed.) *Regional and Spatial Demographic Patterns in the Past*. Dr Smith continues to be co-editor of the journal *Social History of Medicine*.

Major research areas include medical practice in early modern London, medicine and the old Poor Law, ageing and the care of the elderly in medieval and early modern European society, comparative European historical epidemiology, German eugenics and public health, the origins of modern immunology, the League of Nations Health Organization, the history of tropical paediatrics and medieval Islamic medicine.

The following is a list of all awards made during 1989/90.

## LIBRARIES

- Dr C Barry** £20 000  
Royal College of Physicians of Ireland, Dublin: for the restoration and preservation of the Royal College of Physicians of Ireland's Library and paintings (031238/290Z).
- Sir David Innes Williams** £300 000  
Royal Society of Medicine, London: towards the computerisation of the library of the Royal Society of Medicine (032470/290Z).

## TRAVEL GRANTS

- Dr Barbara L Brookes** £270  
Ashwell, Herts: for a visit to Edinburgh University Archives to obtain information on Duncan Macgregor and Frederic Truby King, and to give a paper at the 'New Zealand Past and Present' conference (031727/290Z).
- Dr Mary J Chamard** £750  
Port Alberni, British Columbia, Canada: for a visit to the Wellcome Institute for the History of Medicine, London for research on a book entitled *London's Forgotten Health Service: The Dispensaries, 1770-1948* (030997/289Z).
- Dr K E Collins** £250  
Wellcome Unit for the History of Medicine, University of Glasgow: for a visit to Antwerp, Belgium to attend the 32nd International Congress on the History of Medicine (031767/290Z).
- Dr R J Cooter** £500  
Wellcome Unit for the History of Medicine, University of Manchester: for a visit to the University of Victoria, Canada to attend meetings of the Canadian Historical Association and the Canadian Society for the History of Medicine, and for a visit to the University of British Columbia (031710/290Z).
- Dr Mary E Fissell** £470  
Wellcome Unit for the History of Medicine, University of Manchester: for a visit to Baltimore, USA to attend the annual conference of the American Association for the History of Medicine (031616/290Z).
- Dr J Henderson** £250  
Department of History and Philosophy of Science, University of Cambridge: for a visit to Leuven, Belgium to attend the International Economic History Association Conference (032270/290Z).
- Dr C O'Grada** £600  
Department of Economics, University College Dublin: for a visit to the Contemporary Medical Archives Centre at the Wellcome Institute for the History of Medicine, London to work on the Marie Stopes correspondence (031541/290Z).
- Dr Naomi H Pfeiffer** £301  
Department of History, University of Essex: for a visit to Madrid, Spain to attend a colloquium on 'The role of the state and of public opinion in sexual attitudes and demographic behaviour since the eighteenth century' (032300/290Z).
- Professor L Pyenson** £750  
Department of History, Université de Montréal, Canada: for two months, for a visit to the Wellcome Institute for the History of Medicine, London, and the University of Oxford to study archives relating to the disciplines of the history of medicine and science during 1900-1940 (031439/290Z).
- Dr A Scotti** £600  
Department of Philosophy, University of Bologna, Italy: for a visit to the Wellcome Institute for the History of Medicine, London in connection with his production of a catalogue of the alchemic and medical manuscripts of Czechoslovakia (031063/290Z).
- Dr Elizabeth G Winchester** £250  
Academic Unit, Wellcome Institute for the History of Medicine, London: for a visit to Kolybari, Crete to attend the EMBO International Workshop on the Molecular and Developmental Biology of Drosophila, to interview leading scientists in the field (031769/290Z).

## SYMPOSIA AND SEMINARS

- Dr Janet Browne** £500  
British Society for the History of Science: for a conference entitled 'The Scientific Revolution: Science, Technology and Medicine in the Early Modern Period' to be held at Keble College, Oxford in July 1990 (031062/290Z).
- Dr G Crossick** £1000  
Department of History, University of Essex: for a workshop on the social history of medicine to be held at the University of Essex (030932/289Z).
- Dr C Cullen** £3000  
The Needham Research Institute, Cambridge: for the Sixth International Conference on the History of Science in China, to be held in August 1990 (031489/290Z).
- Professor W R Lee** £1250  
Department of Economic and Social History, University of Liverpool: for a seminar series: 'The changing disease panorama: disease, medicine and society in western Europe' to be held at the University of Liverpool during 1990/91 (032392/290Z).
- Professor P Thompson** £4400  
Department of Sociology, University of Essex: for a course on oral history techniques for historians of medicine, to be held at the University of Essex in September 1990 (032518/290Z).
- Professor T E D Van Der Grinten** £1000  
Leiden Congress Bureau, The Netherlands: for the First European Congress on the History of Psychiatry and Mental Health Care, to be held in The Netherlands in October 1990 (031476/290Z).

