



SUMMER NEWSLETTER 2010

SPECIAL EDITION

INTRODUCING THE NEW SIZE AND SHAPE OF THE
JAMES MARTIN 21ST CENTURY SCHOOL...



DEAR FRIENDS AND COLLEAGUES

It gives me great pleasure to introduce this special edition of our termly newsletter with the exciting news about the results of the James Martin 21st Century School Challenge. We are delighted to announce that the Challenge, which arose from Dr James Martin's visionary and most generous pledge of US\$50 million to match new donations to the School, was an unprecedented success.

Over the course of a year, despite its launch at a time of global financial uncertainty (March 2009), the Challenge clearly captured the imagination of donors and academics alike, attracting over 35 applications for matched funding. A wide range of donors from five continents rose to the Challenge, including well-known philanthropists, various foundations and several corporations.

We were fortunate to be able to select 19 projects which best met our criteria. This new research arising from the matched funding will dramatically increase the size and shape of the School. Our next challenge will be to integrate and develop these wide-ranging programmes and institutes into the greater community of the James Martin School and also build vibrant interdisciplinary research teams which have a global impact in addressing 21st century challenges.

Our first step in this process is to cluster the research projects under four broad themes focusing on the frontiers of: Energy and Environment; Ethics and Governance; Health and Medicine; and Technology and Society. The themes are not binding – as an interdisciplinary research centre, many of our programmes conduct research across these broad categories – but rather they establish avenues of access into our research activities.

The next couple of months will be an incredibly exciting time for everyone involved with the School as we gear up our recruitment processes, build websites, and facilitate introductions for all the new research projects. Our website will continue to be updated as these stages progress.

I look forward to your growing involvement.

With best wishes,
Ian Goldin



TIMES ONLINE

HOW TO CHANGE THE WORLD,
ONE START-UP AT A TIME

An Oxford-based research funding scheme has raised \$100 million to investigate some of the biggest issues facing the world, including climate change, stem-cell biology, the mass production of edible plants suitable for desert environments and even understanding the greed of bankers that some blame for causing the credit crunch.

Twenty new research projects are expected to act as incubators for start-up companies in the pharmaceutical, energy and high-tech sectors.

The initiative has been led by the Pulitzer Prize nominee James Martin, who last year committed \$50 million of his own money to the university scheme if other donors matched his pledge. Business chiefs such as Bill Gates, George Soros and Adrian Beecroft, a former chief investment officer at Apax Partners, have donated between \$1 million and \$5 million to help to fund the new projects...

Nic Fildes

OXFORD RESEARCH FUNDING SCHEME SCORES RAPID \$100M SUCCESS

FUTURE-PROOFING COSTS,
BUT OXFORD CAN COVER IT

University match-funds computer scientist's \$50 million donation.

The University of Oxford has secured matched funding for a \$50 million (£32.6 million) donation in just one year despite the economic crisis. Oxford alumnus James Martin, a computer scientist, promised \$50 million to the university on the condition that it was matched by pledges from other sources.

A year later, having tapped 30 donors – including charities, corporations and financiers such as George Soros and Adrian Beecroft – for at least \$1 million each, the university has hit its target.

Melanie Newman



THE INDEPENDENT

COMPUTER TYCOON'S \$50M BEQUEST SECURES
OXFORD RESEARCH INTO SCIENCES

A technology entrepreneur who lives on his own private island off Bermuda yesterday became the latest wealthy benefactor to Oxford University, after his pledge to give the venerable institution \$50m if an equal sum could be raised by like-minded philanthropists and donors led to a flood of recession-busting contributions.

