



Is this the future for your brain?

Imperial engineers on how the technology
of 2050 could change our lives

... CENTRE PAGES



RECOGNISING SERVICE

New honorary
award unveiled
at Commem Day

PAGE 3



SENIOR DEAN

Professor
Jeff Kramer
provides insight
into his role

PAGE 10



INSPIRING DEBATE

Student-led
conference on
sustainable
energy futures

PAGE 12



EDITOR'S CORNER

Making history

Two weeks ago I stayed up until 05.00 in the morning to watch the first of the **Chilean miners** winched to safety from the depths of the San José copper gold mine. Seeing the miners emerge physically unscathed in a meticulously constructed narrow steel cage was one of the **most amazing engineering feats** I've ever witnessed. And this wasn't my first encounter with the miners. Since the accident occurred on 5 August, trapping the 33 miners almost a mile underground, the phones of the research press officers in the Communications and Development Division have been ringing constantly with **enquiries from the world's media** seeking comments from Imperial experts. From researchers in the Department of Earth Science and Engineering discussing the mining techniques that caused the mine collapse to Imperial medics considering the **psychological effects** of being underground for so long and how the miners will adapt back to normal life – the College has been there every step of the way.

EMILY ROSS, EDITOR

Reporter is published every three weeks during term time in print and online. The next publication day is 18 November. Contact Emily Ross:

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£25 million funding to continue fight against neglected tropical diseases

A team from Imperial has been awarded £25 million of funding from the UK Government to continue its fight against neglected tropical diseases, in October. The money will enable the Schistosomiasis Control Initiative (SCI) based in the Department of Infectious Disease Epidemiology to provide 75 million treatments to protect some of the world's poorest children against schistosomiasis – an illness caused by parasitic worms – and soil-transmitted helminths (STH).

More than 200 million

people are infected with schistosomiasis worldwide, and many more are at risk due to poor hygiene and lack of safe water. In children, it can cause anaemia, stunted growth, and impaired learning ability. If left untreated, the symptoms escalate in adulthood and can result in liver disease and bladder cancer. An estimated 280,000 deaths every year in developing countries are attributable to schistosomiasis.

The new award will pay for the drug praziquantel, which greatly reduces the risk of severe disease, to be delivered to children, high risk individuals and pregnant women in several countries in sub-Saharan Africa. In particular, the



SCI aims to eliminate the serious consequences of schistosomiasis from Niger and Uganda within five years.

"For less than 50p per child per year we can deliver treatments that will put a stop to these diseases, which affect most developing countries," said Professor Alan Fenwick, Director of the SCI in the Department of Infectious Disease Epidemiology.

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT

Research Excellence Awards 2010



Two teams of researchers have been selected for the Research Excellence Award this year. Each team will receive £100,000 towards blue skies research, in recognition of the significant future potential and high academic achievement of their work.

The first of the winning teams is the Next-Gener-

ation Computational Geophysical Fluid Dynamics team from the Department of Earth Science and Engineering, led by Professor Christopher Pain.

Commenting on the award, team member Dr Matthew Piggott said: "We plan to use the award to stimulate several new strategic research directions, including the simulation of renewable energy devices, sediment dynamics, and pollution dispersal in the atmosphere and ocean. One factor which contributed to our success has been our ability to attract outstanding researchers at PhD, postdoctoral and fellowship levels. We also hope to use this award to support younger researchers."

The second set of winners is the New Nanoscale Technique to Study cAMP/cGMP Localisation in Cardiovascular Tissue team, based at the NHLI. Led by Dr Julia Gorelik, it includes experts in various aspects of signalling, pharmacology and microscopy.

Speaking to *Reporter*, Dr Gorelik said: "I am delighted to receive this award which will permit us to further develop our microscopic technique. We are going to look at signalling, not only in isolated cells but also in different living tissues of the cardiovascular system."

The successful teams were selected by a panel which included Rector Sir Keith O'Nions and Professor Dame Louise Johnson, Life Sciences Director at Diamond Light Source.

—SIMON WATTS, COMMUNICATIONS AND DEVELOPMENT

Imperial College
London

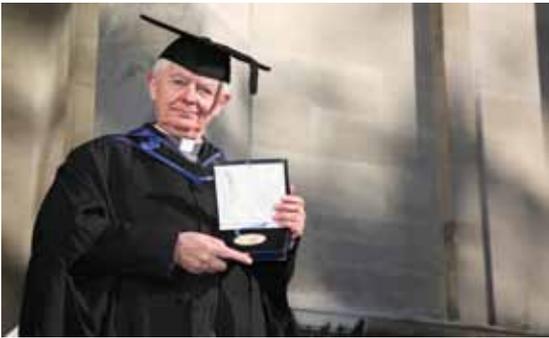
Imperial College Lectureships

If you are interested in furthering your academic career, why not find out more about the Imperial College Lectureships? The College will be appointing a significant number of individuals with outstanding ability and potential to non-clinical lectureships in the Faculties of Engineering, Medicine and Natural Sciences, and assistant professorships in the Business School. Staff are invited to apply.

For more information:
www3.imperial.ac.uk/employment
[lectureships#apply](https://twitter.com/lectureships#apply)

Deadline for applications: Tuesday 4 January 2011

50 years of service recognised at Commemoration Day



A new honorary award recognising meritorious service to Imperial was presented for the first time at the College's Commemoration Day graduation ceremonies on 20 October, which saw over 2,000 graduates receive their degrees in science, engineering and medicine.

The Reverend Brooke Kingsmill-Lunn accepted the first Imperial College Medal, in honour of his service to the College spanning more than 50 years. The Medal has been established by the College Council to recognise a longstanding contribution to the College which enhances its reputation, mission

“Education is at the core of an enterprise which... addresses the big societal challenges of this era”

and objectives. Reverend Kingsmill-Lunn has been ringing the bells in the Queen's Tower on the South Kensington Campus since 1953, and has managed its team of bell ringers since 1976.

Addressing the graduands at his first Commemoration Day ceremony as Imperial's Rector, Sir Keith O'Nions said:

“Education is at the core of an enterprise which undertakes research at the cutting edge, translates it for

economic benefit through new companies, and addresses the big societal challenges of this era. As you now embark on the next phase of your individual careers you will become leaders in business, industry and public service, scientists, engineers, medics and surgeons, entrepreneurs and inventors. The collective contributions we know you will make to the world is truly inspiring”.

An honorary degree was posthumously awarded to Sir Hugh Ford, a former Head of the Department of Mechanical Engineering and Pro Rector, and an Associateship of Imperial College was posthumously awarded to Sharine Brown, Head of Accommodation Services, who died in April this year.

Another first for the College was the award of an Imperial Doctor of Science degree, which was presented to Stepan Lucyszyn (Electrical and Electronic Engineering). The award recognised his work in Millimetre-Wave and Terahertz Electronics.

—SIMON WATTS, COMMUNICATIONS AND DEVELOPMENT

To hear the Rector's welcome speech at Commem Day visit: <http://www.youtube.com/watch?v=r1fdpoTlpVk>

Imperial response to Browne Report



Lord Browne's long-awaited report of the *Independent Review of Higher Education Funding and Student Finance* was published on 12 October.

The report recommended that the current cap on fees of £3,290 per year be removed and a tapered levy be introduced, requiring institutions wishing to charge more than £6,000 per year to pay a proportion of the additional fee income to the government. Other key proposals in the report were to raise the income threshold over which graduates make repayments on their student loan to £21,000 from the £15,000 under the current system, and to introduce student charters.

Commenting on the report, Imperial's Rector Sir Keith O'Nions said: “We expect fees to increase nationally, including at Imperial. We will make the fullest use of our own resources to ensure that all students who may benefit from our courses are attracted to apply. If fees go up so will our financial aid to the neediest.”

Sir Keith explained that the College is currently planning a long-term campaign for philanthropic support focused on scholarships and financial aid at Imperial, commenting: “Our goal is to build the resilience of an endowment to give Imperial the sustainable basis to attract the brightest and the best in the world, for generations to come.”

In November 2009 Lord Browne was tasked with leading the *Independent Review of Higher Education Funding and Student Finance*. Consisting of members drawn from academia and business, the group analysed the challenges and opportunities facing higher education, and their implications for student financing and support.

According to David Willetts, Minister for Universities and Science, in a speech to the HEFCE Annual Conference on 21 October, the government aims to publish a White Paper concerning higher education in the winter of 2010–11.