## RESEARCH ASSISTANCE AND EXPENSES

- Dr Brigitte A Askonas** £1000  
Institute of Molecular Medicine, University of Oxford: for one year, for a series of interviews with leading immunologists (031384/290Z).
- Dr N Black** £76 021  
Department of Community Health, London School of Hygiene and Tropical Medicine: for three years, for a study of the history of hepatitis B policy in the UK from the 1960s to the 1980s, with *Dr Virginia S Berridge*, Department of Public Health and Policy and *Dr P M Stroug* (031877/290Z).
- D R Brothwell** £22 810  
Institute of Archaeology, University College London: for one year, for support for the MSc course in Archaeology and Ancient History at the Institute of Archaeology, London (031043/290Z).
- Professor M Bury** £53 523  
Department of Social Policy and Social Science, Royal Holloway and Bedford New College, University of London: for eighteen months, for a study of the development of geriatrics as a medical speciality, with *Professor Margaret Jefferys* (032375/290Z).
- Judi Caton** £507  
London Museums Service, Barbican, London: for one year, for a survey of pathological collections in London (031636/290Z).
- Dr Ann R David** £9350  
Manchester Museum, University of Manchester: for two years, for a study of diseases and remedies in ancient Egypt using the evidence of papyri and human physical remains (031001/289Z).
- Dr P Garnham** £2500  
University of Oxford: for one year, for a renewal of two fellowships at Green College for Wellcome Trust-supported research workers in the history of medicine (018977/288A).
- Dr A Hollman** £1000  
East Sussex: for three years, for a biography of Sir Thomas Lewis (030999/289Z).
- Dr K Kearns** £14 552  
Department of Geography, University of Liverpool: for one year, for a study of the letter books of William Henry Duncan MD, with *P Laxton* (030665/289Z).
- Dr D J Keene** £4260  
Centre for Metropolitan History, Institute of Historical Research, University of London: for eighteen months, for additional costs of a study of the social geography of the plague in seventeenth-century London (019204/289A).
- Professor W R Lee** £29 172  
Department of Economic and Social History, University of Liverpool: for fifteen months, for a study of urban mortality and change in Germany, 1870-1913 (032292/290Z).
- Dr I S L Loudon** £750  
Wellcome Unit for the History of Medicine, University of Oxford: for one year, for an extension of his study of maternal mortality and maternal care, 1850-1950 (015628/286A).
- Jan Loudon** £1903  
Wantage, Oxfordshire: for one year, for completion of an index of biographical notices in British medical journals and related sources 1750-1850 (032447/290Z).
- Dr G T Pollock** £300  
University of Warwick: for one year, for a study of the evolution of quarantine and its influence on international health cooperation (031212/290Z).
- Dr B H Tolley** £2688  
School of Education, University of Nottingham: for two months, for a history of Nottingham University Medical School (030890/289Z).

## UNIVERSITY AWARD

**Dr Catherine Crawford** £81 680  
 Department of History, University of Essex: for five years, for 1) Forensic medicine in France, 1750-1850, 2) Law and medicine in the eighteenth and nineteenth centuries: comparative case studies, under *Dr Ludmilla J Jordanova* (032345/Z/90Z).

## FELLOWSHIPS

**Dr Poonam Bala**  
 Department of History, School of Oriental and African Studies, London: for one year, for a study of imperialism and medicine in metropolitan Bombay, 1820-1935, under *Professor D J Arnold* (032174/Z/90Z).

**Dr Helen M Dingwall**  
 Department of Scottish History, University of Edinburgh: for three years, for a professional, social and economic history of the medical profession in Edinburgh, 1600-1726, under *Dr M Lynch* (032164/Z/90Z).

**Dr Mary J Dobson**  
 Wellcome Unit for the History of Medicine, University of Oxford: for three years, for an epidemiological history of southern and eastern Britain, 1600-1800, under *Dr R M Smith* (032392/Z/90Z).

