Hidden gems

Scientists unravel the secrets of proteins in Imperial’s Oxfordshire outpost at Diamond Light Source → CENTRE PAGES

£6 MILLION LABS OPENED
Facility to explore ways of storing CO₂ underground
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“IT’S BEEN A PRIVILEGE”
Professor Kinloch reflects on his time as HoD
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Imperial physicists help to make accelerator science go faster

The John Adams Institute for Accelerator Science (JAI) is expanding, with a new research base at Imperial joining two existing centres at Royal Holloway, University of London and the University of Oxford.

Scientists at the Institute are researching ways to improve particle accelerator technology and its applications in science and medicine. New funding from the government’s Science and Technology Facilities Council will help accelerator science develop beyond its current use for research in fundamental physics, such as the hunt for new bosons at the Large Hadron Collider.

Experts at Imperial will now help to develop advanced medical treatments, such as new forms of cancer radiotherapy that avoid damaging tissue surrounding a tumour. Future developments would help to reduce the size and cost of machines, making them accessible for use in smaller hospitals or research centres.

Professor Zulfikar Najmudin, JAI’s deputy director (Physics), said: “The JAI now connects the world-leading efforts on laser plasma acceleration that were developed in Imperial’s Plasma Physics Group and Oxford’s Atomic and Laser Group. It creates new opportunities for developments of laser plasma acceleration applications and new instruments, in particular compact X-ray light sources.”

AHSC Director appointed

Professor David Taube, one of the country’s leading kidney experts and the UK’s only Professor of Transplant Medicine, was appointed Director of the Imperial College Academic Health Science Centre (AHSC) on 1 September.

Professor Taube, former medical director at Imperial College Healthcare NHS Trust and Professor of Transplant Medicine at Imperial, brings more than 25 years’ experience in research, education and clinical leadership to the role. The AHSC was established as a partnership between the College and the Imperial College Healthcare NHS Trust in 2007 with the aim to transform healthcare by translating research discoveries into medical advances in as fast a timeframe as possible.

Reporting jointly to the Principal of the College’s Faculty of Medicine and the Chief Executive of the Trust, Professor Taube will drive the AHSC and facilitate close collaboration between the partners.

Welcoming the appointment, Mr Mark Davies, Chief Executive of Imperial College Healthcare NHS Trust, described how Professor Taube embodies the tripartite mission of the AHSC: “He is one of the country’s finest nephrologists, a prolific translational researcher with a proven track record of raising education and training standards, and of driving the adoption of innovative practice in the largest renal and transplant centre in the UK.”

Professor Dermot Kelleher, incoming Principal of the Faculty of Medicine, said: “Professor Taube will play a vital role in steering the AHSC to deliver academic and clinical excellence. His energy and outstanding reputation as a medical leader mean he is well equipped to develop the AHSC to deliver world class healthcare to local, national and global populations.”

Investigating the science of cyber security

A new academic research institute to improve understanding of the science behind the growing cyber security threat was announced on 13 September. The initiative will enable leading cyber security academics from seven universities, including Imperial, to collaborate with social scientists, mathematicians and computer scientists from across the UK.

The institute is a virtual organisation funded by a £3.8 million grant, as part of a government commitment to increasing the nation’s academic capability in all fields of cyber security.

“...This research will help businesses, government and individuals to better protect themselves from cyber threats”

Researchers from the Institute of Security Science and Technology at Imperial were selected through a tough competitive process in which they worked with Queen Mary and Royal Holloway colleges, University of London, to devise new research programmes for security science.

Congratulating the successful teams, David Willets, Minister for Universities and Science, said: “This new research institute will draw on the leading expertise in our universities from both technological and behavioural disciplines to address key challenges. It will help businesses, government and individuals to better protect themselves from cyber threats so they can make the most of the opportunities the internet presents.”

—ADAPTED FROM A JOINT PRESS RELEASE BY GOVERNMENT COMMUNICATION HEADQUARTERS AND THE ENGINEERING AND PHYSICAL SCIENCES RESEARCH COUNCIL

Ahmed
Business secretary shares his vision for UK industry during Imperial tour

The Secretary of State for Business, Innovation and Skills, Dr Vince Cable MP, introduced his vision for British industry during a visit to Imperial on 11 September, before taking a tour of the College’s £2 million pilot plant in the Department of Chemical Engineering.

In a speech which praised British universities as a strong export industry, he outlined how government can support and work with business in the long term. The new industrial strategy includes plans for partnerships to expand sectors such as aerospace and new approaches to translate academic research into commercial developments. Dr Cable also announced that an Innovation and Knowledge Centre for Synthetic Biology would be created.

The event was hosted by Professor David Gann, Deputy Principal of the Business School, and guests including representatives from industry, the media, Imperial and the College’s corporate partners.

Welcoming Dr Cable to the College and to the Business School, Professor Gann, who is also Head of Innovation and Entrepreneurship, said: “This is an apt setting for the launch of your strategy today. Here at Imperial we are always looking to the future, and our own research and teaching is focused on translating ideas into practice.”

Following his speech, Dr Cable toured the Department of Chemical Engineering’s carbon capture pilot plant. The facility was developed as part of a partnership between the College and industry, and demonstrates to students how CO₂ emissions can be captured by a power plant of the future.

PhD student Amelia Foo gave a demonstration in the plant. She said: “We had a mock emergency situation to demonstrate one of our training scenarios for him. It was a great opportunity for us to raise awareness about the world class training we get at Imperial.”

—John-Paul Jones, Communications and Development

Rock solid research gets a boost

On 13 September, four new laboratories were opened at the College that will enable scientists to study in high detail carbonate rocks and how fluids flow in them. These rocks are the predominant reservoir type in the Middle East, storing more than 70 per cent of the world’s oil and gas reserves underground.

The laboratories were officially opened by Mr Saad Al-Kaabi, Director of Oil and Gas Ventures for Qatar Petroleum, Mr Peter Voser, Chief Executive Officer of Shell, and Dr Tidu Maini, Executive Chairman of the Qatar Science and Technology Park.

The Imperial researchers working in the £6 million labs are developing a deeper understanding of what happens to these emissions at the microscopic level by carrying out experiments to observe CO₂ within the rock under reservoir conditions and modelling how it flows through tiny pores in the rock. This is then linked to imaging experiments and models on a larger scale, so that the researchers can predict what happens to CO₂ when it is stored in carbonate rock reservoirs, which can be hundreds of kilometres in size.