—SIMON WATTS, COMMUNICATIONS AND DEVELOPMENT

in brief



Life Sciences' Consultation

The Department of Life Sciences has recently been through a consultation process on a proposal to restructure the Section of Plant and Microbial Sciences and the Section of Cell Biology and Functional Genomics. Drawing on the existing research strengths of these sections together with expertise from Biophysics, a new Section of Integrative Cell Biology will be created. Professor Ian Owens, the Head of the Department of Life Sciences, talked to *Reporter* about the restructure plans and what they will mean for research and teaching in the Department. To hear the full interview visit: www3.imperial.ac.uk/news/newsection

CHOSTM funding

The Centre for the History of Science, Technology and Medicine at Imperial has won a prestigious, five-year Wellcome Trust programme grant worth over half a million pounds. The project will run from 2011–16 and will investigate human and animal disease, covering the period 1850–2015. The next issue of *Reporter*, published on 18 November, will feature an interview with Dr Abigail Woods, the Principal investigator on the project.

Sustainability Award

The College has been named the Most Sustainable Public Sector Organisation, in the education category, at the Sustainable FM Awards 2010. Imperial was recognised for its food composting system, introduced in May 2010. The CompPod, which was developed using research from the Department of Civil and Environmental Engineering, turns the waste from the three main restaurants on the South Kensington Campus into compost, which is being used on campus green spaces. The composting system is helping to contribute towards the College's target of recycling 40 per cent of all College waste during 2010.

“If fees go up, so will our financial aid to the neediest.”

RECTOR SIR KEITH O'NIONS COMMENTING ON THE BROWNE REPORT ON HIGHER EDUCATION AND STUDENT FINANCE – SEE FULL STORY ABOVE.

Imperial College Healthcare 

Gearing up for genetic diagnosis

Two new generation genetic sequencers are being used by Imperial College Healthcare NHS Trust to pinpoint the genetic causes of common illnesses like cancer, heart disease and diabetes.

The HiSeq 2000 sequencer can sequence a whole human genome in two weeks and will enable clinicians to effectively diagnose and treat patients, by examining which illnesses they are genetically predisposed to developing. It will also improve diagnosis of well-known inherited conditions, like sudden cardiac death syndrome, by allowing scientists to sequence all of the patient's genes, rather than the one or two genes most likely to cause the condition. The new technology could help guide clinicians in prescribing specific medication, such as cancer drugs.

Professor Tim Aitman, Professor of Clinical and Molecular Genetics (MRC Institute of Clinical Science), said: "It's increasingly recognised that mutations in certain genes influence which drugs individual patients are likely to respond to best. For example, Herceptin, which is used for treating breast cancer, only works in patients who have mutations in the ERB2 gene. Through genetic diagnostics we'll increasingly be able to catalogue mutations, which cause specific cancers, and tailor treatment to the individual patient."

The second sequencer, GS-Junior, can sequence long stretches of DNA in just 16 hours, allowing rapid diagnosis in cases such as infectious diseases.

"This sequencer could have a major impact on infection control. If, for example, there were an outbreak of MRSA, you could sequence the whole staphylococcal genome, in as many people as you want, and take swabs from around the hospital or ward, and the results could tell you the source of infection, where it's moving to and which patients it's infecting," added Professor Aitman.

The two sequencers were funded by grants from the National Institute of Health Research and the Imperial Biomedical Research Centre.

— IMPERIAL COLLEGE HEALTHCARE NHS TRUST PRESS OFFICE

Mass book club for freshers

Earlier this month, Imperial students joined Simon Mawer, the author of the Man Booker Prize-shortlisted novel *The Glass Room*, for a frank discussion about writing techniques. In advance of starting at the College, students from six departments received copies of the novel and an invitation to meet the author at one of two meetings.

At the events Simon gave an overview of his approach to writing and discussed the inspiration and background behind *The Glass Room*, taking questions from the student audience.

Welcoming Simon and the Chair of the Booker Prize

Foundation, Jonathan Taylor, Professor Julia Buckingham, Pro Rector (Education and Academic Services) said:

"While we focus on science here at Imperial, bringing the arts and sciences closer together is something very close to the College's heart, and it is a point of pride for us that we encourage our students to explore and develop their artistic side during their time here. With that in mind, I'm very pleased Imperial has been able to take part in this Booker Prize Foundation initiative and delighted that Simon Mawer is able to meet with student participants here this week."

The events were held as part of the Man Booker



Student Readership Programme, involving 18,000 students across five UK universities. It aims to engage student readers with the best of contemporary fiction.

— JOHN-PAUL JONES, COMMUNICATIONS AND DEVELOPMENT

For the full story see: www2.imperial.ac.uk/blog/reporter/2010/10/12/book-club-freshers-joined-by-the-author

New talent arrives at Imperial



The second cohort of Imperial's Junior Research Fellows (JRFs) arrived at College at the start of term, bringing the total number of Fellows recruited under the scheme to 33. The new Fellows come from Imperial, as well as international institutions, such as the California Institute of Technology, the University of Queensland and

Forschungszentrum Jülich in Germany, and are carrying out research within all three faculties and the Centre for the History of Science, Technology and Medicine.

Imperial's JRF scheme aims to help Imperial recruit and develop the brightest and best early-career researchers from across the world, providing them with freedom

to focus on their research within a supporting and nurturing environment. The scheme aims to help researchers make the leap from postdoctoral researcher to lecturer, offering the opportunity to develop an independent research programme during three years free from obligatory or administrative duties. Imperial has invested more than £10 million over five years in the scheme, which has also received donations from more than 220 alumni.

"Nurturing talent is key to Imperial's mission," said Professor Maggie Dallman, Principal of the Faculty of Natural Sciences and champion of the JRF scheme. "Our JRFs are exceptional people and the research leaders of tomorrow."

— NATASHA MARTINEAU, COMMUNICATIONS AND DEVELOPMENT

Visit from first lady of South Africa



The Institute of Global Health Innovation welcomed South Africa's first lady, Mrs Tobeka Zuma, on 7 October, when she visited the College to meet its academics and endorse the wealth of interdisciplinary global health research at Imperial.

The Institute of Global Health Innovation, chaired by Professor Lord Darzi, brings together world-leading academics in medical science, engineering, business and health policy to improve

people's health, and reduce health inequalities in developed and developing countries. Mrs Zuma met with Imperial academics as part of the Institute's aim to ensure healthcare innovations and health policies have a significant impact across the world.

Mrs Zuma was visiting the UK as part of a tour to raise awareness of her charity the Tobeka Madiba Zuma Foundation, which promotes health initiatives, education and the empowerment

of women across Africa. Following welcome speeches from the Rector, Sir Keith O'Nions, and Professor Lord Darzi, Mrs Zuma spoke about her foundation's work to help South Africa move towards an HIV-free generation.

During the visit, Mrs Zuma heard from three of Imperial's academics. Speaking about HIV healthcare, Dr Beate Kampmann (Medicine) highlighted the challenges in delivering effective care to HIV-infected women and babies, and Professor Jonathan Weber (Medicine) championed the CD4 Initiative; a project developing an innovative HIV point-of-care diagnostic test. Professor Lesley Regan (Surgery and Cancer) spoke on the differing healthcare challenges in treating cancer in the UK and South Africa, an area of particular interest to Mrs Zuma.

Commenting on the visit Professor Darzi said: "We share common goals with Mrs Zuma, who spoke passionately on the importance of tackling global health challenges, such as HIV and cancer, through the implementation of low cost, high impact and innovative health solutions."

—AGNES BECKER, INSTITUTE OF GLOBAL HEALTH INNOVATION

Reducing road transport emissions

Radical changes in vehicle technologies and fuel and energy sources will be essential, if the UK is to meet its commitment of an 80 per cent reduction in greenhouse gas emissions by 2050, according to a new briefing paper on road transport technologies published on 12 October by the Grantham Institute for Climate Change at Imperial.

"Road transport makes a significant contribution to greenhouse gas emissions across the world, with the UK having one of the poorer emissions track records in Europe," says lead author Dr David Howey (Mechanical Engineering). "This briefing paper provides a technical review of low carbon vehicle options, which is relevant whether you are responsible for developing new technologies, making policy decisions or considering buying a new car."

The briefing paper is aimed at policy makers, investors, business, industry and members of the general public, highlighting immediate and future research priorities. It also outlines the policy changes required to reduce emissions rapidly, and suggests a range of



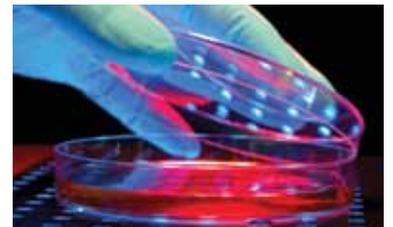
Around half of all cars on the road may need to be electric vehicles by 2035 to reduce carbon emissions, according to the paper.

options and some timescales for when they might need to be implemented.