**Dr D Gentilcore**  
 University of Cambridge: for three years, for a study of the systems of healing in early modern southern Italy, 1600-1900, under *Dr A R Cunningham, Wellcome Unit for the History of Medicine* (031019/Z/89Z).

**Dr O P Grell**  
 Department of History and Philosophy of Science, University of Cambridge: for eighteen months, for an extension of his study of the Dutch Republic and the development of English medicine, c.1590-1642, under *Dr R K French* (018493/Z/88A).

**Dr Debbie Kemmer**  
 Department of Economic and Social History, University of Edinburgh: for three years, for a study of the decline in infant mortality in early twentieth-century Scotland, under *Professor M Anderson* (032190/Z/90Z).

## RESEARCH LEAVE FELLOWSHIP

**Dr W F Bynum**  
 Wellcome Institute for the History of Medicine, London: for four months, for a study of medicine in the modern world (031067/Z/90Z).

**Dr P Kreager**  
 Department of History, University of Oxford: for eighteen months, for an early population analysis: An historical introduction, under *Professor E A Wrigley* (031002/Z/89Z).

**Dr A H Maehle**  
 Wellcome Institute for the History of Medicine, London: for three years, for a study of pharmacological and toxicological research in eighteenth-century Britain, under *Dr W F Bynum* (031048/Z/90Z).

**Dr Ornella Moccucci**  
 Wellcome Institute for the History of Medicine, London: for three years, for a study of childbirth in twentieth-century Britain, under *Dr W F Bynum* (032137/Z/90Z).

**Dr A J Newman**  
 Wellcome Unit for the History of Medicine, University of Oxford: for two years, for a study of Persian anatomical knowledge in the medieval period, under *Dr R M Smith* (031008/Z/89Z).

**Dr P Palladino**  
 Wellcome Unit for the History of Medicine, University of Manchester: for three years, for a comparative analysis of the development of genetics in Britain and the United States, 1919-1939, under *Dr J Hanwood* (032188/Z/90Z).

## RESEARCH SCHOLARSHIPS

**P D Bartlett**  
 Faculty of Laws, University College London: for two years, for standards of committal of paupers to nineteenth-century lunatic asylums, under *Professor W L Twining* (032362/Z/90Z).

**Sandra Cavallo**  
 Wellcome Institute for the History of Medicine, London: for seven months, for an extension of her study of the founding and functions of the voluntary hospitals in eighteenth-century England, under *Dr W F Bynum* (014067/Z/84A).

**M Harrison**  
 Wellcome Unit for the History of Medicine, University of Oxford: for one year, for a study of public health and medical research in India, under *Dr P J Windling and Dr Margaret Pelling* (032182/Z/90Z).

**Lara V Marks**  
 Wellcome Unit for the History of Medicine, University of Oxford: for six months, for an extension of her study of immigrant women's health in the East End of London, 1810-1930, in particular Jewish and Irish women, under *Dr I S L London and Dr Anne R Summers* (017260/Z/87A).

**Dr A C Power**  
 Wellcome Institute for the History of Medicine, London: for one year, for an MSc in the History of Medicine (taught course), under *Dr W F Bynum* (032141/Z/90Z).

**F Salmon**  
 Wellcome Unit for the History of Medicine, University of Cambridge: for one year, for a study of medicine and natural philosophy in thirteenth and fourteenth century Europe, under *Dr R K French* (032096/Z/90Z).

**Sonia Uytendoeven**  
 Wellcome Unit for the History of Medicine, University of Cambridge: for three years, for a study of experimental physiology at Cambridge University, 1870-1914, under *Dr A R Cunningham* (032257/Z/90Z).

**M W Weatherall**  
 Wellcome Unit for the History of Medicine, University of Cambridge: for three years, for a study of scientific medicine in twentieth-century Cambridge, under *Dr R K French* (032258/Z/90Z).



