

## Philip Leverhulme Prizes

The Philip Leverhulme Prizes were set up for outstanding young scholars of substantial distinction and promise commemorating the late Third Viscount Leverhulme who died in 2000.

The fields of research honoured by this year's awards are:

- ▶ [Biochemistry and Molecular Biology](#)
- ▶ [Earth, Ocean and Atmospheric Sciences](#)
- ▶ [Economics](#)
- ▶ [Information and Communications Technology](#)
- ▶ [Modern History since 1800.](#)

### ▶ Biochemistry and Molecular Biology

#### **Dr Dario R Alessi**

*MRC Protein Phosphorylation Unit, School of Life Sciences, University of Dundee*

For his elegant contributions to understanding the mechanisms of cellular signalling, where a molecule cues the response of a cell to the behaviour of other cells or to objects in its environment. In particular, Dr Alessi has used a powerful combination of biochemical, molecular and genetic analysis to unravel the signalling pathways regulated by the hormone insulin, and other chemical factors that regulate animal growth.

<http://www.dundee.ac.uk/lifesciences/mrcppu/pi/dra.htm>

#### **Dr Paula J Booth**

*Department of Biochemistry, School of Medical Sciences, University of Bristol*

For her development of a unique combination of skills in physical chemistry and biochemistry to obtain novel results in the field of membrane structure and function. Dr Booth's research has led to new insights in how the complex arrangements of proteins and fat molecules fold to create a membrane that exists around every cell.

<http://www.bch.bris.ac.uk/staff/booth/index/index.htm>

#### **Dr Benjamin G Davis**

*Department of Chemistry, University of Oxford*

For his development of novel strategies for synthesising desired complexes of carbohydrates and proteins, a challenging but important area of contemporary chemical biology that required considerable site selectivity and control during the synthesis. Dr Davis' work has huge potential in the development of novel therapeutic applications, for example, carbohydrate-mediated targeted drug delivery and novel anti-biotic strategies.

<http://www.chem.ox.ac.uk/researchguide/bgdavis.html>

**Dr Jan Löwe**

*MRC Laboratory for Molecular Biology, Hills Road, Cambridge*

For his development of multidisciplinary approaches to structural biology that have led to a better understanding of the relationships between cellular structure and function. In particular, Dr Löwe's use of x-ray crystallography and electron microscopy to probe the architecture of cells, and how the internal structure of both simple and more highly evolved cells are organised, which has forced us to look again at their evolutionary and functional relationships.

<http://www2.mrc-lmb.cam.ac.uk/groups/JYL/index.html>

**Professor James H Naismith**

*Centre for Biomolecular Sciences, University of St Andrews*

For his major contribution to structural chemistry that have led to a better understanding of the role of carbohydrate chemistry in biological systems. In particular, Professor Naismith was the first to determine the structure of all enzymes involved in the biosynthesis of one carbohydrate, an achievement that is generating challenging new insights into enzyme mechanisms that are likely to influence future developments in carbohydrate chemistry.

**Professor Andreas Schedl**

*Institute of Human Genetics, University of Newcastle upon Tyne*

For the originality of his contributions, and the insight his work has provided to our understanding of the molecular control of developmental processes in animals, which in many cases have direct relevance to human genetic disease. Professor Schedl's research has shown how the proteins encoded by genes control the morphological changes that occur in developing tissue, and how in some cases this development becomes faulty and leads to disease.

**► Earth, Ocean and Atmospheric Sciences****Dr Dario Alfè**

*Department of Geological Sciences, University College London*

For his work on deep earth geophysics and computational mineral physics. At the age of 34 Dr Alfè has achieved international recognition for his work on the nature of the Earth's core. He has succeeded in calculating from first principles, with great precision, the properties of core materials at thousands of degrees Centigrade and millions of atmospheres pressure. Dr Alfè's research has revolutionised our understanding of the Earth's core, and the international community of geodynamo researchers and mantle dynamicists are now re-examining their own work in the light of his results.

<http://chianti.geol.ucl.ac.uk/~dario>

**Dr Alan Cooper**

*Department of Zoology, University of Oxford*

For his work on ancient DNA and evolution. Dr Cooper is an exceptional young researcher and a leading authority in the field of ancient DNA. He has made outstanding contributions to the fields of evolution and extinction, and recently

led a team that was the first to sequence the entire mitochondrial genome of an extinct species. Dr Cooper's research combines ideas from geology, paleontology, natural history and molecular evolution to generate original and innovative approaches to major scientific issues in the areas of ancient DNA and macroevolution. He has pioneered a new area of paleoecological research using DNA from permafrost-preserved bones, which is currently attracting major international collaboration as it records the effects of climate change and extinctions over geological timeframes.