—COLIN SMITH, COMMUNICATIONS AND DEVELOPMENT

To download the briefing visit: <http://workspace.imperial.ac.uk/climatechange/Public/pdfs/press/GranthamTransportBriefingPaper.pdf>

Academics recognised in new science rankings



Eight academics from Imperial have been included in *Eureka 100: the science list*, a new guide to the most important contemporary figures in British science and engineering published by *The Times*.

Alongside the science list, Rector Sir Keith O'Nions was ranked at number five in the top 10 'Academic Power Brokers', while Professor Molly Stevens (Materials) was named one of the top 10 scientists in Britain under the age of 40.

Eureka canvassed opinions and recommendations from the heads of top universities, research bodies, scientific societies, engineering businesses, pharmaceutical companies and government institutions. Judging panellists included journalists from *The Times* and Lord Waldegrave, the former Conservative minister responsible for setting up the Office of Science and Technology.

The full line-up of Imperial academics included in the Top 100 is:

- Professor Sir John Pendry (Physics)—48
- Professor Jim Virdee (Physics)—62
- Professor Sir Peter Knight (Physics)—67
- Professor Simon Donaldson (Mathematics)—75
- Professor David Nutt (Medicine)—79
- Professor Lord Robert Winston (Humanities)—81
- Professor Guang-Zhong Yang (Global Health Innovation)—83
- Professor Sir Roy Anderson (Public Health)—100

—SIMON WATTS, COMMUNICATIONS AND DEVELOPMENT

For details of their achievements see the full story at www3.imperial.ac.uk/news/sciencerrankings

media mentions

—COLIN SMITH, COMMUNICATIONS AND DEVELOPMENT



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www.imperial.ac.uk/media/jointsignup

THE LANCET ▶ 9.10.2010

New alliance aims to improve global health



Academic medicine must take more responsibility for global health, argued Professor Stephen Smith, Principal of the Faculty of Medicine, and other representatives of the M8 Alliance of Academic Health Centres and Medical Universities in an article in *The Lancet*. The Alliance aims to improve medicine by engaging scientific institutions and to confront global health issues. “True medical advances only arise from collaboration and mutual understanding between academia and healthcare and social systems,” they write. “Policy makers should not be left to interpret research; academic leaders should be involved and translate the findings. Isolated ivory towers will no longer do in the modern world. Governments, and ultimately taxpayers or donors, pay for research and expect a return in health gains.”

THE DAILY TELEGRAPH
▶ 14.10.2010

The search for life continues

A team of UK space scientists will be part of the latest European Space Agency and NASA mission to send two unmanned rovers to Mars in 2019 to analyse the red planet for signs of life. Professor Mark Sephton (Earth Science and Engineering) told *The Daily Telegraph* that he thought there was a good chance of finding life: “It’s the logical thing. If you say, ‘Look, we have conditions here, we have conditions there, they’re about the same, it was about the same for 300 million years, and there’s life here’, why wouldn’t you expect life there as well?”

EXQUISITE LIFE ▶ 20.10.2010

Support science communicators



Cuts to the PR departments of universities and research councils would be a major setback to the public’s support for, and understanding of, science, argued the College’s research media relations manager, following the government’s comprehensive spending review, in an entry published on the *Exquisite Life* blog. “University researchers are helping us to understand the world in which we live and their work improves our quality of life, whether that’s through creating a better treatment for a disease, developing a technological innovation, or finding a way of generating cleaner energy,” said Laura Gallagher (Communications and Development). “We need professional communicators to tell the story of this work in an accurate and accessible way, generating excitement about what researchers are achieving, inspiring the next generation of scientists and contributing to a scientifically literate society.”

THE SUN ▶ 21.10.2010

Pooch helping patient with Parkinson’s

Benji the dog could be improving the health of a patient living with Parkinson’s disease, reported *The Sun*. The West Highland White Terrier not only gives his owner company, but is improving her symptoms and reducing the amount of medication she needs, according to researchers. The medics have been so amazed by the patient’s improvement since she got her beloved pooch that they have described her case around the world to other specialists, recommending that their other patients buy dogs to help their symptoms of the incurable nerve disease. “Remarkable benefits occurred when Amanda got Benji. We’ve seen improvements in her walking, appetite, sleep and social life,” Dr Peter Bain (Medicine) commented.

awards and honours

NATURAL SCIENCES

Nobel laureates recognise Physics graduate

Physics graduate Leron Borsten was awarded the prize for the best student presentation at the 2010 International School of Subnuclear Physics in Erice, Sicily, at the end of August. The board which assessed the presentations included two Nobel laureates and the directors of CERN and Fermilab. Leron’s talk was based on a recent paper, *Four qubit entanglement from string theory*, written in collaboration with his PhD supervisor, Professor Michael Duff (Physics), and other authors from

Imperial and Stanford University. Leron graduated from Imperial in 2006 and has just been awarded his PhD. See page 11 to find out more about his experience in Sicily.

(pictured left) received the award on behalf of the team for excellence in research, medicine and science news writing.

Roberts for his leadership in the area of physics and his work in setting up the Centre for Inertial Fusion Science at Imperial.

COLLEGE

Press office recognised



The Research Communications team, part of the College’s Communications and Development Division, picked up a silver award in the 2010 Circle of Excellence Awards at the Council for the Advancement and Support of Education (CASE) annual conference, held in Glasgow this August. Press Officer Colin Smith

NATURAL SCIENCES

Institute of Physics awards

Three Imperial physicists were presented with awards by the Institute of Physics at a ceremony held on 30 September. Dr Peter Haynes (Physics and Materials) was awarded the Maxwell Medal and Prize for outstanding contributions to theoretical physics, mathematical or computational physics and Professor Stefan Maier (Physics) was presented the Paterson Medal and Prize for distinguished research in applied physics. A gold award, the Glazebrook medal, was awarded to Visiting Professor Peter

COLLEGE

Prestigious water quality award

Dr Nick Voulvoulis (Environmental Policy) has been awarded the prestigious Eddy Wastewater Principles/Processes Medal by the Water Environment Federation, an international, not-for-profit, technical and educational water quality organisation. Dr Voulvoulis was recognised for his findings recorded in the article, *Removal of steroid estrogens from wastewater using granular activated carbon: comparison between virgin and reactivated carbon*.



Study sheds new light on how the Sun affects the Earth's climate

The Sun's activity has recently affected the Earth's atmosphere and climate in unexpected ways, according to a new study published in *Nature* on 6 October. The study, led by researchers from the Department of Physics, the Grantham Institute for Climate Change and the University of Colorado, shows that a decline in the Sun's activity does not always mean that the Earth becomes cooler.

It is well-established that the Sun's activity waxes and wanes over an 11-year cycle and that as its activity wanes, the overall amount of radiation reaching the Earth decreases. This study looked at the Sun's activity from 2004–07, when it was in a declining part of its activity cycle.

Although the Sun's activity declined over this period, the new research shows that it may actually have caused the Earth to become warmer. Contrary to expectations, the amount of energy reaching the Earth at visible wavelengths increased rather than decreased as the Sun's activity declined, causing this warming effect.

Following this surprising finding, the researchers behind the study believe it is possible that the inverse is also true and that in periods when the Sun's activity increases, this tends to cool, rather than warm, the Earth.

Lead author of the study Professor Joanna Haigh (Physics and Grantham Institute for Climate Change) said: "We need to carry out further studies to explore the Sun's activity and the patterns that we have uncovered, on longer timescales. However, if further studies find the same pattern over a longer period of time, this could suggest that we may have overestimated the Sun's role in warming the planet, rather than underestimated it."

—LAURA GALLAGHER, COMMUNICATIONS AND DEVELOPMENT

Malarial mosquitoes are evolving into new species, say researchers

Two strains of the type of mosquito responsible for the majority of malaria transmission in Africa have evolved such substantial genetic differences that they are becoming different species, according to two new studies published on 21 October in the journal *Science*.

The international research effort, co-led by Imperial scientists from the Department of Life Sciences, looks at two strains of the *Anopheles gambiae* mosquito, the type primarily responsible for transmitting malaria in sub-Saharan Africa. Although these strains are physically identical, the new research shows that their genetic differences are such that they appear to be becoming different spe-

cies, so efforts to control mosquito populations may be effective against one strain of mosquito but not the other.