## STAFF

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E J Freeman, BA, ALA, Librarian  
 R M Price, MA, ALA, Deputy Librarian  
 N M W T Allan, MA, PhD, ALA, Curator (Orientals Manuscripts and Printed Books)  
 D Brady, BA, Assistant Curator (Iconographic Collections)  
 Lesley Hall, BA, Senior Assistant Archivist (Contemporary Medical Archives Centre)  
 Katherine Hooper, MA, DipLib, Assistant Curator (Early Printed Books) (Until 21/9/90)  
 Patricia Hully, BA, FLA, Editor, Current Work in the History of Medicine  
 Jeannette Lake, BA, ALA, Head (Modern Medicine and Bibliographical Services)  
 R J Palmer, BA, PhD, ALA, Curator (Western Manuscripts)  
 W M Schupbach, MA (Cantab), MA (Lond), Curator (Iconographic Collections)  
 Julia Sheppard, BA, Archivist (Contemporary Medical Archives Centre)  
 Brenda Sutton, BA, DipLib, Head (Reader Services)  
 H J M Symons, MA, ALA, Curator (Early Printed Books)  
 D Wujastyk, BSc, DPhil, Associate Curator (South Asia — Oriental Manuscripts and Printed Books)

**Administration**

S E Emberton, MBIM

## WELLCOME INSTITUTE FOR THE HISTORY OF MEDICINE

The major event in the life of the Institute this year was its evacuation from the Wellcome Building. This complicated operation was completed successfully between January and March 1990. Temporary accommodation for the Library was established at 200 Euston Road (Bentley House); the Academic Unit and Administration moved to the fourth and fifth floors of Tavistock House South; and accommodation for Wellcome fellows and visiting scholars was found in the Rockefeller Building, courtesy of University College London. The Library re-opened for public use on 23 April 1990. Staff are to be congratulated on the generally good-humoured and professional way in which they faced the inevitable strains and stresses of a difficult and disruptive period.

During the year Mr Stephen Emberton had to withdraw from the administration of the Institute as his duties as Public Activities Development Manager for the planned Wellcome Centre increased. His replacement in a new administrative structure for the Wellcome Institute has yet to be appointed.

**The Library**

A period more disruptive to ordinary library life and routines could scarcely be imagined. Three months' closure and the exigencies of temporary accommodation produced effects on the public service which will take time to repair. The need to move hardware and to employ key staff on other duties contributed to some delays in the implementation of the Automated Library System, while gaps and delays occurred in the ongoing routines of acquisitions and cataloguing.

On the positive side, and following a major policy reappraisal by the Trustees' advisory panels and committees, a number of major projects were begun. Substantial funding over two years was earmarked for sorting and processing the very large reserve stock of prints and drawings in the Enfield Library Store. A major project to produce a videodisc catalogue of up to 55 000 images from the Iconographic Collections was begun in partnership with Media Projects International Ltd. When complete, this disc facility will ease greatly the lives of picture researchers and other image-seekers, as well as lighten the work of staff. The Trustees also agreed to finance a retrospective conversion to machine-readable form of the manual record of the Library's holdings of books printed before 1851. This project will be undertaken in partnership with OCLC in Dublin, Ohio.

Bentley House, 200 Euston Road, began its life as the Library's principal store as well as the interim location for the public reading room. Experience of the building promises well for its principal use when connected to the main Wellcome Building by a service tunnel under Euston Road.



The Library's acquisitions for this year include a drawing of a professor (at present unidentified) giving clinical instruction to students, probably in a Paris hospital around 1820.



A professor giving clinical instruction to medical students, probably in Paris around 1820. The drawing shows the development of metropolitan hospitals from the hostels and hospices of the early eighteenth century to places of medical teaching and research in the years after the French Revolution. Pen and ink drawing, 14 x 20.4cm attributed to Jean-Henri Marlet (1771 - 1847).

### The Academic Unit

The Academic Unit has managed to continue its formal teaching commitments through University College London and to run its wider academic programme from a variety of locations. A record number (28) of Intercalated BSc students read for the History of Medicine degree. The closure of the Library put special burdens on both the students and their teachers, especially in connection with their projects; in the end, the quality of both projects and examination papers was better than average, and five students achieved First Class Honours. Bursaries from the Wellcome Trust were available for more than half the students. In addition, members of the Unit teach courses for other science and arts undergraduates as well as postgraduate seminars for the MSc programme. The latter is offered through the London Centre for the History of Science, Technology and Medicine.

Three theses were examined: Lesley Hall's PhD thesis, T H Turner's MD thesis, and Bernard Brais's MPhil thesis. Each is being revised for publication as a monograph. Five new research students and three new research fellows joined an existing group of 17 students and fellows already in residence. Three scholars from abroad spent periods of sabbatical working through the Unit. The *esprit* in the new Postgraduate Centre in University College has been excellent, although, as usual, there are more bodies than desks. In addition to the Wellcome Trust, funding was provided by the King's Fund, the Special Trustees of the Westminster Hospital Group and the Fulbright Commission.