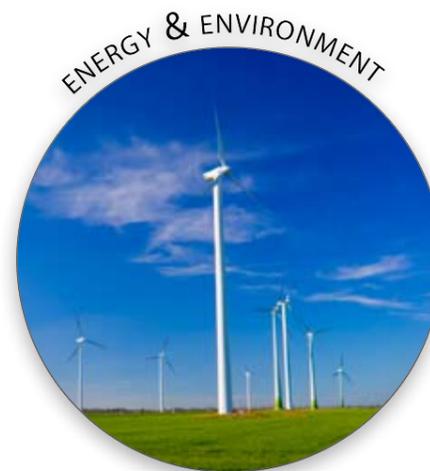
The \$100m (£65m) fund set up by Dr James Martin, a Pulitzer Prize-nominated author from Ashby-de-la-Zouch who is considered one of the world's foremost computer scientists, will be used to finance a catalogue of research projects aimed at resolving pressing global problems, ranging from methods of forecasting economic shocks to the preservation of plant species...

Richard Garner and Cahal Milmo

FOUR BROAD THEMES FOR TACKLING 21ST CENTURY CHALLENGES...

The challenges of the 21st century are complex and interconnected in ways that may yet be unanticipated. The James Martin 21st Century School is founded on the principle that deep research, fostered in a collaborative atmosphere, will yield fresh insights and practical solutions to address these complex challenges.

Our future-orientated research is clustered under four broad themes...



ENERGY & ENVIRONMENT

Wide-ranging research initiatives aimed at ensuring a more sustainable future.

- ▶ 21st Century Ocean Institute
- ▶ *NEW:* Institute of Biodiversity
- ▶ Institute for Carbon and Energy Reduction in Transport
- ▶ *NEW:* Institute on Plants for the 21st Century
- ▶ Oxford Centre for Tropical Forests
- ▶ *NEW:* Oxford Geoengineering Programme
- ▶ *NEW:* Programme on Globalising Tidal Power Generation
- ▶ *NEW:* Programme on Modelling and Predicting Climate Change
- ▶ *NEW:* Programme in Nuclear and Energy Materials
- ▶ *NEW:* Programme on Solar Energy: Organic Photovoltaics



ETHICS & GOVERNANCE

Research programmes that aim to provide new frameworks for analysing and addressing the challenges of a complex and interconnected world.

- ▶ Future of Humanity Institute
- ▶ Oxford Institute for Ethics, Law and Armed Conflict
- ▶ Programme on Ethics of the New Biosciences
- ▶ *NEW:* Programme on Mind and Machine



HEALTH & MEDICINE

Research into the latest technologies and approaches to health challenges of the future.

- ▶ Future of the Mind Institute
- ▶ *NEW:* George Centre for Healthcare Innovation
- ▶ Institute for Emerging Infections
- ▶ *NEW:* Institute for Vaccine Design
- ▶ Institute of Nanoscience for Medicine
- ▶ Oxford Stem Cell Institute
- ▶ Particle Therapy Cancer Research Institute

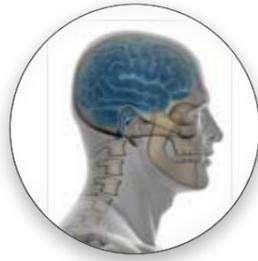


TECHNOLOGY & SOCIETY

Research programmes examining major demographic change and socio-economic drivers, as well as advancing directions and impacts of new technologies.

- ▶ *NEW:* Institute for Economic Modelling
- ▶ *NEW:* Institute for the Future of Computing
- ▶ Institute for Science, Innovation and Society
- ▶ International Migration Institute
- ▶ Oxford Institute of Ageing
- ▶ *NEW:* Oxford Institute for Global Economic Development
- ▶ *NEW:* Programme on Computational Cosmology
- ▶ *NEW:* Programme on the Future of Cities

HEALTH AND MEDICINE



FUTURE OF THE MIND INSTITUTE

Director:
Professor Baroness Susan Greenfield, Professor of Pharmacology

- ▶ One of the major challenges of the 21st century is to discover a cure for common neurodegenerative disorders, such as Alzheimer's and Parkinson's diseases. The Institute for the Future of the Mind has been developing a completely novel approach to understanding neurodegeneration, with the ultimate aim of helping to develop treatments for such disorders. Research activity is driven by the theory that already identified naturally occurring molecules could exert a trophic action in the developing brain that becomes toxic when aberrantly activated in maturity.