The scientists argue that when researchers are developing new ways of controlling malarial mosquitoes, for example, by creating new insecticides or trying to interfere with their ability to reproduce, they need to make sure that the controls are effective in both strains.

One of the lead researchers behind the new research, Dr George Christophides (Life Sciences), said: "Our studies help us to understand the makeup of the mosquitoes that transmit malaria, so that we can find new ways of preventing them from infecting people."

Another lead researcher, Dr Mara Lawniczak (Life Sciences), said: "It's important to identify and monitor these hidden genetic changes in mosquitoes, if we are to succeed in bringing malaria under control by



“Our studies help us to understand the makeup of the mosquitoes that transmit malaria”

targeting mosquitoes.”

The Imperial researchers are now carrying out genome-wide association studies of mosquitoes to explore which genetic variations affect mosquitoes' propensity to become infected with malaria and other pathogens.

—LAURA GALLAGHER, COMMUNICATIONS AND DEVELOPMENT

Brain chemical finding could open door to new schizophrenia drugs

New research by scientists in the Department of Medicine has linked psychosis with an abnormal relationship between two signalling chemicals in the brain. The findings, published in the journal *Biological Psychiatry* on 30 September, suggest a new approach to preventing psychotic symptoms, which could lead to better drugs for schizophrenia.

Schizophrenia has been linked with abnormally high levels of a neurotransmitter called dopamine in a region of the brain called

the striatum. Drugs currently used to treat schizophrenia block the effects of dopamine in the brain, but they are not effective for all patients, and can have serious side effects.

The new pilot research, funded by the Medical Research Council, provides evidence that high levels of dopamine in people with psychotic symptoms occur as a consequence of changes in another brain chemical, glutamate. Glutamate-releasing cells in the hippocampus connect to the striatum and influence the activity of dopamine-

“If drugs that act on glutamate signalling can prevent psychotic symptoms, it would mean a real shift in the way that people are treated for schizophrenia”



releasing cells. Drugs that interfere with glutamate signals in the brain might therefore be able to prevent psychotic symptoms in people with schizophrenia.

First author of the study, Dr James Stone (Medicine), said: "In healthy volunteers, there's no clear relationship between glutamate and dopamine, but in people with early signs of psychosis, we see this abnormal relationship". He added: "This suggests that the signalling pathway between the hippocampus and the striatum is dysfunctional, and we might be able to treat this by targeting the glutamate system. If drugs that act on glutamate signalling can prevent psychotic symptoms, it would mean a real shift in the way that people are treated for schizophrenia."

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT



The future of engineering

Imagine a world where you can speak without words, where age-related memory loss is a thing of the past and where hundreds of intelligent sensors track and react to your every move. Last month the Faculty of Engineering held a brainstorming 'Ideas Lab' workshop to discuss the future of engineering over the next 40 years and identify long-term research priorities for the College, bearing in mind major societal challenges, such as climate change, global health and a shortage of energy.

Reporter speaks to Dr Simon Schultz (Bioengineering) and Professor Eric Yeatman (Electrical and Electronic Engineering) to hear what they think scientists in their fields will have achieved by 2050.

Your brain in 2050

Neurotechnology was identified as one of the key research fields for the future at the conference. Simon Schultz spoke provocatively about the long-term future for our brains. He described a number of scenarios such as 'runaway growth' – the idea of computers and technology superseding humanity, particularly at a time of environmental crisis. "If we have developed the technology to scan and simulate our brains in a computer in such an effective way, then it could be seen as more efficient to have humanity running on a set of solar powered computers in orbit than consuming resources on Earth," he says.

Simon admits that this is an unlikely scenario but it highlights some important ethical issues which might arise as the development of enhanced intelligence accelerates. Simon predicts that popular technolo-

gies which are already in use, particularly pervasive devices like the iPhone, which currently interact with the brain in a 'primitive' way – through the eyes – are likely to be the foundation of new types of advanced brain and machine interface technology.

"I envisage that computer and human interface technology may have developed so much that, by 2050, people will be using computers as back-ups for their brains, to offload tasks and extend their memory capacity," he says.

Neurotechnology today

Researchers in the Department of Bioengineering are already making headway with brain-reading technology. Simon explains that they have found a way to use viruses to put fluorescent proteins into the brain cells of mice. The fluorescence allows the researchers to see what is going on inside the cells from outside the body and watch the signals that one



neuron uses to talk to another. The researchers are also using similar technology to manipulate the signals that the brain is giving out. When a cell is made light sensitive by this method, its behaviour can be influenced by hitting it with a laser beam. This technique could potentially be used to tackle behavioural problems and neurological disorders.

Simon says there is a lot of future scope for using computer and human interface technology to help people with neurological disorders. For example, deep brain stimulation – a technology where electrodes inserted deep into the brain are used to electrically stimulate it. This has been used to treat a number of disorders including Parkinson's disease. So far, the 'machines' to which they have been connected have been very simple – like a switch – but in the future, there will be substantially more computer control of this. As we learn more about the brain – and more about how to target and manipulate specific cell types deep in the brain, for instance with optical techniques – there is the prospect of such treatments being used for a much wider range of cognitive disorders, without the side effects that occur with many drug treatments.

Another more commercial direction Simon anticipates is that neurotechnologists will get involved with social networking. "We didn't fully realise how strong people's

drive to communicate was before sites like Twitter or Facebook were developed," says Simon. "Social networking has already challenged the way people interact and I can see neurotechnology taking this further – for example, if you can have a brain to computer link, that implies that you can also have a brain-to-brain link, via a computer – linking up people by direct brain-to-brain links to solve problems and for communication purposes. I'm not quite sure how it will look at this stage, perhaps something like interacting without words? I stress that we're talking about the long term here!"

Simon explains that his key aim for the next 40 years is to continue working on basic neurotechnology and developing new tools for understanding how the brain works: "All these potential advances are going to be held up for 20 years without a better understanding of the brain – this is the weak link at the moment and the thing we need to focus on first, so that we can provide real benefits for society."

Big Brother theory

Another of the future priorities for engineering that emerged from the 'Ideas Lab' was the development of smart cities. Professor Eric Yeatman (Electrical and Electronic Engineering) specialises in research into powering and developing sensors. He spoke at the conference about the use of pervasive sensing in the future – the idea of having sensors everywhere – from your house to your car to public transport. These incredibly intelligent sensors could be used to monitor your daily routine, your health, the temperature of your environment and adapt it to suit your personal needs and preferences. "By 2050 I can see sensors playing a key part in society as they promote energy efficiency, comfort and convenience, not to mention health," Eric says.

Eric doesn't think that smart cities will suddenly appear in

2050 but that it will be a gradual process. He says that people forget how much data is already out there, for example, in London people use pre-paid Oyster cards on public transport and these log individuals' movements and patterns. Store loyalty cards also have information about what you buy on a certain day, not to mention the use of CCTV cameras monitoring the street and public buildings. CCTV now has the ability to recognise number plates and is beginning to employ face recognition technology too.

“Social networking has already challenged the way people interact and I can see neurotechnology taking this further”

"The amount of information held by society about our everyday life is growing and growing – most members of the public don't really know what is done with it and to a certain extent don't care," says Eric. "Theoretical loss of liberty tends not to bother people too much if it is traded off against a benefit, for example, people like Nectar cards as they get free stuff and Oyster cards mean you can avoid queues and don't have to carry change around in your pocket," he adds.



By 2050 intelligent sensors could be used to monitor and adapt your environment to suit your needs.

Challenges

One of the current concerns that communities have with the introduction of pervasive sensing is the loss of privacy.

"Adults today still have an instinctive need for privacy but the younger generation put everything about themselves onto social networking sites without thinking about it – they just don't have the same attitude," says Simon. "While many elements of the future of engineering aren't certain, what's for sure is that our perception on privacy will have to evolve."

Another issue is the worry about a Big Brother scenario of one omnipotent authority controlling all pervasive sensing technology.

Eric believes the jump to a smart city is smaller than people might think. He uses the analogy of how domestic service used to work in the mid-nineteenth century to explain: "Wealthy people used to live in houses controlled by lots of servants. You didn't have to press a button to get your empty tea cup taken away – it just happened. If you needed some food to be delivered, you didn't need to be home to receive it. In a 'smart' society this would be the same – just automated."

— EMILY ROSS,
COMMUNICATIONS
AND DEVELOPMENT

How do you imagine the future?

Post your ideas on the future priorities for engineering and read more comments on the Ideas Lab: www.imperial.ac.uk/reporter





The importance of quality

Reporter speaks to Senior Dean, Professor Jeff Kramer (Computing), about what it means to be a Dean.