**Professor Stuart N Lane**

*School of Geography, University of Leeds*

For his work on numerical modelling and remote sensing of fluvial processes. Professor Lane is internationally recognised as one of the leading researchers of his generation within the field of geomorphological and numerical modelling of complex river systems. Professor Lane is best known for his work on analytical photogrammetry and computational fluid dynamics, and he has been at the forefront of UK and international developments in these areas, providing the subject with new approaches to difficult numerical problems. He is currently engaged in research on flooding and flood management in the UK – a major contemporary problem.

<http://www.geog.leeds.ac.uk/people/s.lane>

**Dr David Marshall**

*Department of Meteorology, University of Reading*

For his work on physical oceanography. Dr Marshall is one of the leading physical oceanographers in the UK today, and his work is recognised on an international level. His research is characterised by great imagination and originality, which has enabled him to make significant contributions to a number of fundamental problems in the movement of water within the ocean basins. One of his most important contributions has been to show clearly how strong currents interact with the topography of the ocean floor. He approaches these problems through powerful analytic models and simplified numerical models which elucidate the fundamental mechanisms at work in these highly complex situations.

<http://www.met.rdg.ac.uk/~ocean/>

**Dr Martin Siegert**

*School of Geographical Sciences, University of Bristol*

For his work on glaciology. Dr Siegert's research has been fundamental in advancing our understanding of the behaviour of past and present ice sheets, especially through the identification and characterization of lakes buried beneath thousands of metres of Antarctic ice. He is perhaps best known for his work on conditions in and above subglacial Lake Vostok, but has also shown the presence of many more such lakes, and has shown the potential of these lakes in the dynamics of the Antarctic ice sheet. This work has brought him widespread international recognition, and involvement in major collaborative international programmes.

<http://www.ggy.bris.ac.uk/research/glaciology/personalpp/siegert/mashome.html>

**Dr Ralf Toumi**

*Department of Physics, Imperial College*

For his work on atmospheric science. Dr Toumi is one of the most creative young scientists in the world working on problems of atmospheric chemistry. His innovative approach has established him as a key contributor to this research area, and he has also changed our understanding of a number of important aspects of chemistry and climate change. Dr Toumi was the first to examine a possible climate-chemistry feedback between lightning, ozone and temperature. He identified increased lightning activity as a major source of uncertainty in future tropospheric ozone levels in the context of climate change. Dr Toumi also initiated a study of the role of soot within the atmosphere which recognised the potential of reactive soot as a catalytic and non-catalytic surface reagent. Dr Toumi's work is characterised by an impressive combination of range, originality and productivity.

<http://www.sp.ph.ic.ac.uk/~rtoumi>

► **Economics**

**Professor Paul Dolan**

*School of Health and Related Research, University of Sheffield*

For his work on health economics. Professor Dolan has proven himself to be a most remarkable young scholar over the past decade or so and he is highly regarded in the field of Health Economics. He is, perhaps, best known on an international level through his work on the Quality Adjusted Life years, associated with different degrees of health state impairment. Professor Dolan has made significant theoretical and methodological inputs to health outcome valuations, applying theoretical insights to practical health policy contexts. He has also written incisively on equity and fairness in the field of medical care, and demonstrated the relevance of his work to a broad community.

**Dr Gilles Duranton**

*Department of Geography and Environment, London School of Economics*

For his work on economic geography. Dr Duranton has built up an international reputation for his ability to engage in both theoretical and empirical economic analysis. His work is at the interface of economics and geography, and he has produced a most impressive collection of well-respected articles in top journals. In particular his work on urban systems and agglomeration has been ground breaking.

**Dr Richard J Green**

*Department of Economics, University of Hull*

For his work on industrial economics. Professor Green's international reputation was first established through his 1992 co-authored work (with David Newbery) in which he predicted the consequences of competition in the British electricity market. This work had a major impact on how British electricity generators

dealt with the introduction of competition in this deregulated industry. He has since gone on to publish widely on deregulation within many different international electricity markets. Professor Green has a varied background (having worked both within academia and industry), and has an impressive command of both theoretical economics and practical applications.

<http://www.hull.ac.uk/hubs/staff/profiles/green.htm>

**Professor Jonathan R W Temple**

*Department of Economics, University of Bristol*

For his work on macroeconomics. At the age of 30 Professor Temple has already published an impressive number of papers in leading international journals. His work lies mainly in the rapidly advancing area of economic growth, and more particularly in the area of developing economies, and is characterised by both range and dynamism. His work on growth and convergence has been widely cited, not only by people in the field of growth, but also by those outside it, and it is recognised as being an extremely useful tool for many economists.