GEORGE CENTRE FOR HEALTHCARE INNOVATION

Directors:
Professor Stephen MacMahon, Professor of Cardiovascular Medicine
Professor Robyn Norton, Professor of Public Health

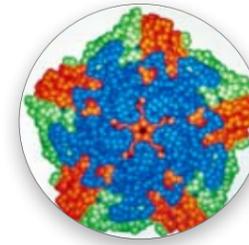
- ▶ For the foreseeable future, health care systems in all regions of the world will face an increasing demand for essential health services, largely as a consequence of an ageing population and an increasing burden of chronic disease, such as cardiovascular disease, cancer, respiratory disease and mental illness. It is now apparent that no global health agenda is complete without consideration of the chronic disease burden and the strategies for its management. The George Centre for Healthcare Innovation will form a multidisciplinary collaboration dedicated to the formulation, evaluation and implementation of innovative affordable strategies for managing the pandemics of chronic disease and disability facing the world in the 21st century. Much of the Institute's work will aim at providing evidence that will directly inform policy and practice.



INSTITUTE FOR EMERGING INFECTIONS

Directors:
Professor Angela McLean, Professor of Mathematical Biology
Professor Rodney Phillips, Professor of Medicine

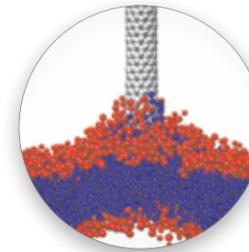
- ▶ The Institute for Emerging Infections consists of a multi-disciplinary team of biologists, mathematicians and clinicians who aim to understand the processes that drive the emergence and spread of novel human infectious diseases. By studying existing infections, researchers use the knowledge gained to anticipate the challenges posed by novel infections. In the future, the Institute plans to expand its work to analyse further its archive of samples from HIV-infected people, look at the problem of drug-resistant strains and develop new mathematical models of how infections spread.
- ▶ **Newly funded project:** Biodiversity and infectious disease - This research programme seeks to define and explore the links between biodiversity and infectious diseases, with the aim of providing evidence-based advice to policy makers involved in health, biodiversity management, and urban and rural planning.



INSTITUTE FOR VACCINE DESIGN

Directors:
Professor Adrian Hill, Professor of Human Genetics
Professor Susan Lea, Professor of Chemical Biology

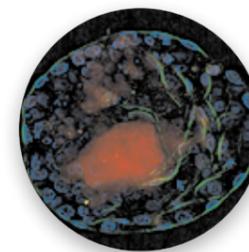
- ▶ For most people living in the first decade of the 21st century, death from infectious diseases remains a substantial risk. The threat of global pandemics and the huge mortality from endemic diseases will continue to pose great challenges for vaccine research and development in coming decades. The Institute for Vaccine Design seeks to design and develop promising new vaccines against infectious diseases of global health importance, focusing on five target diseases: pandemic influenza, malaria, tuberculosis, HIV/AIDS and meningitis. By spanning the broad range of disciplines that underpin modern vaccinology from pathogen genomics and structural biology, through molecular biology and cellular immunology, to clinical development and health economics, the Institute will provide a range of synergistic expertise unparalleled elsewhere in academia.



INSTITUTE OF NANOSCIENCE FOR MEDICINE

Directors:
Dr Sonia A. Contera, RCUK Fellow in Biological Physics and Nanomedicine
Professor John Ryan, Professor of Physics
Professor Mark Sansom, Professor of Biochemistry

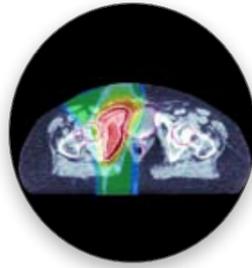
- ▶ Using nanostructures to deliver treatments by, for example, loading them with drugs that are only released at the site of a tumour, has the potential to transform medicine. The Nanoscience for Medicine project seeks to improve our understanding of how nanostructures interact with DNA, proteins, membranes and, ultimately, with cells. The aim is to help establish fundamental design principles for nanoscale drug delivery methods and enhance understanding of potential nano-toxicological effects.