Can you describe your career at Imperial?

I have been accused of a lack of imagination, as I've been at the College since 1973, but I still find working here exciting as I've had so many roles. I started at the College as a computer programmer and a research assistant in the Department of Computing, then moved up through the ranks to lecturer, senior lecturer, reader and then professor. I've also been Director of Undergraduate Studies and was Head of the Department for five years before becoming Dean in 2006. This is my second year as Senior Dean.

Why did you decide to become a Dean?

One of my colleagues suggested that I might be good at it. Like many people I wasn't sure what Deans actually do so I decided to find out more and give it a go.

What do Deans do?

Deans are here to maintain the quality and ethos of the College and to ensure that high standards are met throughout. They perform key College-wide roles including sitting on academic promotions and appointment boards, disciplinary panels and anything to do with the quality of College's activities. Each faculty elects two Deans for a three-year period. Once a Dean is elected 50 per cent of his or her time is spent as a Dean and 50 per cent as an academic.

How are Imperial's Deans unique?

Unlike many universities Imperial's Deans aren't part of the management structure, instead they sit alongside it. This independence means they are a step removed from decisions which management make, allowing them to criticise

when appropriate and to liaise between staff and management to ensure fairness.

What powers do Deans have?

Amongst others, Deans have the power of veto. For example, the College requires that there is a Dean on all appointment panels for academic staff, so if the Dean thinks the candidate isn't up to Imperial's standards then they could veto the appointment.

What does a Senior Dean do?

As the Senior Dean I am in charge of coordinating all the Deans' activities. We meet regularly to discuss what is going on and to give each other advice. I also sit on the College Council and the Senate and am often asked to contribute to review committees, such as the

College Governance Review last year.

What do you most enjoy about your role?

One minute you are on a promotions panel listening to a researcher talk about their amazing face recognition technology and the next you are at an appeal meeting hearing a student contest their degree mark. It is the wide variety which makes it so interesting.

How do you ensure you reach the right decision in disciplinary cases?

For me it is about recognising where the fault lies and sometimes it doesn't rest solely with the student. Sometimes I can see that the way a Department is organised has had an impact on the student's behaviour. Once you recognise that, you can help the Department to implement changes to its processes and also acknowledge that the student isn't completely to blame for the situation.

What are the challenges of the role?

Managing people is always a challenge. You have to be able to tell someone they aren't going to get the promotion they were hoping for or won't be appointed. You also have to be kind and diplomatic yet tough, as people don't always agree with your decisions.

What would you like to see change in the College?

I'd like to see the promotions process be more humane. The Deputy Rector, Professor Stephen Richardson, has already helped to revise the process and it is now shorter and less onerous than it was but there is still work to be done.

What qualities do you need to be a successful Dean?

You need to have common sense, an open mind, diplomacy, experience of managing people and a sense of humour. We are an opinionated bunch so being able to hold your own in a debate is also vital.

Have you always been opinionated?

I grew up in South Africa in the 1950s and 60s where politics was embedded into everything. I've always been quite opinionated and I don't like seeing injustice – I think being a Dean suits me as it is essentially about fairness.

—EMILY ROSS, COMMUNICATIONS AND DEVELOPMENT

inside

story

mini profile

Daqing Ma

Daqing Ma, Senior Lecturer (Surgery and Cancer), explains how undergoing surgery can put you at risk of Alzheimer's disease.

Why are you interested in dementia research?

Many people experience problems with memory after undergoing surgery. Thankfully, in most people it's only temporary, but some patients, especially elderly ones, go on to develop a more permanent disorder called postoperative cognitive decline, or POCD. Studies suggest that people undergoing surgery may have an increased risk and earlier onset of Alzheimer's disease. Since more and more people are having to undergo surgery, particularly over 65-year-olds, we urgently need to study the link between POCD and Alzheimer's, and develop strategies to prevent memory decline after surgery.

What have you discovered about how surgery can affect memory?

Surgery involves a lot of trauma, which can cause an inflammatory response in the body. But we didn't know if this inflammatory response could reach the brain to trigger other harmful changes. My collaborator, Dr Yanjie Wan in Shanghai, China, and I found strong inflammation markers together with signs of Alzheimer's disease in the brains of mice after they had major surgery, especially in an area called



the hippocampus, which is involved in memory.

Could there be a way to prevent these effects?

In our next proposal, we're testing statins and a purified Chinese herbal remedy. Rather than giving a treatment when the brain is already damaged, we're trying them as a preventative strategy. I think this is a better approach. The preliminary data look very promising.

What can doctors do now to minimise the risks attached to surgery?

Professor Lord Ara Darzi (Global Health Innovation) and Professor Guang-Zhong Yang (Bioengineering) have been pioneering the development of robotic surgery. This kind of surgery minimises surgical trauma, which is a major factor triggering these complications. I think robotic surgery or key-hole surgery should be used more in the future, especially for older patients.

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT

School of Subnuclear Physics

Imperial Physics postgraduate Leron Borsten describes his experience of going to the 2010 International School of Subnuclear Physics in Erice, Sicily, at the end of August.

"Venus, goddess of love, and Neptune, god of the sea, had a son – Erice. On top of a solitary mountain, rising suddenly from the arid and gently undulating plains of northern Sicily, he founded a small fortified town, which, to this day, bears his name.

Its jumble of pre-medieval buildings now play host to the Ettore Majorana Foundation and Centre for Scientific Culture. The Centre was co-founded in 1962 by P.M.S. Blackett, the Nobel laureate and former Head of Department after whom our very own building housing the Department of Physics is named. Today, it is run by Professor Antonino Zichichi, discoverer of the first example of nuclear antimatter, who initiated and directs the centre's oldest gathering, the International School of Subnuclear Physics, now in its 48th year, which I was lucky enough to attend this summer.

Erice is a truly beautiful setting – the lectures were held in the crumbling, yet elegant, San Domenico Monastery (which resulted in many a bewildered tourist, expecting a nice 12th century church interior, being greeted by the



Lectures were held in the San Domenico Monastery in Sicily.

finer points of collider physics). It was very exciting to hear about the latest developments in experimental and theoretical high energy physics from leaders in the field. For example, we got the latest news on the Large Hadron Collider from the CERN director-general Rolf-Dieter Heuer. However, perhaps the most interesting, and relatively unique, aspect of the school was the emphasis on engaging students and young researchers in the scientific dialogue. I am very grateful to the organisers for organising such a wonderful conference and for the opportunity to present our work on string theory."

To find out about the award Leron won at the School of Subnuclear Physics see Awards and Honours on page 6 of this issue.

► SCIENCE FROM SCRATCH

As explained by Sarah Barker, MSc Science Communication



Quasars

Quasars or 'quasi-stellar-objects' are so named because they appear as points of light in the night sky, and were originally mistaken for stars. However, quasars are actually the compact cores of galaxies surrounding supermassive black holes. They only look small because they are so far away, up to 28 billion light years, making them among the most distant objects in the universe. Thanks to their incredible brightness, they can always be seen, in fact there is nothing more luminous in the entire universe than a quasar. Thought to be powered by an accretion of material onto a supermassive black hole, some quasars have fantastically powerful jets of material that burst out from their cores at almost the speed of light. Relatively closer to home, there is a chance that a quasar could form when our milky way galaxy collides with the andromeda galaxy in three to five billion years.



IMPERIAL STUDENTS SHARE THEIR EXPERIENCES OF LIFE AT THE COLLEGE ON THE STUDENT BLOGGERS WEBSITE.

Student blogger Chris on Freshers' Fair:

"Tuesday rolled around and every society had to abandon their 12-hour sleeping pattern to set up for Freshers' Fair. Freshers' Fair is effectively a College-wide car boot sale, where every society tries to get as many new members as possible. A little unexpected pleasure was meeting a few people who recognised me from my blog. While campus stardom is an inevitable fate for us bloggers, it really isn't why we do this, and getting such positive feedback is the most uplifting experience one can really get around campus. Thank you to everyone who came up to me at the fair and to all the lovely people who comment regularly."



To watch Freshers' Fair in 30 seconds visit: http://www.youtube.com/user/imperialcollegevideo#p/u/o/V3_hzMTwEoE

blog
SPOT

Sustainable energy conference

Last month, the Sustainable Energy Futures MSc class from the Energy Futures Lab, exhibited their year's work in a student-led conference held on the South Kensington Campus. Romina Castro and Sean Tooze, who completed the course in September, report on their experiences:

"The Sustainable Energy Futures MSc provided us with a holistic view of energy systems and an awareness that society needs more sustainable solutions for energy generation. We designed this conference as a way to share our insights and promote future collaboration with other energy professionals.