Staff research productivity remains at a very high level. Among several volumes and more than 50 papers may be noted the collection of essays edited by Vivian Nutton, *Medicine at the Courts of Europe, 1500-1837* (Routledge, 1990), based on a symposium organised in 1986 by the Institute and the Herzog August Bibliothek, Wolfenbuttel, Germany.

The Institute's programme of seminars and symposia has been maintained, with only a modest diminution in scale. The Research Seminar for 1989-90 had as its theme *Medical Lives and Practice*, and now meets in the Library's Reading Room in Bentley House. Six all-day symposia were held, including one on Meteorology and Medicine in conjunction with the History Section of the Royal Meteorological Society. During the development of the Wellcome Building alternative venues have had to be found, including the King's Fund Centre in Camden Town and the National Hospital, Queen Square. Other themes included the *Popularisation of Science, History of Medical Ethics, History of Hysteria, Infant and Child Care and Mortality, 1850-1940*, and *Palaeopathology and Medical History*.

Other notable events included two public lectures; that by Professor Richard Lovell of the University of Melbourne offered a fascinating preview of his forthcoming biography of Lord Moran, whose papers are in the Institute's Contemporary Medical Archives Centre. Dr Robert Kark, Rush Presbyterian, St Luke's Medical Center, Chicago, gave the first Amalie and Edward Kass Lecture, a new biennial series endowed by the Kass children. It was a moving occasion, as many of Edward Kass's British friends gathered to pay their respects to him. His death three months later deprived the Institute of a loyal friend.

The informal faculty exchange arrangements with the Institute of the History of Medicine, Johns Hopkins University were continued, with Dr W Bynum spending a month in Baltimore. A similar scheme has been started with the Department of the History of the Health Sciences, University of California at San Francisco, with Dr Roy Porter representing the Institute. Staff at the Unit gave a number of external lectures abroad including Canada, Holland, Australia, France, Spain, Portugal and the United States.

Professor Eldryd Parry completed his five year contract as Director of the Wellcome Tropical Institute at the end of September 1990. The Tropical Institute had been originally created to modernise and develop the Wellcome Museum of Medical Science when it was taken over from the Wellcome Foundation Ltd. During the five years of his directorship a series of moves for the museum and laterly for its offices caused disruption of its work until, ultimately with the development of the Wellcome Building complex, the Trustees decided to disband it as a separate entity. The Wellcome Tropical Institute Museum will be the resource from which the Wellcome Tropical Videodisc Project is developed.

Professor Parry's special interest in Distance Learning is now being continued from a base at the London School of Hygiene and Tropical Medicine, with continuing support from the Trust for the next two years.

The Tropical Historical Library and Archive, started before his appointment, is now absorbed into the Wellcome Institute for the History of Medicine. This will be the resource for the history of tropical medicine activities now being encouraged by the Trust alongside the videodisc development.

Professor Parry's great experience of Africa has meant that the Distance Learning Programme, developed by him and his colleague Charles Engel in the Tropical Institute, has been adopted in a number of countries in Africa, notably Ethiopia, Zimbabwe, Ghana and Tanzania. There are now texts on the following subjects available: *Acute respiratory infections; Anaemia in infancy; Anaemia in Pregnancy; Burns; Diarrhoea in children; Drainage of the pleural cavity; Epidemiology; Malaria; Management; Obstructed labour; Red eye and common blinding diseases; Sexually transmitted diseases; and Surgical emergencies.*

### Tropical Diseases Videodisc Project

During the year it was agreed to fund the development of an interactive videodisc to replace the Museum of the Wellcome Tropical Institute. The contents of the Museum together with new material from a variety of other sources will be placed on a combination of videodisc and computer. This will make the collection portable and produce a more versatile resource for teaching and learning. £760 000 was allocated during 1989/90 to the project by the Trustees.

The Trustees see this as a cooperative project facilitated by the Trust rather than an initiative that is exclusive to the Trust. This philosophy is in line with the fact that much of the visual material in the former Museum has been donated to the Trust, free of charge, by many scientists over the years.