OXFORD STEM CELL INSTITUTE

Directors:
Dr Paul Fairchild, RCUK Academic Fellow in Stem Cell Biology and Immunology
Professor Helen Mardon, Professor of Reproductive Science

- ▶ Oxford has been at the centre of stem cell biology since the field's earliest days and boasts expertise in a broad range of technologies from adult to embryonic stem cells, and from nuclear reprogramming to tissue engineering. The Oxford Stem Cell Institute creates a network of excellence among the many laboratories in Oxford involved in stem cell research. The aim is to foster collaboration and synergy among researchers by stimulating interdisciplinary research and by providing seed funding for collaborative projects that may develop fresh insights and lead to effective stem cell treatments.
- ▶ **Newly funded project:** Stem cells - The matched funding will secure the recruitment of new stem cell biology fellows and establish a fully-equipped and staffed core facility creating a large and unique critical mass of stem cell scientists from different disciplines.



PARTICLE THERAPY CANCER RESEARCH INSTITUTE

Directors:

Professor Ken Peach, Professor of Particle Physics
Professor Bleddyn Jones, Professor of Clinical Radiation Biology

- ▶ Destroying cancer non-invasively using protons or charged light ions such as carbon (Particle Therapy Cancer Research or PTCR) offers advantages over conventional radiotherapy using x-rays, since a far lower radiation dose is delivered to healthy normal tissues. Particle Therapy is also an alternative to radical cancer surgery. Despite enormous progress in recent years, traditional treatments can be aggressive, leading to short and long term reductions in quality of life. The PTCR Institute studies the clinical effectiveness of charged particle therapy to treat cancer, promoting its use in the UK and elsewhere on the basis of robust clinical evidence.

ENERGY AND ENVIRONMENT



21ST CENTURY OCEAN INSTITUTE

Directors:

Professor Gideon Henderson, Professor of Earth Sciences
Professor David Marshall, Professor of Oceanography

- ▶ The 21st Century Ocean Institute combines innovative computer modelling of ocean physics with state-of-the-art expertise of ocean chemistry to assess the response of the ocean system to global change. A key focus of research activity is to understand the role and response of the ocean in a changing carbon cycle. The Institute draws together existing disciplinary strength at Oxford to generate a vibrant interdisciplinary research environment, and interacts with Oxford researchers working in the areas of climate, oceans and the carbon cycle.



INSTITUTE OF BIODIVERSITY

Director:

Professor Charles Godfray (acting Director), Hope Professor of Zoology (The Tasso Leventis Professor of Biodiversity is currently under recruitment)

- ▶ Loss of biodiversity is one of the most pressing issues of the 21st century. The present era is critical for the globe's biodiversity which, with the exception of the three or four major extinctions documented in the fossil record, is currently experiencing radical changes at a rate unprecedented in history. The Institute of Biodiversity will bring together research from the natural and social sciences in order to address the challenges of our sustainable existence on the planet. A key aim of the Institute is to facilitate the translation of science into policy, planning and strategy.



INSTITUTE FOR CARBON AND ENERGY REDUCTION IN TRANSPORT

Director:

Dr Malcolm McCulloch, University Lecturer in Engineering Science

- ▶ This interdisciplinary Institute examines the effectiveness of various technical solutions to cut the greenhouse gases emitted by cars and other road transport. The Institute advises government on future carbon reduction policies and looks at the whole infrastructure that is needed for the successful implementation of practical low-carbon transport. The Institute's aim is to better understand and enhance the potential impact of a particular technology, fuel, or policy by considering engineering, science, economics and regulatory instruments together.