Dr Andrew Heyes, Director of Education at the Energy Futures Lab, opened the day's proceedings and welcomed guests from a variety of backgrounds, including consulting firms, oil companies, utilities and academics.

There were two guest speakers on the day, Jonathan Brearley, Director of Energy Strategy and Futures at the Department of Energy and



The conference attracted students, staff and members of the energy industry.

Climate Change, and Professor James Durrant, Deputy Director of the Energy Futures Lab. Eight students also gave presentations on the main research topics studied over the last year. The topics ranged from solar energy technologies and carbon capture and storage, to combined heat and power and urban energy systems.

As we hoped, the presentations inspired lots of debate. For example, the Sustainable Transport presentation, which focused strongly on personal vehicle use, generated questions around future mobility alternatives and the controversial use of biofuels. Without diminishing the importance of mass transportation, students

shared their views, highlighting the trends in car ownership and the urge to find a solution for personal transport. They also defended the use of biofuels as a contributor in future energy demand but recognised the sensitivity of the social and environmental issues around this technology.

There was a lot of interest in the specifics of the projects during the poster presentation sessions held afterwards. Overall we were really pleased with the outcome of the event. We hope that future Sustainable Energy Futures students will be just as enthusiastic at putting on this event and make it an annual highlight for the energy sector."

INSPIRE students at the Royal Institution

On 27 September, a group of postgraduates on the INSPIRE scheme, which combines a Postgraduate Certificate in Education with specialised science communication training, visited the Royal Institution (RI), as part of their training in presenting activities to 11–18 year olds. PhD student Samuel Furse (Life Sciences) reports on the events of the day and meeting the Mayor of London.

"The first half of the morning at the RI focused on training us how to give scientific

demonstrations using liquid nitrogen, which boils at a chilly 196 Celsius. Halfway through the morning, the Mayor of London, Boris Johnson, arrived in the lab, flanked by national press photographers. He was there to promote science in London, as part of the launch of the Story of London Festival 2010, and give a demonstration, which we observed as part of our training. Drawing on the theme of his new Transport for London cycle scheme, the Mayor put a partially inflated, rubber, bicycle inner tube into a

"The whole day showed us how this type of interactive experiment can be presented in a memorable way for secondary-school-age children"

lidless polystyrene box and poured liquid nitrogen into it. The cooling effect of the liquid nitrogen hardened the rubber, making it brittle like a glass. After a few moments in the liquid nitrogen the Mayor withdrew the inner tube and proceeded

to drop it deliberately on the bench, at which point the coldest part of it shattered. This was very entertaining and a good example of something we could try and replicate in the classroom. After this demonstration, the Mayor left and we used liquid nitrogen, then dry ice, to explore some of the physical properties of the world around us. The whole day showed us how this type of interactive experiment can be



Boris Johnson doing a practical demonstration at the Royal Institution. Samuel Furse pictured behind.

presented in a memorable way for secondary-school-age children. All in all, it was a valuable and memorable day's training."



Spider's webs, blindfolds and team building

Earlier in October seven management trainees took part in a team-building session led by Steve Rathborn, Head of the Learning and Development Centre. The College's Management Training Scheme annually recruits graduates, who undertake six-month placements in College departments. One of the new trainees, Katherine Bayliss (Communications and Development), describes their experiences of the day:

"Having been told only that we would need sporty clothes for the day, we arrived at *Ethos* in a state of pleasant curiosity. We were introduced to the mantra for the team-building exercise, 'PLAN → APPLY → DO → REVIEW', and were

then led outside and blindfolded by Steve, who gave us a rope and told us to use it to form a large square. After some rather chaotic activity, we took our blindfolds off to see that we had indeed managed to create a square, albeit a slightly squashed one! We also completed our next challenge by transporting each team member through a magic spider's web made of cord without touching any part of it; this was achieved by physically lifting and hurling each person through its largest hole. Our final challenge was to work together to produce a drawing of the gym; the results did not display much artistic ability on our part! As well as being fun, the day improved our understanding of how to work together."



Dr Charlotte Williams is a reader in Catalysis and Polymer Chemistry in the Department of Chemistry. She talks to Reporter about making sustainable polymers.

What have you discovered?

A group of catalysts that enable a process, which uses carbon dioxide as a raw material to make polymers or plastic materials.

How is your discovery unique?

The reaction was first discovered in Japan in 1969. However, at that time, the catalysts that the scientists were concentrating on, required high pressures of CO₂ to work and actually emitted more CO₂ than they consumed, making it unsustainable. The catalyst which we are using is quite different. Up until now,

INVENTOR'S CORNER

Fantastic plastic

most of the research in this area focused on catalysts with a single metal centre, but we decided to target binuclear catalysts, in other words, those that have two metals in very close proximity to one another.

"The catalysts we have discovered are very stable and tolerant of water, and can be handled without special operating procedures"

How is the process you have discovered more sustainable?

The catalyst we use enables the process of making polymers to occur at one atmosphere pressure of CO₂. This is significant because it's the kind of pressure of CO₂ that you might find produced in industrial processes like power generation, cement manufacture, or fermentation.

How did you discover this catalyst?

It was a quite deliberate project. Research papers have, for some time, indicated that binuclear catalysts are key to making the process more sustainable, so we decided to test several metals. We screened many and it took three years to find this successful group of catalysts.

How will your discovery benefit society?

There is an increasing consumer demand for sustainable polymers. The catalysts we have discovered are very stable and tolerant of water, and can be handled without special operating procedures in the air and in the laboratory. This makes the process of producing polymers from CO₂ much more feasible.

—ANUSHKA WARDEN, IMPERIAL INNOVATIONS

VOX POP

What have you been doing since you finished your degree?

Over 2,000 Imperial students from around the world graduated in the Commemoration Day ceremonies on 20 October. Some of the new graduates told Reporter what they have been up to over the summer.



"As part of the Teach First programme, I'm now teaching maths and science full-time at an academy in Nottingham."

JONATHAN LANSLEY-GORDON (PHYSICS)



"I've spent the summer fundraising for Cancer Research UK and now I'm doing an MRes in Biomedical Research at Imperial."

RESHA AL-RABEH (LIFE SCIENCES)



"My friends and I decided to travel, so we spent a month and a half in South America and after that I went travelling around Italy".

BIANCA GRANARA (MATHEMATICS)

obituaries



MR JIM CUNNINGHAM

Jim Cunningham, former Departmental Superintendent in the Department of Aeronautics, died on 4 July 2010. His son, Don Cunningham, pays tribute to his career and the 40 years he spent at Imperial.

“Dad came to Imperial in April 1949 as a Grade 1 Lab Assistant in the Department of Aeronautics, which later moved to the Roderic Hill Building on the South Kensington Campus. He ascended through the ranks to become Chief Technician in 1951 and Departmental Superintendent in 1973. He was made an Honorary Associate of Imperial College in 1984.

One of his key contributions to the College was building the three-axis balance used to measure forces on models tested in the Donald Campbell low-speed wind tunnel. The wind tunnel brought in a lot of funding to the College as companies used it to test vehicles, in particular, Formula One racing cars. The balance that my father developed is still used today for tests on aircraft, cars and boats.

Outside his core role, he was very involved in giving health and safety lectures and serving as a mason at the College lodge. As a superintendent, he was a keen participant in discussions on apprentices, wages and grants.

Imperial was dad’s life – he held the College on a pedestal. His proudest moment was when he was awarded the Associateship at the Royal Albert Hall.

He retired from the College in 1987 and continued an active life. He loved sailing and travelling and was a keen fan of the Farnborough Air Show, although he wasn’t so keen on flying!

Dad was a very principled man and wouldn’t suffer fools gladly. As a father he was kind, generous and loving.”

Bringing science to the public



Lucía de la Riva Pérez is a postdoc in the Centre for Molecular Microbiology and Infection (CMMI), studying the biology of the ‘superbug’ *Clostridium difficile*.

Lucía has been working as a volunteer ambassador at the Science Museum in South Kensington for the last year and is launching a project to engage the public in the research she does at Imperial. She shares her experience of bringing visitors into her lab.

“People often hear about scientists and their discoveries on the news but many have never been inside a laboratory”

galleries. After doing this for a number of months, I thought it would be great to take advantage of Imperial’s close location to the Science Museum and I began to work on launching a new project – organising tours for volunteers and members of the museum to my lab in the CMMI. People often hear about scientists and their discoveries on the news but many have never been inside a laboratory. Last week I took my first tour

group – it started with a welcome talk and a health and safety talk by Heather Combe, our Laboratory Manager. Then I showed them the microbiology lab and my colleague Dr David Albesa-Jove demonstrated the facilities at the Centre

for Structural Biology. If I can persuade more people to get involved, we could run tours to other laboratories and increase the number of visitors.”