The research is part of the Qatar Carbonates and Carbon Storage Research Centre (QCCSRC) run jointly by researchers in the Departments of Chemical Engineering and Earth Science and Engineering at Imperial. Professor Geoffrey Maitland, Director of QCCSRC (Chemical Engineering), said:

“A deeper understanding will enable us to improve processes such as carbon capture and storage and enhance oil recovery. These rock formations, which are located all around the world, including the Middle East, could provide us with a valuable repository for storing CO₂, but more work needs to be done to understand how to lock away these greenhouse gas emissions effectively.”

—Colin Smith, Communications and Development

Watch a video about the work being done in one of the new labs at: http://bit.ly/rocksolidvid
Imperial to develop ‘Marsquake’ technology

Technology for detecting ‘Marsquakes’ will be developed by an Imperial engineer as part of NASA’s next unmanned mission to the red planet, it was announced at the end of August.

Dr Tom Pike (Electrical and Electronic Engineering) will develop miniaturised seismometers, based on silicon chip sensor technology, to detect Martian seismic activity, known as Marsquakes, on Earth’s nearest neighbour as part of the Insight mission to Mars. The mission’s aim is to understand the formation and evolution of rocky planets by investigating Mars’ internal structure.

This is the second mission that Dr Pike has been involved with. In 2008, as part of the Phoenix mission, he developed technology for holding samples of Martian soil and helped NASA to detect water in the form of ice, just below the surface, as part of the search for evidence of past or present habitability on the planet.

Dr Pike said: “In some ways the Insight mission will see history repeating itself as we will be using the same spacecraft design that we used for the Phoenix mission. However, on board will be a very different payload with instruments to help us to peer deep into the Martian interior. This could help us to understand more about the early evolution of planets like the Earth.”

The Insight mission is due to launch in March 2016 and touch down on the Martian equator in September that year. The lander will be equipped with a geophysics station that will be used to carry out three experiments that include measuring tremors below the surface with the seismic experiment for interior structure instrument package; determining the precise rotation of Mars using the spacecraft’s onboard communications system, and working out the temperature inside the planet with the heat flow and physical properties package.

—COLIN SMITH, COMMUNICATIONS AND DEVELOPMENT

New charter for working together

A new student charter, setting out the principles by which Imperial staff and students work together, has been signed by Imperial’s President & Rector Sir Keith O’Nions and the President of Imperial College Union, Paul Beaumont.

The new initiative follows recommendations by the Student Charter Working Group, established by the government in partnership with Universities UK and the National Union of Students, which suggested that each higher education institution should have a high level statement setting out the mutual expectations of universities and students.

Imperial’s version, Our Principles, was developed by academic and support staff in partnership with undergraduate and postgraduate student representatives, and will be reviewed annually. It outlines expectations of how the College and students can work together across four categories: what Imperial will provide through its staff, what it will provide its students with, what students should expect to do, and what Imperial College Union will do.

Paul Beaumont said: “Our Principles will be an accessible way for students to learn what to expect from Imperial. It highlights that studying here is a two-way agreement that relies on students working hard, through which they will be rewarded with support in all their endeavours.”

—JOHN-PAUL JONES, COMMUNICATIONS AND DEVELOPMENT

Read Our Principles here: www.imperial.ac.uk/students/ourprinciples

Heavens above! MBA alumnus wins The Angel on Sky 1

Business School alumnus Yakub Zolynski, pictured right, won £100,000 investment for his business idea in August after competing in Sky 1’s new entrepreneur show The Angel.

Yakub came up with the idea for Market Mavens, a recruitment agency for business school graduates, while studying for his MBA in 2009. Looking for opportunities to grow his idea into a successful business, Yakub decided to enter the game show after noticing the advert on Imperial’s LinkedIn page.

With a £100,000 investment up for grabs, contestants are put through their paces with four rounds based on first impressions, teamwork, a sales pitch and a final interview. The ‘angel’ is billionaire John Caudwell, a successful entrepreneur who created mobile telecoms company The Caudwell Group in 1987. The company is best known for the high street chain Phones4U.

“My worst fear was going out in the first round. I kept on thinking about the grief I would get from my friends!”

Competing against four other hopefuls, Yakub fought his way through the rounds and emerged as the winner, securing investment for his business.

Commenting on the competition Yakub said: “My worst fear was going out in the first round. I kept on thinking about the grief I would get from my friends if I let this happen. I did actually find myself in the firing line in every single round but managed to get through.”

—TANYA GUBBAY, COMMUNICATIONS AND DEVELOPMENT
Screening failure

**BBC RADIO 4 • 31.7.2012**

Areas with the highest tuberculosis (TB) rates in the UK are failing to implement screening programmes for high-risk groups, *Radio 4*’s File on 4 reported. There are often no visible symptoms of TB infections, so migrants from areas where TB is prevalent are supposed to have blood tests to check for the bacteria. However, Imperial research found that many primary care providers are not performing the tests. “Those areas with the highest rates are devoting all their resources to the daily burden of treating active TB disease, but what that leaves below the surface is the vast reservoir of latent TB,” Professor Ajit LaVani (NHLI) said. “It’s frightening and it’s part of the reason why TB has been progressively increasing for the last two decades in Britain.”

Rise of the machines

**DAILY MAIL • 7.8.2012**

These are exciting times for robotic surgery, according to Emeritus Professor Brian Davies (Mechanical Engineering), who invented the first robot to remove tissue from a living human in 1991. Today’s robots are transforming treatment for joint problems, irregular heartbeats and many other conditions, and their accuracy makes it possible to carry out complex operations with minimal trauma to the patient. Speaking to the *Daily Mail* he noted that “Robots can work much more accurately than the human hand, which is fantastic now that we are seeking minimally invasive surgery through a tiny incision where precision is key.”

Physicists seeking superpartners

**NBC NEWS • 8.8.2012**

Following their detection of the elusive Higgs boson, scientists at CERN are now trawling through data produced in the Geneva research centre’s Large Hadron Collider for signs of what they call ‘SUSY’, reported *NBC news*. Formally known as supersymmetry, SUSY is the idea that every one of the elementary particles that make up the universe and everything in it has an almost, but not quite identical, ‘superpartner’. “SUSY is still a very valid option and we have just started to constrain it on the energy scale,” said Dr Oliver Buchmueller (Physics). “There are many regions on the map of where it should be that we have still to explore.”

Sex differences neglected

**DAILY MAIL • 28.8.2012**

Alzheimer’s disease researchers are giving insufficient attention to differences in how the condition affects the sexes, according to scientists speaking to the *Daily Mail*. Recent research showed that the disease tended to cause more rapid deterioration in men than in women and to affect different parts of the brain between the genders. Professor Glenda Gillies (Medicine) said that there have not been enough studies addressing such discrepancies. “We need much better data about gender differences,” she told the newspaper. “It’s women who are losing out because of this. And because they live longer, at any one time significantly more women will have the disease than men. So we need to know a lot more about what works for them.”