INSTITUTE ON PLANTS FOR THE 21ST CENTURY

Directors:

Professor Liam Dolan, Sherardian Professor of Botany
Professor Jane Langdale, Professor of Plant Development

- ▶ Ensuring food, fibre, feedstock and fuel security in the 21st century is a major global challenge that requires innovative research in plant sciences. A central goal of Plants for the 21st Century research is to increase crop yields and thereby alleviate global food security concerns. Through addressing questions in two main areas of global concern, namely crop production and species conservation, the Institute will generate scientific resources and information that will enable policy makers, conservation biologists, multinational companies and individuals to use land in a way that will maximise crop outputs and protect 'hotspots' of species diversity.



OXFORD CENTRE FOR TROPICAL FORESTS

Director:

Professor Yadvinder Malhi, Professor of Ecosystems Science

- ▶ The Oxford Centre for Tropical Forests (OCTF), based in the Environmental Change Institute (ECI), incorporates a network of organisations, including charities, private businesses and public sector organisations, as well as various Oxford University research groups. Tropical forests are perhaps the greatest treasures of life on Earth, housing half of all biodiversity, much of which has yet to be observed or described. The OCTF brings together Oxford's vast intellectual capital and expertise on practical issues in this area, with the aim of fostering links between all those interested in the past, present and future of tropical forests.



OXFORD GEOENGINEERING PROGRAMME

Directors:

Professor Richard Darton, Professor of Engineering Science
Professor Gideon Henderson, Professor of Earth Sciences
Professor Steve Rayner, James Martin Professor of Science and Civilization
Professor Julian Savulescu, Professor of Practical Ethics

- ▶ Geoengineering as a possible means of mitigating climate change has been an increasing focal point for public debate in recent years, and yet it remains an under-researched topic. Geoengineering, which refers to the deliberate large-scale manipulation of the planetary environment in order to moderate global warming, raises a wide range of questions across many branches of thought including engineering, physical and biological sciences, ethics, politics, law, and business. The Oxford Geoengineering Programme will use primary research to examine the engineering processes and associated risks of schemes to geoengineer the Earth's climate in the context of these key scientific, ethical and governance questions. The Programme aims to establish Oxford as the pre-eminent centre in the United Kingdom and internationally for the integrated study of geoengineering.



PROGRAMME ON GLOBALISING TIDAL POWER GENERATION

Directors:

Professor Alistair Borthwick, Professor of Engineering Science
Professor Guy Houlsby, Professor of Civil Engineering
Dr Richard Willden, EPSRC & RCUK Academic Fellow in Marine Renewable Energy

- ▶ Environmental change and energy security are amongst the most pressing problems facing the world today. In addition to changing the way we use energy, there is an urgent need to develop a diverse stream of clean and affordable renewable energy generation technologies. Tidal power presents a huge, as yet untapped, opportunity to generate clean and affordable power. This Programme will examine how to make use of the globally abundant supply of low speed tidal flow resources to deliver clean and affordable renewable power generation across the globe. Through developing devices and deployment strategies to enable the globalisation of tidal power generation, the Programme will support research that will substantially increase the number of tidal sites from which energy can be harnessed economically. This in turn will lead to a step change in the amount of energy that can be generated globally from tidal resources and will help shape policy and debate in the tidal energy sector.



PROGRAMME ON MODELLING AND PREDICTING CLIMATE CHANGE

Directors:

Dr Chris Farmer, Research Fellow in Applied Mathematics
Professor Tim Palmer FRS, Royal Society Professor of Physics

- ▶ Climate predictions will be used for making major decisions in climate mitigation, adaptation and geoengineering. Whilst on the global scale, climate prediction is broadly reliable, attention has turned to more regional climate prediction, where errors inherent in conventional modelling methods are more apparent. The quality of a decision depends upon how accurate the forecasts are and how well the uncertainty in the forecast can be estimated. This Programme aims to increase confidence in the reliability of climate prediction through the development of novel mathematical techniques for incorporating in next-generation earth-system models.