<http://www.ecn.bris.ac.uk/www/ecjrw>

► **Information and Communications Technology**

**Professor Graham D Finlayson**

*School of Information Systems, University of East Anglia*

For his work on the computation of colour. Professor Finlayson leads the Colour Research Group in the School of Information Systems at UEA, which is the leading centre for colour imaging research in the UK. His research looks at how computer science techniques can be used to understand colour processing and studies the various applications this may have, such as computational methods for colour object recognition. At the age of 30 Professor Finlayson was appointed to a Chair in recognition of the strength and influential nature of his work, which has had a major impact on the computer vision/image processing community. His publications have drawn much international attention, and he has already attracted close to one million pounds in funding from both industry and research councils.

**Professor Bashar Nuseibeh**

*Computing Department, The Open University*

For his work on software engineering. Professor Nuseibeh has made seminal contributions to the field of software engineering. His work is widely cited and highly regarded by the international community and is published in the top journals in his field. Two of the major contributions that Professor Nuseibeh has made are in the field of requirement engineering. In this groundbreaking work he developed two frameworks to assist software development: one to manage inconsistencies in specifications and the other the ViewPoints framework, which provides a tool for managing the viewpoints of different multiple stakeholders. A testimony to the impact that Professor Nuseibeh's work has had is borne out in his close links with many international organisations, such as NASA.

<http://mcs.open.ac.uk/ban25>

► **Modern history since 1800**

**Dr Richard H Drayton**

*Corpus Christi College, University of Cambridge*

For his work on the history of Britain, the British Empire and the history of science.

Dr Drayton is best known for his book "Nature's Government", which spans the fields of botany, science, ideas, political economy and empire. It has attracted international attention and praise, not only from historians, but also from scholars in a wide range of fields. The book combines breadth of scope with meticulous detail, placing political and scientific history in its deeper cultural setting. Dr Drayton is currently working on the role of the Caribbean in the modern world and French colonial expansion, especially in the West Indies, and his contributions to these related fields are eagerly awaited.

[http://www.hist.cam.ac.uk/academic\\_staff/further\\_details/drayton.html](http://www.hist.cam.ac.uk/academic_staff/further_details/drayton.html)

**Dr Matthew Hilton**

*Department of Modern History, University of Birmingham*

For his work on nineteenth- and twentieth-century social history. Dr Hilton is working at the forefront of one of the fastest growing and most innovative areas of historical research, namely the history of consumption and material culture. His work straddles cultural and economic history and is characterised by a broad analytical approach backed by precise and insightful detail. Matthew Hilton's comparative and inter-disciplinary approach to his work has secured him a reputation as a leading practitioner in this field.

**Dr Timothy J Minchin**

*Department of Modern History, University of St Andrews*

For his work on post World War II American history. Historians in both the UK and USA pay tribute to Dr Minchin's reputation. His written work has addressed a number of major issues in US history: civil rights in the South, Black labour and the evolution of labour unionism. His ground-breaking research in these fields, especially on the relationship of race and class, has provided a radically different slant on traditional perspectives, illuminating the subjects in an original and distinctive way. Dr Minchin's drive and energy have most recently focussed on a unique study of the link between unions and the environmental movement in a US labour dispute.

**Dr Martin Thomas**

*School of History, University of the West of England*

For his work on French international and imperial history. The quality of Dr Thomas' work has served to secure him a position at the forefront of the younger scholars working in the field of international history, and the respect with which he is held by colleagues in the UK, France and North America is well-earned. Much of his prolific work to date has focussed on France but it has also encompassed a much broader canvas, shedding light on the way that French history has intersected with that of other nations. His range of interests

and expertise are further demonstrated by his present project on the inter-war period in the Middle East.

**Dr J Adam Tooze**

*Jesus College, University of Cambridge*

For his work on modern European history and economic history. Dr Tooze's innovative work on German economic history combines economics with political and cultural history in a way which is both scholarly and accessible. He has not only been able to shed light on the evaluation of German economic development in a comparative perspective, but has also contributed to the debate on the way in which economic history data is perceived. His work has used economic data and theories of the state to add a new dimension to current writing on German history, and he is internationally recognised as a leading economic historian. In addition to his work on the Third Reich Dr Tooze is now turning his attention to European and American history.

**Dr Maiken Umbach**

*Department of History, University of Manchester*

For her work on the cultural and political history of modern Germany. Dr Umbach has already established a formidable reputation as a historian of eighteenth and nineteenth century Germany, and her work has been influential in Britain, Germany and the USA. She has taken a creative and original approach in her study of German federal traditions and regionalism challenging common assumptions about the inevitability of political centralism and the nation state in modern German history, and exploring the range and contingency of alternative cultural idioms and political traditions. Her new project aims to expand on these themes and the cultural politics of a later period in a comparative European framework

<http://www.art.man.ac.uk/HISTORY/staff/umbach/home.htm>