**awards and honours**

**MEDICINE**

**Barnes becomes a Master Fellow**

Professor Peter Barnes (NHLI) has been elected as a Master Fellow of the American College of Chest Physicians in recognition of his contributions to international research and teaching in respiratory medicine. Only one award is made each year. Professor Barnes will receive his award in October 2012.

**ENGINEERING**

**Pistikopoulos recognised**

Professor Stratos Pistikopoulos has received the 2012 Computing in Chemical Engineering Award by the Computing and Systems Technology Division of the American Institute of Chemical Engineers. Professor Pistikopoulos was honoured as a world leading authority in process systems, with innovative and breakthrough technologies recognised by an ERC award and industrially applied by companies such as Shell.

**MEDICINE**

**UNESCO Women in Science Award**

Dr Katrina Lythgoe (Public Health) has received a L’Oréal UNESCO For Women in Science Award, recognising her work in applying ecological and evolutionary theory to better predict the evolutionary dynamics of infectious disease in humans and other species. The results were announced on 28 June at a ceremony at the Royal Society and each of the winners received £15,000 to fund their research.

**MEDICINE**

**DSc for Taylor**

Graham Taylor, Reader in Communicable Diseases (Medicine) has been awarded the DSc degree of Imperial College London for his work on the human T-lymphotropic virus type 1 (HTLV-1) which belongs to the family of viruses called retroviruses. Since joining Imperial in 1992, Dr Taylor has developed a research team to provide care for patients with HTLV-1 infection and associated diseases, determine the frequency and spectrum of disease, understand the causes of disease, develop tests to monitor the infection and to study novel treatments.
Universal health coverage improves health for all

Evidence suggests that progress towards universal health coverage generally results in substantial improvements to population health, according to a new paper from researchers at Imperial published on 7 September.

The issues surrounding universal health coverage – how an adequate standard of healthcare can be provided to all people, while ensuring that use of health services does not expose people to financial hardship – have never been more controversial or politically relevant than now. Dr Rodrigo Moreno-Serra and Professor Peter Smith, from the Business School and the Centre for Health Policy, provided a comprehensive assessment of the current evidence for the effects of universal coverage on people’s health in the first of a series of papers on universal health coverage published in The Lancet.

The researchers found that the evidence available suggests that broader health coverage leads to better access to necessary care and improved population health, particularly for the poorest people. Countries that rely on out-of-pocket payments to finance their health systems are often in a worse position to guarantee access to care and protect their citizens from the financial risks of illness, which tends to be damaging to people’s health.

Dr Rodrigo Moreno-Serra, the paper’s lead author, says: “Progress towards universal health coverage may be at risk in the current financial climate and, if financial pressures result in universal health coverage being neglected in some countries, this is likely to have an adverse effect on people’s health and their broader welfare. For example, in Greece and Spain the global economic downturn has led to an increase in user payments for health services.”

Drug improves vaccine response in HIV patients

The drug maraviroc could help some vaccines work more effectively in people with HIV infection, according to a study by researchers in the Department of Medicine.

HIV causes a progressive weakening of the immune system, which results in patients responding poorly to vaccinations and becoming increasingly vulnerable to infectious diseases.

Maraviroc is already used in combination with other treatments for HIV as it prevents the virus from entering white blood cells, but now a clinical trial has found that it also enhances the body’s response to immunisation. The findings were published on 7 August in the journal Molecular Medicine.

Forty-seven patients with HIV were given either maraviroc or a placebo in addition to their normal combination of antiretroviral drugs in a trial at Chelsea and Westminster Hospital, sponsored by St Stephen’s AIDS Trust. The patients were vaccinated against meningitis, tetanus and cholera, and the researchers measured their biological responses.

After being given an injected meningitis vaccine, the levels of antibodies in the blood rose in the maraviroc group, but did not rise significantly in the placebo group. The maraviroc group also showed an increased response to an HIV protein, unlike the placebo group.

Dr Samantha Westrop (Medicine), the study’s first author, said: “People with HIV are vulnerable to infectious diseases and they don’t respond as well to vaccinations, so there is interest in how to improve their immune response. The outcomes of our trial using maraviroc were very encouraging and we think as a result clinicians may, in future, be interested in prescribing maraviroc in conjunction with certain vaccines.”

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT

Flu is transmitted before symptoms appear

A study from the Department of Medicine examining influenza transmission in ferrets suggest that the virus can be passed on before the appearance of symptoms. If the finding applies to humans, it means that people pass on flu to others before they know they’re infected, making it very difficult to contain epidemics.

The research, published in the open access journal PLOS ONE on 29 August, was supported by the Imperial National Institute for Health Research Biomedical Research Centre.

Knowing if people are infectious before they have symptoms is important to help authorities plan for an epidemic, but it has been difficult to establish this from data collected during outbreaks. Previous research using mathematical models estimated that most flu transmission occurs after the onset of symptoms, but some happens earlier.

The new study is the first to investigate this question experimentally in an animal model. Ferrets with flu were put in contact with uninfected ferrets for short periods at different stages after infection. Transmission occurred before the first symptom, fever, appeared, both when the ferrets were in the same cage and when they were in adjacent cages.

Professor Wendy Barclay (Medicine), the study’s lead author, said: “This result has important implications for pandemic planning strategies. It means that the spread of flu is very difficult to control, even with self-diagnosis and measures such as temperature screens at airports. It also means that doctors and nurses who don’t get the flu jab are putting their patients at risk because they might pass on an infection when they don’t know they’re infected.”

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT
Maser power comes out of the cold

Imperial scientists have demonstrated that they can operate a ‘maser’ at room temperature for the first time using new technology, paving the way for its widespread adoption. The research was published on 16 August in the journal Nature.

Maser (microwave amplification simulated emission of radiation) was invented by scientists more than 50 years ago, before laser technology was developed. Instead of creating intense beams of light, as in the case of lasers, masers deliver a concentrated beam of microwaves. However, the maser has had little technological impact because it was inconvenient to use, only functioning in high magnetic fields, a vacuum and at temperatures close to absolute zero (−273°C).

Now, the team from Imperial and the National Physical Laboratory (NPL) have developed technology that enables masers to be operated at room temperature and without the need for an external magnetic field.

"When lasers were invented, no-one quite knew exactly how they would be used and yet, the technology has flourished.”

The researchers suggest that the maser could be used in a range of applications including more sensitive medical instruments for scanning patients and improved chemical sensors for remotely detecting explosives.