PROGRAMME IN NUCLEAR MATERIALS

Directors:

Professor Chris Grovenor, Professor of Materials
Professor James Marrow, James Martin Professor in Energy Materials

- ▶ The James Martin 21st Century School Professorship in Energy Materials is part of a programme that aims to help address the global energy problem by developing a coherent and internationally-recognised centre for world-class science in non-carbon energy materials, with strong interactions on policy and socioeconomic issues. Based in the Department of Materials, and drawing together relevant research from across the University, the new Chair will lead and develop work in key materials-based energy science and technology.
- ▶ **Newly funded project:** Nuclear energy for the 21st century - The research will establish an understanding of the key materials problems which limit the exploitation of nuclear power in the 21st century.



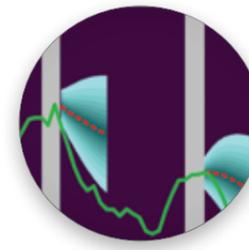
PROGRAMME ON SOLAR ENERGY: ORGANIC PHOTOVOLTAICS

Directors:

Professor John Ockendon FRS, Professor of Mathematics
Dr Henry Snaith, RCUK Academic Fellow in Physics

- ▶ The Programme on Solar Energy: Organic Photovoltaics aims to ensure that solar radiation collected by photovoltaic cells makes the maximum possible contribution to society's energy budget. Through interactive collaboration between mathematical modelling and physical experiments, the Programme will develop new ideas for both the fabrication and operation of more efficient and cost-effective photovoltaic devices. Fabrication and operation research avenues are closely coupled to each other and the scientific dialogue between them will be a key component of the Programme.

TECHNOLOGY AND SOCIETY

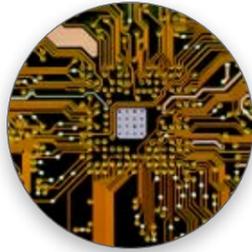


INSTITUTE FOR ECONOMIC MODELLING

Director:

Professor Sir David Hendry, Professor of Economics

- ▶ The 21st century has begun with the largest global economic and financial crisis since the Great Depression 80 years ago. Many factors have been blamed for this disastrous outcome, but a failure to forecast it combined with poor initial policy responses are partly at fault, precipitating the need for a paradigm shift. The Institute will investigate the difficulties that economic analyses, policy, empirical modelling and forecasting all confront when there are sudden, or very rapid, unanticipated changes, and will develop alternative approaches to improve on those currently extant.



INSTITUTE FOR THE FUTURE OF COMPUTING

Directors:

Professor Bill Roscoe, Professor of Computing Science
Professor Anne Trefethen, Professor of Computing and Information Technology

- ▶ The Institute for the Future of Computing will address the challenges brought about by the ubiquity of computers, deluge of digital data, complexity of extreme computing and requirements for usable secure systems. In order to address these key issues, the Institute will support collaborative multidisciplinary research on energy efficient algorithms at both the user and system levels, novel methodologies and software for design, engineering and analysis of reliable and efficient wireless sensor networks, tools and technologies for reasoning across large-scale data, and secure mechanisms to allow the exploitation of pervasive and ubiquitous computing.



INSTITUTE FOR SCIENCE, INNOVATION AND SOCIETY

Director:

Professor Steve Rayner, James Martin Professor of Science and Civilization

- ▶ The Institute for Science, Innovation and Society (formerly the James Martin Institute for Science and Civilization) focuses on research, policy development and teaching programmes which provide new approaches to understanding technological and social change. This process of investigation generates new insight into the challenges faced by business, government and civil society organisations. Research projects are designed to question the often entrenched assumptions about how science, technology and society work. The Institute aims to understand the complex networks and dynamics of technological and social systems with a view to informing governance structures and accountability.



