

Head for figures

Staff at the frontline of big data

 **CENTRE PAGES**



NEW DEAN APPOINTED

Professor
Anandalingam
to head the
Business School

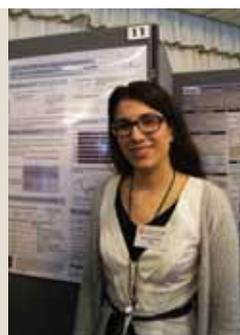
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QUAKEPROOFING HOMES

New engineering
techniques that
could save lives

PAGE 5



FULL HOUSE

Early-career
researchers at
the House of
Commons

PAGE 10



EDITOR'S CORNER

Treasure trove

If you were to ask what the College's **most valuable asset** is, you would probably get some varied responses. One would hope that near the top of the list would be people. Others might say it's our prime real estate or vital research grants. Few, though, would immediately think of something as abstract as data. But much of the **wonderful research** done at the College ends up as data, which is by and large housed at the College's Research Computing Facility. In there might just be glimpses of new exotic particles, faint distant galaxies or some synthetic drug for an intractable illness. Of course, researchers have long grappled with data, but the sheer volume of it generated by modern science means that **specialist skills** are often required. In this issue we profile two academics whose skills ensure that we get the most out of this key commodity (page 6).

ANDREW CZYZEWSKI, ACTING EDITOR

Reporter is published every three weeks during term time in print and online. The next publication day is 20 May.

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TEDMED goes live at Imperial

Imperial staff and students contributed to discussions about pressing medical and health challenges on 21 April when the College took part in the international conference, TEDMED.

Taking place at the Royal Geographical Society, five themes were explored at the *TEDMEDLive at Imperial* event: understanding the human mind, the body as a stimulus for art, staying alive, universal health and achieving medical innovation.

Speakers included 11-time Paralympic gold medallist David Roberts and James Brown, a magician, pickpocket and hypnotist trained in psychiatry and perceptual psychology.

They were joined by speakers from Imperial including Professor of Science and Society Lord Winston (Centre for Co-Curricular Studies), Professor Roger Kneebone (Surgery and Cancer) who uses groundbreaking techniques to simulate surgery, and Dr Henrietta Bowden-Jones (Medicine),



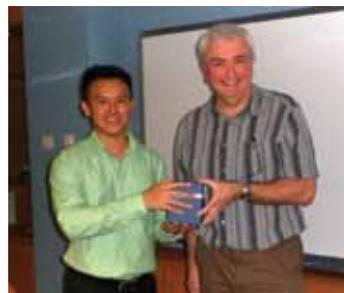
a consultant psychiatrist who founded the first National Problem Gambling Clinic in the UK.

Ali Rezaei Haddad, undergraduate medical student and licence holder of *TEDMEDLive at Imperial*, said: "The event gave students, staff and members of the public the opportunity to hear from world-renowned speakers and pioneers in their respective fields."

—LUCY HANDFORD, COMMUNICATIONS AND PUBLIC AFFAIRS

First joint Imperial-NUS PhD awarded

Jonathan Leong recently became the first student to complete a joint Imperial and National University of Singapore (NUS) PhD programme.



The programme, launched in 2010, offers students the opportunity to draw on the research facilities and expertise at both universities as well as providing an opportunity to work in an international research context.

Spending equal time at both institutions, Jonathan focused on techniques to reduce the friction in microscopic mechanical devices. "My time on the programme, including working at Imperial, helped to broaden my mind and deepen my understanding, not only in my area of study but across cultures as well," he said.

Dr David McPhail (Materials), Academic Lead for the Joint Degree Programme, agreed: "Science is a truly global activity and the joint PhD gives students enriched scientific, social and cultural insights. The

graduating students are very well prepared for their future careers as international scientists."

Professor Mohan S. Kananhalli, Associate Provost (Graduate Education) at NUS, added: "It's a unique opportunity. The intellectual adventure that it offers is not only exciting and fun, but it also prepares scientists and engineers who will influence the future."

Currently Imperial has five students taking part in the programme. A further 13 students are enrolled with NUS as their 'home' university. Areas of study amongst the joint PhD students range from mechanical engineering to medicine.