Professor Neil Alford, co-author and Head of the Department of Materials, said: “When lasers were invented, no-one quite knew exactly how they would be used and yet, the technology flourished to the point where lasers have now become ubiquitous in our everyday lives. We’ve still got a long way to go before the maser reaches that level, but our breakthrough does mean that this technology can literally come out of the cold and start becoming more useful.”

—COLIN SMITH, COMMUNICATIONS AND DEVELOPMENT

Black belts’ white matter shows how a powerful punch comes from the brain

Karate experts are able to generate extremely powerful forces with their punches, but how they do this is not fully understood. Previous studies have found that the force generated in a karate punch is not determined by muscular strength, suggesting that factors related to the control of muscle movement by the brain might be important.

The study looked for differences in brain structure between 12 karate practitioners with a black belt rank and an average of 13.8 years’ karate experience, and 12 control subjects of similar age who exercised regularly but did not have any martial arts experience.

The researchers tested how powerful the subjects could punch. The participants also wore infrared markers on their arms and torso to capture the speed of their movements.

“The karate black belts were able to repeatedly coordinate their punching action with a level of coordination that novices can’t produce,” said Dr Ed Roberts (Medicine), who led the study published on 14 August in the journal Cerebral Cortex.

“We think that ability might be related to fine tuning of neural connections in the cerebellum, allowing them to synchronise their arm and trunk movements very accurately,” he said.

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT

Study suggests benefits of TB vaccine have been underestimated

The BCG vaccine used to prevent tuberculosis (TB) has a bigger role in protecting children than previously thought, according to an international study led by investigators at Imperial and published in the American Journal of Respiratory and Critical Care Medicine on 15 August. BCG was understood to prevent severe illness from tuberculosis, but not to prevent infection with TB bacteria. Now data collected from five countries in Europe suggest that the vaccine is also effective at preventing infection.

The BCG vaccine is made from a weakened form of bacteria closely related to human TB. The vaccine is 70-80 per cent effective against the most severe forms of TB.

TB is the second biggest killer, after HIV/AIDS, out of all infectious diseases worldwide. It is caused by bacteria called Mycobacterium tuberculosis that infect the lungs, but people can be infected for years without showing any symptoms.

The new study, by a network of paediatricians from Europe called ptnet, analysed skin test and blood test results from 1,128 children in Greece, Spain, Italy, Bulgaria and the UK to establish whether BCG prevents TB infection.

The senior author of the study, Professor Beate Kampmann (Medicine), said: “We set up a paediatric tuberculosis network in Europe in 2009 which has enabled us to compile a much bigger dataset than we’ve had before. This has given us the opportunity to answer important questions about childhood TB, such as how the blood test performs in children and what role the BCG vaccine plays in preventing infection.”

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT
Diamond discoveries

Simon Levey (Communications and Development) goes on a guided tour of Imperial’s Membrane Protein Lab

A short train journey from Paddington station followed by a taxi ride through a sleepy village and rolling green fields brings into view a space-age aircraft hangar rising out from behind a clump of trees.

I arrive in the reception hut of what looks like a gleaming metallic fortress and a massive aerial photo on the wall shows that the building I’m in actually bears more than a passing resemblance to a Krispy Kreme doughnut nestled in the Oxfordshire landscape (pictured right).

According to my tour guide Dr Isabel de Moraes (Life Sciences), last winter’s heavy snowfall even gave it a topping of thick white icing.

Set inside the futuristic doughnut is the Membrane Protein Laboratory (MPL), a multimillion pound research centre established by Imperial, the Wellcome Trust and Diamond Light Source, the UK’s national synchrotron science facility and the building’s primary occupant.

Diamond Light Source is the only facility of its kind in the UK, Isabel says. This spring marked 10 years since it came into existence, when the government and the Wellcome Trust signed a joint venture agreement to create Diamond Light Source Ltd. It opened its doors five years later in 2007, replacing a 28-year-old synchrotron at Daresbury in Cheshire.

“You’ve heard of a particle accelerator?” Asks Isabel. “Well, the synchrotron is a particle accelerator for electrons.” Powerful magnets guide electrons around the doughnut in a 562-metre-long circular path at speeds so fast that they complete 555,000 circuits every second. Unlike the accelerator at CERN, which smashes particles head-on at one of several giant underground detectors, scientists at the Diamond facility use accelerated electrons to create an extremely bright light, which they siphon off in a beam into one of 20 experimental laboratories around the ring, where they sit like junctions on the M25.

Scientists and engineers use these powerful beams of light to illuminate topics as diverse as earthworm digestion, nanoelectronics and super-thin solar panels. The synchrotron light beam allows them to see details that ordinary light microscopes cannot.

Diamond jubilation

Set up in 2006 by Imperial’s Professor So Iwata (Life Sciences) and University of Oxford’s Professor Dame Louise Johnson FRS, the MPL team have earned themselves a global reputation for their combination of knowledge and expertise. Over the years they have brought new understanding to the biological secrets behind pain, allergy and photosynthesis by helping other scientists to fully visualise the proteins at the heart of these research fields. In fact, they are so proud of their discoveries that models of three of these proteins are immortalised in fist-sized blocks of perspex on a windowsill for all to admire.

Isabel joined the team two years ago from drug discovery company Evotec in nearby Abingdon. She manages the laboratory and its external scientific collaborators, whilst directly supervising three Imperial postgraduate students and 11 external PhD students and postdoctoral scientists.

Their well-furnished laboratory sits just across the hall from the beam called I24. It boasts an extensive range of high-tech equipment that can be used by visiting scientists and postgraduate students. There Isabel works with technician Matthew Jennions and alongside colleagues Dr Konstantinos Beis and Dr Alex Cameron (all Life Sciences).

Studying proteins is Alex’s passion. “These bundles of molecules, strung out in twisted, winding chains and intricately folded in on themselves form some of the most complex biological machines in our bodies, few more than one ten billionth of a metre in size,” he explains enthusiastically. “Each protein has its own superpower, the ability to grab a passing molecule or release a waste product from a cell. Almost all these superpowers are activated by a protein subtly changing its shape,” he adds.

To illustrate an application of their work, Alex explains that pharmaceuticals work by
interacting in some way with proteins in our bodies, and changing how they behave. For example, antihistamines prevent specific receptors on cells from binding to the molecules that cause allergic reactions. Using new insights gained from work at the laboratory, scientists in pharmaceutical development can design new types of drugs that have fewer side effects—an important concern when it comes to drugs for chronic pain, cancer treatments and antihistamines for common allergies.

Crystal clear

An important step in understanding a protein is creating an accurate 3D model of it, Isabel explains later, which is a straightforward process for around five per cent of proteins that have potential to form new drugs. For the remaining 95 per cent of promising drug targets, the process is more complicated. These are proteins that control what enters or leaves a cell through its surrounding membrane, and are at the centre of many health problems.