The project is led by Dr J A Longstaffe who is Director of the Computers in Teaching Initiative Centre for Medicine in the University of Bristol. A team of computer programmers and systems designers led by Dr M Whittlestone and Professor D Ingram, Professor of Medical Informatics at St Bartholomew's Hospital Medical School, will provide the bulk of software infrastructure and specify the necessary hardware. Dr P Harkin, University of Leeds, will develop a tutorial authoring system which will enable university staff to produce their own interactive learning modules using the visual and computer databases. A group of doctors and programmers led by Dr J Poyser at the University of Sheffield will develop a computer programme which will use 'computer games' philosophy to generate problems of diagnosis and case management to challenge and train users by constructing an unlimited series of simulated patients from the database.

Dr S Lucas, Department of Pathology, University College and Middlesex School of Medicine, will provide a definitive archive of illustrations of pathological and histological material appropriate to tropical medicine.

Two-thirds of tropical medicine concerns problems of maternal and child health. The Institute of Child Health, University of London (Dr R Richardson and Dr Jann Marshall) has therefore agreed to contribute to the project by allowing access to the valuable slide archive at the Hospital for Sick Children and its Teaching Aids at Low Cost centre and will produce tutorials in this important area of tropical medicine.

The first year of the project will largely consist of building the archive and developing the computer software to the point where the project can receive material from others and the development of tutorials can start. As the project develops, it is planned to involve many other individuals from the university system to extend the scope of this large and ambitious venture.

## WELLCOME TRUST FILM UNIT

During the year Anthony Palmer undertook to make a film entitled *The Wellcome Legacy*. This film, now complete, gives a synopsis of the objectives of Sir Henry Wellcome's will and the fulfilment of its purpose by his Trustees. It uses the following three major projects to illustrate the scientific work of the Trust;

- the developmental biology unit in Cambridge
- the care and study of the premature infant at University College London
- the joint KEMRI and Wellcome Trust Unit at Kilifi in Kenya which is working on malaria.



A scene from the film *The Wellcome Legacy*. Dr Kevin Marsh, leader of the clinical research team at Kilifi where the team is researching into severe *Plasmodium falciparum malaria* in children.

Other parts of the film show the growth of the Trust and the care and use of Sir Henry Wellcome's collections. It runs for 25 minutes and is an excellent production.

Two of the Trust's earlier films on the history of sleeping sickness have received awards. *Entebbe Encounter* was awarded Best Camera at the 1990 International Visual Communication Association Festival, and *The Sleep of Death* was awarded a certificate for creative excellence at the US Industrial Film and Video Festival.

The use of these films and some of those on more biological topics has been examined by several university departments and many copies have now been sold at cost price or given away to suitable institutions.

The importance of film material as an archive for the history of medicine has also been examined through a fellowship to Dr M Clark to catalogue films on the cardiovascular system, and more recently to extend this catalogue to cover a wider subject base. Dr Clark has also produced a book entitled *Medical, Biomedical Science and History. A Catalogue of Films and Videos Available for Purchase*. It gives details of the films made by the Trust film unit and its predecessor, the film unit of the Wellcome Foundation Limited. Many of these films are available on video.

The activities of the film unit now continue on a contractual basis with Frontrunner Films, a company established by Anthony Palmer.

## MEDALS AND PRIZES

## The Wellcome Prize in Physiology

The Wellcome Prize in Physiology was instituted in 1986 and is intended to encourage young physiologists to bring their work to general notice. The prize, which is biennial, is in the form of a lecture, an award of £500 and a medal.

The award for 1990 has been made to Dr A Y King, University Laboratory of Physiology, Oxford. His lecture, given at the Semi-Annual General meeting was titled "A map of auditory space in the mammalian brain: neural computation and development".

## Association of Military Surgeons of the United States of America

The Sir Henry Wellcome Medal and Prize, instituted by Sir Henry Wellcome in 1916, is awarded annually by the Council of the Association of Military Surgeons of the United States of America, Washington, D.C. The recipients are Medical Officers of the Armed Forces of the United States of America or the US Public Health Service. The medal and prize are awarded for an essay or report on original research dealing with military applications of medicine.

The medal and prize for 1990 was awarded to Captain Charles M Evans, Jr, MD, PhD. Captain Evans is Chief of the Tumour Biology Section of the National Cancer Institute at the National Institutes of Health in Bethesda and a captain in the Commissioned Officers Corps of the US Public Health Service. His prize winning essay was entitled 'Leukoregulin: a new biotherapeutic cytokine in the search for more effective antiviral pharmacological agents'.

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