INTERNATIONAL MIGRATION INSTITUTE

Director:

Professor Robin Cohen, Professor of Development Studies

- ▶ Working with researchers and policy makers across the world, notably in Africa, the International Migration Institute is investigating the way that human mobility is changing the face of global society. Its research projects aim to provide an understanding of who is migrating, where to, why, and what impacts these movements have on both receiving countries and societies left behind. The Institute's activities help inform governments and international organisations about key migration issues, with the aim to develop effective governance structures and policies to cope with global migration dynamics.
- ▶ **Newly funded project:** Global migration in the 21st century - The research programme will use new and existing data sets and an innovative scenarios methodology to understand the shape and likely evolution of migration systems, and the new challenges they pose for global governance.



OXFORD INSTITUTE OF AGEING

Director:

Professor Sarah Harper, Professor of Gerontology

- ▶ By 2030 half the population of Western Europe will be aged over 50; by 2050, there will be 2 billion older people globally, 500 million of them aged over 80. The Oxford Institute of Ageing investigates the wide-ranging impacts brought about by this unprecedented rise in the number of elderly people and makes policy recommendations for how government, business and society can and should respond. As well as examining the implications for medical and social services, the Institute looks at the wider impact of ageing populations on, for example, the family, politics and consumer behaviour.
- ▶ **Newly funded project:** Population dynamics and environment - The research will unite demographers, economists, anthropologists, philosophers and environmentalists to address the complex interactions of environmental (including climate change) and demographic change over the next 50 years.

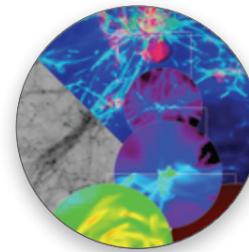


OXFORD INSTITUTE FOR GLOBAL ECONOMIC DEVELOPMENT

Directors:

Professor Paul Collier, Professor of Economics
Professor Anthony Venables, Professor of Economics

- ▶ Although the last 20 years have seen an unprecedented fall in global poverty, largely as a result of countries becoming successfully integrated into the world economy, poverty remains an urgent issue in those countries which have been left behind. Ever widening differentials will have adverse implications for all countries, not just those that are lagging. OxIGED's twofold research agenda plans to improve understanding of why some regions have successfully increased participation in the world economy while others have not, and to inform the policy debate, particularly for the low-income countries currently left behind.



PROGRAMME ON COMPUTATIONAL COSMOLOGY

Director:

Professor Pedro Ferreira, Professor of Astrophysics

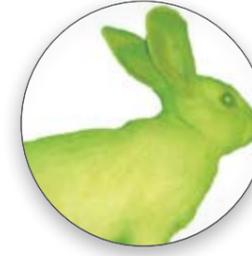
- ▶ For most of scientific history, the speed with which our understanding of the Universe increased was limited by the amount of data available. 21st century science is fundamentally different. Advances in detector technology, connectivity and computing provide an unprecedented wealth of information to researchers in diverse fields across the sciences. Yet, without new techniques to harness these developments, the promise afforded by this data will never be realised. This Programme aims to tackle three main questions: how can data from enormous experiments be processed?; how can efficient but sophisticated searches within extremely large data sets be enacted?; and, how can adaptive mesh refinement techniques for modelling complex, multi-scale systems be used? In addressing these questions, the Programme will look at ways of extending methods developed in astrophysics and cosmology to aid researchers in a diverse range of fields including oceanography, climate science and medicine.



PROGRAMME ON THE FUTURE OF CITIES

Director:
Professor Steve Rayner, James Martin Professor of Science and Civilization

- ▶ This Programme is hosted by the Institute for Science, Innovation and Society. Research will explore the social and technological changes that cities will face over the next 50 years and the implications for current decision-making by the private sector, governments and civil society. In particular, the programme will focus on ageing, migration, climate change and governance in looking at how cities can become more flexible to face these challenges.