To build a 3D model of any protein, scientists need to gather information about it using the beam, often lining up lots of the same type of protein to magnify the image. However, these more complicated membrane proteins unravel and become floppy outside the special conditions that would normally hold them together in the cell, and this makes them very difficult to prepare. Isabel explains that instead, scientists in the laboratory spend many hours painstakingly trying to arrange proteins into the perfect configuration by assembling them into a rigid and uniform pattern called a crystal. Once they have achieved this, the crystals can be stored at a set temperature in giant incubators or fridges before being carried across the hallway to be scrutinised in the beam. “This is a great benefit for the scientists at the MPL,” says Isabel, “otherwise we’d have to transport crystals to labs in Europe or across the Atlantic on a journey many of these delicate structures would not survive.”

According to So Iwata, one of the most exciting things to come out of the laboratory was first seeing a membrane protein, called Mph1, take on three different shapes: “It had long been hypothesised that proteins changed shape in order to perform their superpower, but nobody had been able to provide clear evidence of it happening. Then the beam detected the three steps by which this protein grabbed a passing molecule and spat it back out somewhere else.” This discovery was made by So in 2006, and led other scientists to realise the power of the technique.

Since 2008 the laboratory has helped to unveil the structure of 13 new proteins, but rarely is this research all plain sailing, says Isabel. “Often you need to grow the crystals under really unusual or extreme conditions. This means that sometimes you just can’t put an end date on a project. For example, it may take a long time to experiment and work out what temperature makes them grow.”

In one strand of work she is looking for new targets for chemotherapy drugs with the help of scientist Dr Anastasia Mylona from Cancer Research UK, although, despite two years of successful experiments, they have not yet had the breakthrough they are hoping to see.

“The MPL plays an important role in developing new technologies for molecular biology,” says Professor Paul Freemont (Life Sciences), who heads up several research units on the South Kensington Campus. “It performs a fantastic service for Imperial researchers and external scientists by allowing them to access the equipment, as well as the expertise at the lab.” Paul has recently taken up a position on Diamond Light Source’s scientific committee, establishing further ties between the College and the facility.

The sun is beginning to set as I say goodbye to Isabel and the team, but the outlook for the lab looks brighter than ever. Imperial has just been awarded a Wellcome Trust grant to help fund new equipment and increase the laboratory’s potential.

As the train carries me home to more familiar urban surroundings, I think back on everything I have seen over the course of the day and reflect that even though this Oxfordshire outpost isn’t based on one of our main campuses, it clearly embraces the Imperial ethos of excellence. I hope to hear about many more discoveries from the Membrane Protein Laboratory over the coming 10 years.

—Simon Levey, Communications and Development
Imperial's new College Secretary and Registrar, John Neilson, took up his post in May after 30 years working in government, including six as Director of the Research Base in the Department for Business Innovation and Skills. John spoke to Reporter about how he has settled into life at the College.

How would you describe the role of College Secretary and Registrar?

My role has a number of parts. First, I am concerned with the effective governance of the College. At the same time, I have direct management responsibility for some of the underpinning areas of the College – from the research reactor to the Registry and the school outreach work. I also share responsibility for developing Imperial’s strategic direction, thinking through the challenges on the horizon over the next five to 20 years, and am involved in nurturing external relations for the College, in particular with government and funding bodies.

What do you enjoy most about your current role?

So much of what Imperial does is at the cutting edge of research and teaching. It’s great being part of that, and being able to hear firsthand what people are working on. I’ve been fascinated by some of the research I’ve heard about through attending inaugural lectures. I also have a personal link to Imperial; my father was a Master’s student here in the 1950s, studying aeronautical engineering.

Are you looking forward to the start of term?

Yes, it has particular resonance because in the week Imperial welcomes its new students, I’ll be dropping my daughter off at Oxford to study Geography. Both my children followed in their mother’s footsteps in their choice of degree. As a mathematician, I did however lure them into A Level Further Maths!

What are your upcoming challenges?

We need to keep focused on our strategy for the College’s future – how we can develop partnerships with others and mitigate sensibly the risks we might face. Continuing the excellent efforts to enhance the student experience remains a top priority. I am particularly keen to support further collaboration across Imperial, so we remain at the forefront of multidisciplinary working in research, teaching and translation, which is already one of the greatest strengths of the College.

—John-Paul Jones, Communications and Development

People person

In the week Imperial welcomes its new students, I’ll be dropping my daughter off at Oxford to study Geography.”

What personality traits are useful in your role?

I think boundless enthusiasm is helpful! I hope colleagues find I’m approachable, make myself available, and that I enjoy meeting people. So many interesting things happen in College – there’s a lot to communicate, outside Imperial as well as within.

Do you wear any other hats within the College?

I’m also the Disability Champion, chairing the Disability Action Committee. We have a responsibility as a world class institution to support all our staff, and that means we’re as helpful as possible to anyone with a disability. It’s particularly important to be aware of mental health issues, which often fall beneath the radar because they are less visible. I was impressed by an excellent series of articles called Unseen Imperial in Felix recently, which explored some of these issues.

What are your interests outside work?

Apart from acting as the family taxi driver, I play golf and have a season ticket to support Harlequins. I like going to concerts, and enjoyed hearing the College choir perform in St Stephen’s Gloucester Road earlier in the summer.
Debating sustainable energy

A panel discussion on sustainable energy policies for the so-called BRIC countries – Brazil, Russia, India and China – was held at Imperial on 16 August.

The event featured experts including Professor Paul Ekins, Director of the UCL Institute for Sustainable Resources, Minister-Councillor Rodrigo de Azeredo Santos from the Brazilian Embassy, and Mr Magued Eldaief, the Executive Director, Energy Accounts, GE Energy. Students Edo Abraham (Electrical and Electronic Engineering) and Bing Feng Ng (Aeronautics), President and Publications Officer of the Imperial College Energy Society, who helped to organise the event in collaboration with the Imperial College Brazil Forum, report:

“With the big emerging economies like Brazil, Russia, India and China driving the global agenda on sustainable energy, there is a question over whether these new economies should model their development and policies around the path taken by developed western nations. The consensus of the panel was that they should not. Professor Ekins explained the imperative for separating material consumption growth from financial growth.

He showed two projected GDP growth scenarios for the next 20 years – one for an economic policy with stringent climate change mitigation and one without. A policy for climate change mitigation is one that tries to decrease the causes and effects of climate change (or global warming); one example of this is the European and UK 2020 (and 2050) targets to decrease emissions.

Professor Ekins estimated that mitigation would cost the economy only one year’s growth by 2030. His conclusion was that it is the lack of political will, not economic cost or lack of technology that is the main constraining factor for environmentally sustainable economic growth.