If your Department is interested in offering tours to the public, contact Lucía: l.de-la-riva-perez@imperial.ac.uk

If you want to support the Science Museum, be kept up-to-date with what’s going on and get a whole raft of benefits, including exclusive gallery private views, visit: www.sciencemuseum.org.uk/about_us/membership.aspx

“I was involved in a number of science public engagement activities when I was working towards my PhD at the -Universitat de Barcelona in Spain, and I wanted to continue this when I moved to London. I’ve always felt that the Science Museum does a great job communicating science to society, so I thought it would be a unique experience to work there. A year ago I started working as an ambassador over the weekends. My role was to approach visitors, assist them and encourage them to visit certain

long
service

Reporter features staff who have given many years of service to the College. Staff listed below celebrate anniversaries in the period 5–20 October. Data is supplied by HR and is correct at the time of going to press.

— EMILY GOVAN, INTERNATIONAL OFFICE

20 years

- Mr Christopher Carr, Senior Research Lecturer (Physics)
- Dr Matthew Hodes, Senior Lecturer (Medicine)
- Professor Lesley Regan, Clinical Professor (Surgery and Cancer)
- Ms Kathryn Bull, Information Scientist/Librarian (Kennedy Institute)
- Dr Tim Weaver, Senior Lecturer (Medicine)

30 years

- Mrs Rita Clode, Public Services Manager, Circulation and Membership (Library)
- Mr Barry Coles, Chemical and Analytical Technician (ESE)
- Mr Carl Jurczuk, Technician (ESE)
- Dr John Shemilt, Deputy Director of ICT and Head of Technology Operations (ICT)
- Mr Graham Stuart, Head of Computing Services (Chemical Engineering and Chemical Technology)

SPOTLIGHT



Emeritus Professor Douglas Inman (Materials) 50 years

Long server Emeritus Professor Douglas Inman, Senior Research Fellow (Materials), has been with the College for over 50 years, working in the field of electrochemistry. He specialises in molten metals at high temperatures. “Growing up in Greenwich, my father was a furnace operator at a lead manufacturers. I remember feeling excited watching materials melting at his workplace – this was the start of my interest,” he says. Douglas went on to join Imperial as an undergraduate in 1950 and spent six years studying in the Department of Chemistry for his first degree and then his PhD, awarded in 1957. He returned to Imperial in 1966, this time to the Department of Metallurgy (now Materials), as Third Nuffield Fellow (readership status). In 1972 he became Reader in Chemical Metallurgy and in 1986, Professor of High Temperature Electrochemistry. Since his retirement in 1996, he has continued his research as Emeritus Professor. He has had numerous papers published during his time at the College but said: “I’m particularly proud of the Kroll Medal of the Institute of Materials, which was awarded to me in December 1994.” As a staff member, he was president of the Athletics and Cross Country Club for some years and nowadays enjoys playing golf or walking his dog in the local park.

mailbox

Trevor Bruiners

Dear Editor,
I recently saw a copy of *Reporter* published on 26 November 2009 (issue 212), which contained an obituary for my father, Trevor Bruiners, Residences Security Officer, who unfortunately lost his fight with cancer last year. As his obituary reads, he was a proud family man and possessed a 'keen to improve' type of character. He had worked at the College for some time and always looked at revolutionising even the smallest of systems and processes. I remember as a young child listening to his ideas of security management procedures and reading a long article he took over three years to write...

I wanted to write to you to share with you a quick story that will help his legacy live on for many years to come.

After his passing I decided to pick up on one of his latent ideas. He had previously thought up a concept for real-time voice translation. I formed a company, Family Bruiners, and decided to set forward with the principles of hard work that my father so strongly encouraged.

It hasn't been easy but this week we unveiled one of the world's first pieces of real-time voice translation software for Skype calls. We have launched it completely free, so that everyone can use it and 10 per cent of all donations to the component go to Cancer Research.

At the unveiling, we dedicated this achievement to the memory of my father. I wanted to share the story with those who may have known him at the College.

—James Bruiners

Welcome new starters

Mr Yashodhan Agalgaonkar, EEE
Dr Hind AL-Khayat, NHLI
Dr Anjali Amin, Medicine
Ms Sarah-Jane Anderson, Public Health
Miss Helena Andersson, Medicine
Miss Ioanna Antoniadis, Life Sciences
Mr Muzaffar Anwar, Surgery and Cancer
Dr Darius Armstrong-James, Medicine
Mr Christopher Arrell, Physics
Dr Andrew Ashley, Chemistry
Mrs Elizabeth Atkinson, Surgery and Cancer
Dr Audrey Aupoix, Chemistry
Dr Rebecca Babb, Medicine
Mr Sebastian Bailey, Life Sciences
Mr Akindynos-Nikolaos Baltas, Business School
Dr Istvan Bartok, Medicine
Miss Katherine Bayliss, Human Resources
Mr Tobias Becker, Computing
Dr Anthony Bellotti, Mathematics
Dr Carlo Bertolli, Computing
Miss Kanwal Bhatia, Clinical Science
Dr Susannah Bloch, NHLI
Mr Benjamin Blount, Bioengineering
Ms Sharleen Bowes, NHLI
Mr Edward Brightman, ESE
Ms Tamaryn Brown, Grantham Institute
Dr Cameron Browne, Computing
Dr Sarah Burl, Medicine
Dr Albert Busza, Medicine
Mr Max Cai, Computing
Dr Patrizia Camelliti, NHLI
Dr Francesco Carlucci, Medicine
Dr Franco Catalano, Physics
Dr Christopher Chiu, NHLI
Miss Deborah Chong, NHLI
Miss Helen Cinnamon, Planning
Mr Philip Clemow, EEE
Dr Alessandro Colasanti, Medicine
Miss Carys Cook, ESE
Dr Rosenildo Correa da Costa, Chemistry
Dr Aimee Di Marco, Surgery and Cancer
Dr Sami Dib, Physics

Mr Hugo Doyle, Physics
Dr Nadav Drukker, Physics
Mr Joshua Ellul, Computing
Mr Suffwan Eltom, NHLI
Mr James Evans, Life Sciences
Dr Pilar Garcia Allende, Surgery and Cancer
Mr David Garcia Munzer, Chemical Engineering and Chemical Technology
Dr Cigdem Gelegen Van Eijl, Life Sciences
Dr Giorgio Gilestro, Life Sciences
Mr Boris Ginzburgs, Business School
Mrs Kylie Glasgow, Medicine
Dr Ben Goddard, Chemical Engineering and Chemical Technology
Mr Neil Gregory, Medicine
Dr Fiona Hamilton, Public Health
Miss Alexa Hawkins-Bell, Surgery and Cancer
Mr Hans-Joachim Hein, Mathematics
Dr Christoph Hellmann, Materials
Dr Jethro Herberg, Medicine
Miss Zoe Hollingsworth, International Office
Miss Vivian Ikem, Chemical Engineering and Chemical Technology
Miss Attia Ishaque, Medicine
Dr Khaleel Jamil, Medicine
Miss Bihan Jiang, Computing
Mr Jun Jiao, Computing
Dr Ian Johnston, Medicine
Dr Nicola Kalk, Medicine
Mr Michael Kember, Chemistry
Dr David Kidd, Life Sciences
Mr Jeong Kim, Chemical Engineering and Chemical Technology
Mr Timothy Kimber, Computing
Dr Thomas Kirchartz, Physics
Professor Peter Kohl, NHLI
Mr Sebastian Kroll, Chemistry
Dr Jonathan Landy, Surgery and Cancer
Mr Mauro Laudicella, Business School
Mr Daniel Laydon, Medicine
Dr Vladimir Latic, Mathematics
Dr Erwan Le Martelot, Computing
Mr Michael Lennon, Physics
Mr Jean-Noel Levy, Chemistry
Mr Rhys Lloyd, Physics
Dr Nicolas Lorient, Computing
Mr Song Luan, EEE
Mr Stephen Luckhurst, Human Resources