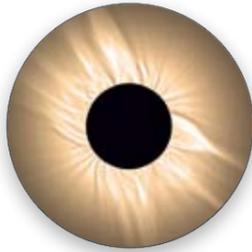


PROGRAMME ON ETHICS OF THE NEW BIOSCIENCES

Director:
Professor Julian Savulescu, Uehiro Professor in Practical Ethics

- ▶ The Programme on Ethics of the New Biosciences brings together ethicists, doctors and scientists, as well as law and policy experts, to explore what limits should be placed on research, development and use of new bioscience such as stem cell science, cloning, artificial reproduction, and genetic engineering. Biotechnology will radically change the human condition this century, for better or for worse, and the Programme aims to help policy makers decide rationally how to manage and regulate the ethical frontiers of bioscience.

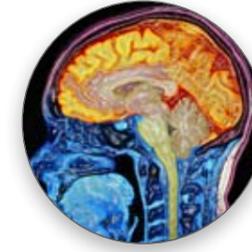
ETHICS AND GOVERNANCE



FUTURE OF HUMANITY INSTITUTE

Director:
Professor Nick Bostrom, Professor of Philosophy

- ▶ Researchers at the Future of Humanity Institute are looking at big-picture challenges for mankind. These include global catastrophic risks that might lead to the extinction of the human race, and enhancement technologies that might lead to fundamental changes in human nature. The Institute also looks at the methodological issues that arise in the study of these big picture challenges. The Institute's goal in all these projects is to make it possible for people to think more rationally about humanity's future.



PROGRAMME ON MIND AND MACHINE

Directors:
Professor Jonathan Flint, Professor of Molecular Psychiatry
Professor Gero Miesenböck, Waynflete Professor of Physiology

- ▶ The Programme on Mind and Machine will conduct research on manipulating the brain and its ethical implications. A key challenge for 21st century biology is to understand how the limited biophysical repertoire of individual neurons in the human brain gives rise to behaviour. The Programme aims to develop novel interfaces between brain and machines, using genetically encoded reagents. It will bring together a collaboration of biologists, engineers and computer scientists to work on developing and applying technology that will allow the observation of and intervention in brain function. This raises profound ethical issues related to understanding behaviour and potentially manipulating it, so called 'mind control'. The ethical, legal and social implications of conducting such research and developing such technologies will be concurrently explored as part of the Programme.



OXFORD INSTITUTE FOR ETHICS, LAW AND ARMED CONFLICT

Directors:
Professor Jennifer Welsh, Professor in International Relations
Mr Dapo Akande, University Lecturer in Public International Law

- ▶ The Oxford Institute for Ethics, Law and Armed Conflict is an interdisciplinary research programme that aims to strengthen law, norms and institutions to restrain, regulate and prevent armed conflict. Drawing on the disciplines of philosophy, law and international relations, the Institute seeks to develop a more sophisticated framework of rules and stronger forms of international authority relating to armed conflict. Research activity addresses all aspects of armed conflict, including the recourse to war, the conduct of war, and post-conflict governance, transition and reconstruction.

DR JAMES MARTIN ON THE MATCHED FUNDING CHALLENGE

Photo: Dr James Martin delivering the annual
Commonwealth Lecture on 28 April 2010

In a video interview broadcast on the School's website, Dr James Martin explained his thoughts about the success of his matched funding Challenge.

"What I'm interested in is the big issues, the big problems, of the planet. My donation is not charity, it is about taking these problems and trying to deal with them," he explained. "When I visit the School I see the solutions emerging to those [problems] and that makes you realise you have started something that is going to make an extraordinary difference."

Dr Martin admitted, "People thought I was nuts when I launched the Challenge in the midst of the worst economic crash in history. But," he continued, "these are urgent problems. They can't wait ...and many of the foundations and donors understood that... [The Challenge has] been a fabulous success."

Dr Martin is contributing his donation of US\$50 million in matching funds on top of an original donation made in 2005, which set up the James Martin 21st Century School with an endowment of US\$100 million.

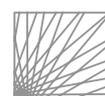
On behalf of our entire community of scholars across the University of Oxford, we would like to take this opportunity to express our sincerest thanks and appreciation for James Martin's extraordinary vision and generosity.



The James Martin 21st Century School

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