Mr Eldaief discussed the best and worst policy scenarios for investment in sustainable energy development in the BRIC nations. He also highlighted the policy risks and opportunities faced by energy companies like GE in doing business in these countries.”

Hear an audio recording of the event and see the presentation slides at: www.ic-energy.org

Exploring Slovenia’s longest cave

During a summer caving expedition under the mountain of Tolminski Migovec, Imperial students and postdocs discovered the longest cave in Slovenia, pictured above.

Read the full story here: http://bit.ly/newcaves
What is REF?
REF is the exercise that is used to assess the quality of research in UK universities – it is used by the Higher Education Funding Council for England (HEFCE) to determine the research funding we get from them.

How does it differ from the Research Assessment Exercise (RAE)?
The main difference between REF and RAE is that there is a new requirement to demonstrate and measure the impact of research.

Why is REF important for Imperial?
Aside from the funding impact, we have always done well in previous research assessment processes so it is vital for our reputation. The results of REF will affect whether people want to work or study at the College.

What is the code of practice for REF?
All higher education institutions making submissions to REF are required to have a code of practice which governs the processes to determine which staff will be included in the REF. The code contains information about how, and by whom, the decisions will be made, how the College will communicate those decisions and how submission patterns will be monitored.

What are the key milestones for REF?
Academic staff must be in post on 31 October 2013 in order to be considered for inclusion in the REF submission. We will return our submission to HEFCE on 29 November 2013. During 2014 the assessment panels will meet and we’ll hear the results in December 2014.

For more information see: www3.imperial.ac.uk/ref

Student blogger Bernadeta on illustrating science:
“If there’s one thing that I would like to see more of in science education it’s teaching of scientific illustration. Today’s science illustration is based on computer animation and Photoshop-edited images – which is not bad – science in all its forms has to keep up with all technological advancements, especially because it helps to promote it. However, I cannot help feeling jealous of scientists from previous decades or ages who, at the same time as being scholars, were also real artists. If you have ever seen illustrations in Robert Hooke’s ‘Micrographia’, well ... even mind-blowing doesn’t describe it!”

www.imperial.ac.uk/campus_life/studentblogs

Dr Duncan Casey is a postdoc working on the Proxomics project in the Department of Chemistry, developing the tools needed to probe cells at a microscopic level, in order to identify the changes that they undergo during ageing and in diseases like cancer. He reports on a creativity workshop he attended in June.

“They course was held at Cumberland Lodge – a fantastic old venue in the shadow of Windsor Castle – and funded through a grant awarded to Dr Laura Barter (Chemistry) by the Postdoc Development Centre and the Institute of Chemical Biology at Imperial. It developed from the ‘sandpit’ events that the Engineering and Physical Sciences Research Council (EPSRC) has established, in which you’re thrown into a five-day, £10 million competition with around 30 total strangers to put together a proposal to work on a strategic, multidisciplinary target. It’s certainly an intense, high-adrenaline way to plan your next project.

The best, but also the hardest, thing about the idea is that you’re working with people with wildly different skill-sets and experience. I helped develop a synthetic biology proposal with a plastic electronics designer and an economist, amongst others. Fortunately, the event came equipped with a group of facilitators and trainers from EPSRC and the Biotechnology and Biological Sciences Research Council, and talks included one from an ex-editor at Nature, who spent a day helping cram some showmanship and theatricality into dry scientific presentations. It was great to hear that EPSRC would like postdocs to start appearing at the full sandpit events, and I’m very keen to get stuck into one.”

Participants of the creativity workshop that Duncan attended.

Demonstrating excellence

Getting to know the research excellence framework (REF)

With departments preparing to demonstrate the quality of their research through the new Research Excellence Framework, Reporter caught up with Director of Strategic Planning, Michelle Coupland, to find out more about the new system and what it means to the College.
Dr Aldo Faisal is a lecturer in neurotechnology, jointly based in the Departments of Bioengineering and Computing. Neurotechnology fuses together the principles of neuroscience and engineering and the Faisal lab was set up two and a half years ago to understand the brain in terms of its engineering design principles and apply this knowledge to technology. As a result, researchers have developed an eye movement tracker that enables patients who are movement impaired to operate an ordinary computer.

How did you come across this idea?
The brain can move the body as long as it is operational. But when the links break down due to injury, old age or illnesses such as Parkinson’s, MS or stroke, we need another way to harness the brain’s power to interact with the world – for example, by controlling computers or wheelchairs. Curiously, eye movements are not affected by these types of motor disorders and readily convey a person’s interaction intentions by how they observe an object or the environment, so we looked at using them to interact and control things.

How does this work?
We have two small cameras mounted into framed spectacles, which allows us to observe where your eyes are looking. If you’re looking at a computer screen and want to interact with the computer, we simply make the mouse cursor follow your eyes on the screen and a wink enables the click of the mouse. In a test, we asked subjects to play fast-paced arcade video games and, excitingly, we saw that people who used this system for the first time for just 10 minutes could reach the performance level of able-bodied players within a 15 per cent range.

How does this differ from what is currently on the market?
Measuring eye movements is not a new concept but systems typically cost tens of thousands of pounds. We have reverse-engineered video game hardware, aiming to maximise the performance of cheap cameras by using smart software, allowing us to make systems costing less than £40. A recent study by the NHS showed that over five million people in the UK alone would benefit from our eye tracking hardware and software, so there is clear low-cost, high-volume commercial potential.

—KAILY NOLAN, IMPERIAL INNOVATIONS

A pleasure and a privilege

Professor Anthony Kinloch is retiring in October as Head of the Department of Mechanical Engineering – a post he has held for the past five years. Reporter caught up with Professor Kinloch to hear about his career highlights and his plans for the future.

The good news is that you are not leaving Imperial entirely. What is your new role?
I am donning a lab coat once again to take on the part-time role of Senior Research Investigator. I aim to further my research, developing tougher plastics used in adhesives and to bind composite materials together.

What does your wife think about your retirement?
She says that she does not want me at home for more than one day a week. For the other four days, I am allowed to do research only – no more admin.

What is your first memory of Imperial?
I joined Imperial from the Department of Defence in 1984 as a Reader under a government initiative to recruit new academic blood to universities. I remember being told at the interview by the then Head of Department (HoD) that while I might aspire to become a professor, I could never be the HoD because I was not a mechanical engineer – I am a materials scientist by training. I replied by asking him to please put his comments in writing, as a guarantee for the future.

How has the College changed over the years?
The addition of the Faculty of Medicine to the College has been a really important change, which has enabled medical engineering research in our Department to flourish. It has meant that our engineers can take part in clinical trials with their medical colleagues and see their work taken from the lab bench to the bedside to improve patient care.

