THE JAMES MARTIN 21ST CENTURY SCHOOL

Oxford's driver of innovative, interdisciplinary research on our global future.

The James Martin 21st Century School Challenge – a $50 million matched funding pledge by Dr James Martin – was successfully concluded in March 2010. As a result, the following projects will be incorporated into the James Martin 21st Century School…

For further information: www.21school.ox.ac.uk

ECONOMIC MODELLING IN A RAPIDLY CHANGING WORLD

Lead Researcher(s): Professor Sir David Hendry

The institute will look at the challenges facing economic analyses, policy, modelling and forecasting when large unanticipated shocks occur, and explore ways of improving such analyses to help avoid future crises.

POPULATION DYNAMICS AND ENVIRONMENT

Lead Researcher(s): Professor Sarah Harper and Dr George Leeson

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.

GLOBAL MIGRATION FUTURES

Lead Researcher(s): Professor Robin Cohen

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.

GLOBAL ECONOMIC DEVELOPMENT

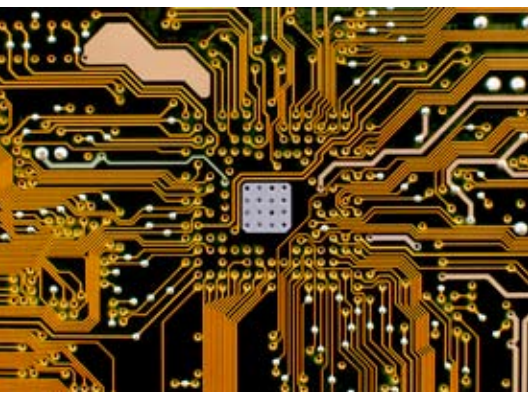
Lead Researcher(s): Professor Paul Collier and Professor Anthony Venables

The Institute will explore why some countries have participated in the world economy while others have not, and inform future policy debate on how developing countries can grow their economies.

THE FUTURE OF CITIES

Lead Researcher(s): Professor Steve Rayner

The 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.



UBIQUITOUS AND EXTREME COMPUTING

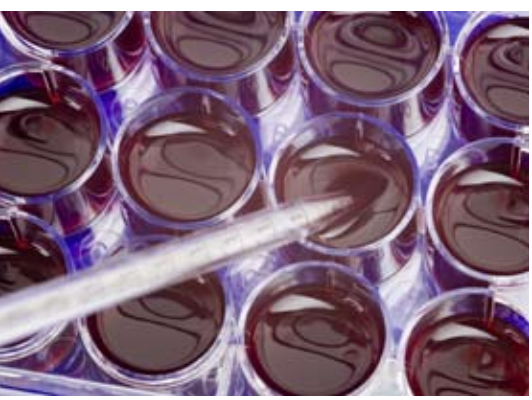
Lead Researcher(s): Professor Bill Roscoe and Professor Anne Trefethen

The research focuses on future computing from "extreme" (very large) to "pervasive" (in everyday devices). Specific topics will include optimal energy-efficient computation, ubiquitous sensing, ubiquitous web data and human-led security for pervasive systems.

BIODIVERSITY

Lead Researcher(s): Tasso Leventis Professor of Biodiversity (under recruitment)

The new Institute will support research activities across the natural and social sciences, making Oxford a global focus for ecological and biodiversity research.



STEM CELLS

Lead Researcher(s): Dr Paul Fairchild, Professor William James and Professor Helen Mardon

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.

VACCINE DESIGN

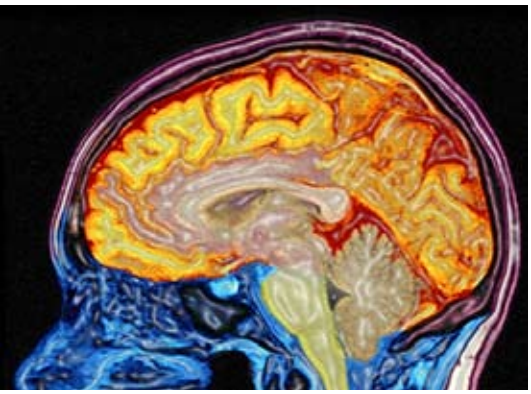
Lead Researcher(s): Professor Adrian Hill and Professor Susan Lea

This programme seeks to design and develop promising new vaccines against infectious diseases of global health importance such as pandemic influenza, malaria and meningitis, using a broad multi-disciplinary set of approaches ranging from structural biology, genomics and mathematical modelling to immunology, clinical trials and health economics.

BIODIVERSITY AND EMERGING INFECTIONS

Lead Researcher(s): Professor Charles Godfray and Professor Angela McLean

The 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.



MIND AND MACHINE: MANIPULATING THE BRAIN AND ITS ETHICAL IMPLICATIONS

Lead Researcher(s): Professor Jonathan Flint and Professor Gero Miesenböck

The programme aims to develop and apply technology that will allow intervention in brain function. The researchers will also address the ethical, legal and social implications of conducting such research and developing such technologies.

GLOBAL HEALTH CARE INNOVATION

Lead Researcher(s): Professor Stephen McMahon and Professor Robyn Norton

The new research centre will develop innovative affordable global strategies for chronic and complex disease management.

SOLVING THE CHALLENGES OF 21ST CENTURY COMPUTATIONAL SCIENCE

Lead Researcher(s): Professor Pedro Ferreira

The programme will look at ways of extending the methods in computing and data processing that have been developed in astrophysics and cosmology to aid researchers in fields as diverse as oceanography, climate science and medicine.

GEOENGINEERING AND CARBON DIOXIDE REMOVAL

Lead Researcher(s): Professors Richard Darton, Gideon Henderson, Steve Rayner and Julian Savulescu

The research will examine the engineering processes and associated risks of schemes to geoengineer the climate in the context of economic, ethical and governance questions.

NUCLEAR ENERGY FOR THE 21ST CENTURY

Lead Researcher(s): Professor Chris Grovenor and Professor James Marrow

The research will establish an understanding of the key materials problems which limit the exploitation of nuclear power in the 21st century.

PLANTS FOR THE 21ST CENTURY

Lead Researcher(s): Professor Jane Langdale

The research will address questions in two main areas of global concern – crop production and species conservation. Both programmes aim to generate scientific resources and information that will enable policy makers, conservation biologists, multinational companies and individuals to use land in a way that will maximize crop outputs and protect 'hotspots' of species diversity.

GLOBALISING TIDAL POWER GENERATION

Lead Researcher(s): Professor Alistair Borthwick, Professor Guy Houlsby and Dr Richard Willden

The research programme will look at the harnessing of energy from tidal sites and shaping public policy and debate in the tidal energy sector.

MODELLING AND PREDICTING CLIMATE CHANGE

Lead Researcher(s): Dr Chris Farmer and Professor Tim Palmer FRS

The research programme will develop mathematical techniques to enable next-generation earth-system models to predict anthropogenic climate change with increased reliability.

DEVELOPING LOW-COST PHOTOVOLTAICS

Lead Researcher(s): Professor John Ockendon FRS and Dr Henry Snaith

The research will develop, via interactive collaboration between mathematical modelling and physical experiments, new ideas for both fabrication and operation of more efficient and cost-effective photovoltaic devices.