Mr Michael Macdonnell, Surgery and Cancer
Dr David MacIntyre, Surgery and Cancer
Mr Szymon Manka, Kennedy Institute
Mr Brais Martinez Alonso, Computing
Mr Andrea Maurano, Chemistry
Dr Miltiadis Mavrakakis, Mathematics
Ms Siobhan McKenna, Medicine
Mr Samuel McKenney, Human Resources
Dr Mark McPhail, Medicine
Dr Omar Merlo, Business School
Dr Reza Mirnezami, Surgery and Cancer
Dr Ruth Mizoguchi, Medicine
Ms Bingli Mo, Chemistry
Dr Philip Molyneaux, NHLI
Miss Hayley Moore, Surgery and Cancer
Mr Gareth Morris, ESE
Miss Barbara Muriene, Bioengineering
Mr Chun Ng, Computing
Dr Heather Niederer, Medicine
Mr Adrian Nightingale, Chemistry
Dr Jonathan Nolan, Medicine
Dr Kevin Nolan, Mechanical Engineering
Dr Rupert Oulton, Physics
Dr Diego Oyarzun, Bioengineering
Miss Candice Palmer, Chemical Engineering and Chemical Technology
Dr Kerry Papps, Business School
Mr Allan Paras, NHLI
Ms Millie Parsons, Public Health
Miss Roberta Perelli, Medicine
Mr Richard Phibel, Mechanical Engineering
Ms Kaisa Piipari, Clinical Science
Dr Izabela Piotrowska, NHLI
Miss Ana Plata Garcia, NHLI
Dr Lucia Possamai, Department of Medicine
Dr Shireen Quli Khan, NHLI
Dr Salman Rana, Surgery and Cancer
Mr Oliver Ratmann, Public Health
Ms Bonnie Razzaghi, Bioengineering
Professor John Reynolds, Computing
Dr Stelios Rigopoulos, Mechanical Engineering

Dr Diana Romero, Surgery and Cancer
Dr Indrani Roy, Physics
Dr Evangelos Russo, Medicine
Mr Muhammad Saleem Khan, Medicine
Ms Lysann Sauer, Surgery and Cancer
Mr Andrew Scott, NHLI
Mr Peter Shardlow, Physics
Dr David Sibley, Chemical Engineering and Chemical Technology
Dr Markus Sikkell, NHLI
Mr Rajandeep Singh, Human Resources
Miss Miranda Smith, Physics
Miss Tanya Stezhka, Medicine
Miss Carmel Stock, NHLI
Dr Song Sun, Mathematics
Dr Satoko Tanimoto, Chemical Engineering and Chemical Technology
Dr Marisa Taylor-Clarke, Surgery and Cancer
Mr Ankur Thapar, Surgery and Cancer
Dr Alexander Thom, Chemistry
Mr William Thomas, CHoSTM
Mr Mark Thommyppillai, EEE
Mr Brendan Tollit, ESE
Miss Effrosyni Tsafa, Life Sciences
Dr Anthony Uren, Clinical Sciences
Mr Nikolay Vaklev, Physics
Mr Thomas von Erlach, Materials
Mr Fei Wang, Humanities
Mr Mark Warren, Life Sciences
Dr Helena Watts, Surgery and Cancer
Mr Simon Watts, Communications and Development
Dr Conghua Wen, Public Health
Miss Nikki Whitelock, Public Health
Miss Anna Woskowicz, Kennedy Institute
Professor Henry Wynn, Mathematics
Miss Feifei Yang, Humanities
Dr Nada Yousif, Medicine
Mr Hamed Zolghadrzadehjahromi, Civil and Environmental Engineering

This data is supplied by HR and covers the period 25 September–15 October. For Moving on and Retirements covering the same period, visit the online supplement to this edition at: www.imperial.ac.uk/reporter. This data was correct at the time of going to press.



10 NOVEMBER ▶ NHS TEACHING EXCELLENCE AWARDS AND INAUGURAL LECTURE

Translational research – Gila monsters, neuropeptides and Margaret Thatcher

The NHS awards celebrate the contribution of over 800 NHS staff, who help provide

undergraduate medical education at Imperial. They recognise that medical teaching is a shared activity, delivered by medical and nursing staff, pharmacists, therapists and others employed in hospitals and general practice. The awards ceremony will be followed by Professor of endocrinology Karim Meeran's inaugural lecture on the role of translational research in delivering new drugs.



11 NOVEMBER ▶ SCHRÖDINGER LECTURE

From Einstein's intuition to quantum bits: a new quantum age?

The 23rd annual Schrödinger lecture will be given by Professor Alain Aspect, CNRS distinguished

scientist and professor, Institut d'Optique, Palaiseau. Professor Aspect will talk about a new field – 'quantum information' – built on the work of Einstein, Podolsky, Rosen and Bell. This new research is centred around quantum bits called 'qubits'. Large-scale practical implementation of such concepts could revolutionise our society, as did the laser, the transistor and integrated circuits in the twentieth century.

3 NOVEMBER ▶ SEMINAR

Robotics in surgery – state of the art

Featuring Professor Brian Davies and Dr Ferdinando Rodriguez y Baena (both Mechanical Engineering)



10 NOVEMBER ▶ NHS TEACHING EXCELLENCE AWARDS AND INAUGURAL LECTURE

Translational research – Gila monsters, neuropeptides and Margaret Thatcher

Professor Karim Meeran, Professor of Endocrinology (Medicine)

10 NOVEMBER ▶ SEMINAR

Abusive head trauma in infancy and early childhood

Arne Stray-Pedersen, Institute of Forensic Medicine, University of Oslo



11 NOVEMBER ▶ LECTURE

Pay regulation kills and other cautionary tales

Professor Carol Propper, Professor of Economics (Business School)

11 NOVEMBER ▶ ANNUAL SCHRÖDINGER LECTURE

From Einstein's intuition to quantum bits: a new quantum age?

Professor Alain Aspect, CNRS distinguished scientist and professor, Institut d'Optique, Palaiseau

11 NOVEMBER ▶ MEMORIAL

A event to celebrate the life of Imperial's longest serving Rector, Lord Flowers

To register your attendance, please contact: amna.siddiq@imperial.ac.uk



15–19 NOVEMBER ▶ CONFERENCE

Neonatal update 2010

Five-day international event is a forum for the presentation of new research data and clinical practice

17 NOVEMBER ▶ SEMINAR

Mechanical stress, stem cells and vascular tissue regeneration / engineering

Professor Qingbo Xu, BHF John Parker Chair of Cardiovascular Sciences, King's College London

18 NOVEMBER ▶ COURSE

Patient Advocacy and Quality Improvement

Course coinciding with EU Antibiotic Awareness Day



23 NOVEMBER ▶ DENNIS ANDERSON ISSUES IN ENERGY SEMINAR

Smart, safe, and just: goals for the global energy system

Professor Rob Socolow, author of *The Princeton Wedges*

1 DECEMBER ▶ SEMINAR

Fundamental limits on the suppression of molecular fluctuations

Dr Ioannis Lestas, Fellow of Clare College and Director of Studies in Engineering, University of Cambridge



8 DECEMBER ▶ OPEN DAY

Postgraduate open day 2010

For those interested in pursuing postgraduate study

take note

Supporting postdocs

A new publication is available to staff offering details of career support on offer to postdocs. The document includes case studies and good practice from departments, highlighting comprehensive induction processes, and ongoing development support throughout a postdoc's time at Imperial and towards the end of their contract. Produced by the Postdoc Development Centre, the publication emphasises the support offered to departments to assist with their aim of producing world class researchers.



www.imperial.ac.uk/staffdevelopment/postdocs1/publications

VOLUNTEERING

Samaritans

Project ID: 708
 Organisation: Samaritans, Central London
 Date(s): Ongoing
 Time(s): One shift per fortnight and one night shift per month
 Location: Soho and various locations across London



If you can listen without giving advice or offering an opinion and be non-judgmental and open-minded then the Samaritans would like to hear from you. As a volunteer with the Central London branch of the Samaritans you will have the opportunity to make a real difference by helping our callers deal with distress. Everyone who calls needs the space to talk, and some may be thinking of taking their own lives. As a Samaritan you'll offer those in real crisis the chance to speak confidentially to another human being about what they have been going through. You will be fully trained to deal with a huge range of issues and situations, to prepare you for the role.

For more information

To take part in a scheme or to hear more about volunteering in general, contact Marco Benozzi:

☎ 020 7594 8141
 ✉ volunteering@imperial.ac.uk

For full details of over 250 volunteering opportunities please visit:

www.imperial.ac.uk/volunteering

✉ Subscribe to the weekly newsletter by emailing volunteering@imperial.ac.uk

Stay in the loop

✉ Visit www.imperial.ac.uk/events for more details about these events and others. To sign up for regular updates about Imperial events please email: events@imperial.ac.uk