What has been your favourite thing about your time at Imperial?
It sounds really clichéd, but being able to teach and undertake research at Imperial has been a real pleasure and a privilege.

—COLIN SMITH, COMMUNICATIONS AND DEVELOPMENT
**obituaries**

**DR JOSEPH FOOTITT**

Dr Joseph Footitt, Walport Clinical Lecturer in the Airway Disease Infection Section, (NHLI), died in an accident on 13 June 2012, aged 37.

Joseph trained at Guy’s and St Thomas’ medical school in London and joined Imperial in 2007 and started a period of research, registering for a PhD under the supervision of Professor Sebastian Johnston, Professor Ian Adcock and Dr Patrick Mallia (all NHLI). He undertook a clinical study on inflammation in chronic obstructive pulmonary disease (COPD) aiming to make discoveries about the mechanisms that cause acute attacks of the disease which could lead to new approaches to prevention and treatment. In 2011 Joseph returned to his clinical training within the NHS before joining the NHLI as a Walport Clinical Lecturer following the award of his PhD in February 2012.

Sebastian Johnston, Professor of Respiratory Medicine and Allergy, said: “I worked with Joseph over the last five years, and was looking forward to working closely with him into the future. He was an extraordinary man in the true meaning of the word – energetic, extremely talented and universally liked with a great sense of humour. His loss is devastating to many, both personally and professionally. My thoughts are with his wife, his parents and all those friends who were lucky enough to enjoy his wonderful company. We will miss him enormously.”

“Joseph was an extraordinary man in the true meaning of the word – energetic, extremely talented and universally liked”

**PROFESSOR DAVID BINNIE**

David Binnie, Emeritus Professor of Physics, who died on 31 May 2012, was Deputy Head of the Department of Physics from October 1992 for three years. Emeritus Professor William G. Jones (Physics) pays tribute to his colleague:

“David first joined Imperial in 1961. He helped to pioneer new types of detectors of fundamental particles in experiments carried out at what was then the new CERN laboratory in Geneva using its first accelerator, the synchrocyclotron, which was tiny compared with today’s Large Hadron Collider at CERN. Later he became head of the ‘Counter Group’ in the High Energy Nuclear Physics Group and developed a new technique for studying fundamental particles. The approach involved detecting neutrons and measuring their velocity using accurate timing devices, thereby computing the mass of the particles produced. David and his team went on to develop high resolution cylindrical multiwire drift chambers which were used on the LEP electron-positron collider in CERN. David was an inspiring teacher and developed the ‘Quantum Lab’ which enabled students to confront some deeply puzzling aspects of quantum mechanics through making their own observations and measurements. Following his retirement in 1996 David joined a medical physics group at the Royal Marsden Hospital and his contributions to solving physics problems in diagnostic imaging resulted in better treatment for cancer patients. David continued his association with the College as a Senior Research Investigator and, latterly, as a Distinguished Research Fellow. He will be sorely missed by his many colleagues and ex-students at Imperial.”

**CORRECTIONS AND CLARIFICATIONS**

Reporter would like to apologise to Emeritus Professor Bob Spence (Electrical and Electronic Engineering) who we inaccurately reported as serving 30 years at the College in issue 249, published on 20 July. Bob has in fact been a staff member for an impressive 50 years starting as a lecturer in 1962. Above, Bob is pictured at the wheel on his way to the Royal Academy of Engineering’s New Fellows Dinner in 1993.

Staff featured in this column have given many years of service to the College. Staff listed below celebrate anniversaries during the period 1 August–1 September. The data is supplied by HR and is correct at the time of going to press.

**20 years**
- Dr Graham Taylor, Reader in Communicable Diseases, Medicine
- Mr John Anderson, Chief Executive Officer of the College Fund, Finance
- Professor Andrew George, Professor of Molecular Immunology, Medicine
- Professor Jonathan Halliwell, Professor of Theoretical Physics, Physics
- Mrs Sandra Scott, Research Nurse, NHLI
- Dr Simon Leather, Reader in Applied Ecology, Life Sciences
- Professor Gad Frankel, Professor of Molecular Pathogenesis, Life Sciences

**30 years**
- Mr Stefan Algar, Laboratory and Concrete Operations Manager, Civil and Environmental Engineering
- Dr Alan Swann, Director of Occupational Health, Occupational Health Service
- Emeritus Professor Mino Green, Senior Research Investigator, EEE

**40 years**
- Professor John Laycock, Professor of Endocrine Physiology, Medicine
Welcome new starters

Mr Edo Abraham, EEE
Mr Christian Adams, International Office
Hala Ahmed, Graduate School
Katya Aloniemi, Business School
Mrs Victoria Allen, Humanities
Diego Alvarez Febio, Mechanical Engineering
Dr Anita Alvarezi Laviada, NHII
Miss Nadine Ameri, Mathematics
Lucas Anecchino, Bioengineering
Eliliu Arandzy Cortes, NHII
Mr Tim Arbabzadab, Imperial College Union
Herna Ani, Medicine
Miss Aparna Ashok, ESE
Dr Elham Ashouri, Mathematics
Dr Christina Atkinson, Public Health
Ms Rebecca Atkinson, Aronmodation
Beata Balil Mood, Chemistry
Mrs Tammy Barrett, Medicine
Nicola Bartlett, Accommodation
Paul Beaumont, Imperial College Union
Miss Martinia Bertini, EEE
Mr Neha Bhattacharj, Medicine
Jennifer Bizges, Clinical Sciences
Dr Mark Boltzrude, Medicine
Professor Annabeau Bowick, NHII
Joseph Boyle, NHII
Professor Damianio Brigo, Mathematics
Dr Matthew Brice, Bioengineering
Dr Samantha Bryan, Life Sciences
Peter Budd, Business School
Oliver Bujuanow Duff, ESE
Mr Lukasz Bukowski, Life Sciences
Matthew Carney, Accommodation
Mess Cassy Fammili, Management
Professor Richard Challis, Accommodation
Dr Brian Chen, Chemistry
Mr Matthew Chongs, Clinical Sciences
Dr Jie Hao, Surgery and Cancer
John Hall, Accommodation
Dr Je Hoo, Surgery and Cancer
Rui Hao, Materials
Simon Harding-Root, College Headquarters
Sally Hargreaves, Medicine
Katharina Hausle, NHII
Sondus Hassounan, Public Health
Dr Edward Hawkins, Life Sciences
Eve Hemets, Accommodation
Camilo Herdes Moreno, Chemical Engineering
Pierre Herman, Humanities
Marily Helieta, Ecology
Dr Samantha Hill, Life Sciences
Allison Hill, Surgery and Cancer
Yonek Hlebo, Life Sciences
Kevin Hochstenbach, Medicine
Lawrence Hudson, Life Sciences
Tom Hughes-Hallett, Global Health Innovation
Dr Doug Hunt, Imperial College Union
Professor Ruslan Ibragimov, Business School
Henry Jacobs, Chemistry
Miss Sarah Jan, Mathematics
Dr Christopher Johnson, Chemistry
Miss Courtnay Johnson, Accommodation
Maximillian Johnston, Surgery and Cancer
Andras Juhasz, Mathematics
Petri Jylyha, Business School
Manuela Kaluarczak, Surgery and Cancer
Sanatakan Kana, Chemical Engineering
Kalesh Kanukarakan Nair, Anatomy, Anatomy
Mrs Ramonddeep Kaur, NII
Miss Andres Kean, Business School
Joanne Keegan, Business School
Miss Joanna Keafas, Accommodation
Professor Dermot Kelleher, Faculty of Medicine
Dr Mark Kennedy, Business School
Miss Angus Kub, Life Sciences
Mrs Jayne King, Faculty of Medicine
Kostas Konstantinidis, ICT
Miss Sarah Koonar, Accommodation
Dr Kevin Ladham, Physics
Sadie Lambert-Bentley, NII
Mrs Rakot Llan, Imperial College Union
Mr Mohamed Laheld, Chemical and Environmental Engineering
Miss Rino lapu, Mechanical Engineering
Sebastian Larent, Physics
Chong Lim, Medicine
Mr Craig Lindo, Accommodation
Martin Lobser, Business School
Dr Carol Liu, Chemical Engineering
James Lockley, Library
Professor Michael Lovett, NII
Mrs Natalie MacDermott, Development
Thirukumarah Maheswaran, Accommodation
Susannah Maidment, EEE
Mrs Yasmina Mallanah Hassam, Cancer
Dr Noel Malagon, Computing
Manolache, Medicine
Stefania Marchell, Civil and Environmental Engineering
Sophia Manquardt, Public Health
Shahnaz Mathur, Medicine
Lorenzo Matteini, Physics
Mr Kyle Matthews, Accommodation
Mr James Mclagan, Public Health
Mr Christopher McCull, Accommodation
Grainne McDermott, Surgery and Cancer
Ian McCollum, ICT
Miss Aimee Mckee, Accommodation
Miss Glenn McKee, Accommodation
Ali Mehmantparast, Mechanical Engineering
Mr Matthew Merker, Accommodation
Miss Carina Miller, Bioengineering
Miss Naomi Miller, Physics
Miss Florencia Minuzzi, Medicine
Badr Missaoui, Mathematics
Heba Misbah, Business School
Dr Brian Mitchell, Humanities
Akaietini Mitsuaki, Humanities
Miss Aiko Nomura, Commercial Services
Mr Andre Moretti Raimundo, Sport and Leisure
Samuel Morris, Communications and Development
Dr Cecily Morrison, Public Health
Ms Sian Moross, Medicine
Miss Elsa Mountain, Public Health
Dr David Mozley, Research Office
Dr Catherine Mulligan, Business School
Miss Katie Murray, Life Sciences
Mrs Symeon Nikitsis, Communications and Development
Miss Kern Noble, Communications and Development
Mr Andrew Keegan, Business School
Dr Stefan Nubert, Imperial College Union
Miss Esther Ungueji, Accommodation
Leila Okehe, Equities Unit
Miss Bhhee Olganathan, Business School
Miss Suat Ooi, Medicine
Dr Michael OShea, Medicine
Michelle Oyelola Oyelola, Human Resources
Dr Joanna Panagakis, Computing
Mehran Pasanaga, Accommodation
Dr Emma Passmore, EEE
Miss Deeveya Patel, Medicine
Dr Rikesh Patel, Bioengineering
Dr Johann Peters, Life Sciences
Ms Fiona Persaud, NII
Yujin Perumal, Physics
Ms Jasmine Pham, Life Sciences
Mr Karl Phillips, Life Sciences
Emmanuelle Poncher, Life Sciences
Michael Povelon, Life Sciences
Dr Eryl Price-Davies, Professional Development
Dr Thomas Prince, Mathematics
Dr Daniela Preppener, Mathematics
Dr Georgios Rakos, EEE
Dr Deepa Rajapakk, Medicine
Sasha Rakvotch, Physics
Dr Masooma Rashid, Life Sciences
Bandula Ratnakeekara, Physics
Dr Bonnie Razazzz, Medicine
Sophie Rehman, Life Sciences
Dr Juan Ribes Fernandez, Medicine
Mr James Richards, Surgery and Cancer
Dr Steven Riddigto, Business School
Miss Rebecca Robey, Medicine
Dr Neeshka Rockwood, Medicine
Dr Clare Ross, NII
Reuben Rowe, Computing
Dr Thomas Rylett, Faculty of Medicine
Miss Farhana Salas, Mathematics
Dr Sheila Samasati, Chemical Engineering
Mr Sergio Santos, Graduate Schools
Ms Anida Sarajlic, Computing
Dr Gregory Scott, Medicine
Miss Farah Seedat, Medicine
Dr Aleksandovica Sevko, Medicine
Mr Sachin Shah, Medicine
Mr Xiao Sheng, Life Sciences
Mrs Nataliya Shiraz, Business School
Mrs Ann Zielonka, EYEC
This data is supplied by HR and covers staff moving in from 25 June–2 September 2012. See the online supplement at http://bit.ly/Reporterpdfs for staff moving on and retirements.
20 SEPTEMBER ▸ PUBLIC LECTURE
Brain sex differences: the new equality
Evidence shows fundamental differences in the brains of men and women, primarily due to the different hormonal and genetic environments in which fetuses develop. These structural and functional differences are thought to underpin the different characteristics between the genders in brain disorders such as Parkinson’s and depression. In her inaugural lecture, Professor Glenda Gillies (Medicine) explains why this understanding is needed in order to develop optimal therapeutic strategies for both sexes.

17 OCTOBER ▸ PUBLIC LECTURE
Defining the legal and ethical boundaries of the cyber frontier
Developing effective, strong strategies for dealing with the cyber threat will require societies to answer key legal and ethical questions, such as: when is a cyber attack a genuine act of war, what is the line between the development of offensive versus defensive cyber capabilities, and how can law enforcement most effectively combat cyber crime and cyber terrorism while maintaining civil liberties and privacy? Ex-Secretary of the US Department of Homeland Security, the Hon. Michael Chertoff, discusses these issues at the 2012 Vincent Biscoe Annual Security Lecture.

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