—LUCY HANDFORD, COMMUNICATIONS AND PUBLIC AFFAIRS

Prospective students of any discipline offered at Imperial can apply. For more information and for details of how to apply visit: bit.ly/14X1VcB

BRING THE WHOLE FAMILY
DROP IN ANYTIME!

IMPERIAL FESTIVAL

FRI 3 MAY ⌘ SAT 4 MAY

Imperial springs to life this May Bank Holiday weekend with hands-on science demonstrations, music, comedy, dance and art for all ages.

SEE BACK COVER ←

for highlights of the programme

www.imperial.ac.uk/festival

Business School appoints new Dean

Professor G. 'Anand' Anandalingam has been appointed Dean of the Business School and Professor of Management Science following an international search. Currently Dean of the Robert H. Smith School of Business at the University of Maryland, USA, Professor Anandalingam will take up his role at Imperial on 1 August 2013.



As Dean of the Smith School, Professor Anandalingam expanded its global reach with new degrees and executive education programmes, and raised over \$40 million from philanthropic and corporate supporters.

Born in Cambridge, UK, Professor Anandalingam was raised in Sri Lanka. He took his undergraduate degree at Cambridge University and his PhD at Harvard.

Sir Keith O'Nions, President & Rector, said: "Anand's passion to see Business students taught really well and for them to do great things in the world, his commitment to research excellence, and his vision for engaging strongly outside the School and the College made him the outstanding choice."

"At the same time as welcoming Anand, I would like to thank Professor Dot Griffiths for serving as Dean of the Business School for the last year, which comes on

top of outstanding service to the School over many years."

Professor Anandalingam said: "As the newest faculty of this great institution and thanks to my excellent predecessors, the Business School has done incredibly well in a short space of time. I'm now very excited by the chance to apply my connectivity and experience towards making Imperial even more proud of its Business School."

"We have one of the best managed, most nimble and entrepreneurial institutions in the world. It is simply a matter of time before Imperial is considered to be the best global university."

—ANDREW SCHEUBER, COMMUNICATIONS AND PUBLIC AFFAIRS

For an interview with Professor Anandalingam visit: bit.ly/152w22h

Independent investigation into animal research allegations

Imperial has commissioned an independent investigation into allegations published by a newspaper regarding the use of animals in medical research.

After receiving the allegations via a newspaper, on Friday 12 April John Neilson, the College Secretary and Registrar, who holds the College's establishment licence, asked Professor Steve Brown, Director of the Medical Research Council's Mammalian Genetics Unit at Harwell, to chair an independent investigation panel and make any recommendations the panel feels are appropriate. The scope and timeframe for the panel's work will be set by Professor Brown.

In addition to commissioning the investigation, Imperial is liaising with all staff holding project or personal Home Office licences for animal research to ensure they are fully aware of the College's policy and their personal responsibilities for the conduct of all research. A refresher training programme is also underway.

The College has passed on the allegations to the Home Office and will work closely with it on any further actions that may be necessary.

John Neilson said: "We are determined to find out if there is any truth to these allegations about animal research at Imperial. That's why we've launched this independent investigation, kept the Home Office fully informed, and reminded staff of their obligations."

Professor Maggie Dallman, Dean of the Faculty of Natural Sciences, said: "Imperial College only allows animal models in research programmes where their use is shown to be essential. We are fully committed to the replacement, reduction and refinement of the use of animals in research."

The vast majority of biomedical research at Imperial College London is carried out using non-animal methods and materials. The small part of research that does involve animals is only carried out where there is no alternative.

—JOHN-PAUL JONES, COMMUNICATIONS AND PUBLIC AFFAIRS

in brief



over 120 Imperial alumni to a reception in Kuala Lumpur on 27 March. Guest of honour Mr Ray Kyles, Deputy High Commissioner at the British High Commission, described education as the best example of the excellent links between Malaysia and the UK and paid tribute to the strength of the Imperial College Alumni Association of Malaysia. Guests spanned the generations with years of graduation ranging from the 1960s to 2012.

Imperial alumni congregate in Malaysia

President & Rector Sir Keith O'Nions welcomed

New centre aims to mend broken hearts

Imperial will lead one of three new British Heart Foundation (BHF) research centres focused on repairing the damage caused by a heart attack. The BHF is pledging £7.5 million raised by its Mending Broken Hearts Appeal to fund scientists at three new dedicated research centres in the UK. The Centre at Imperial, led by Professor Sian Harding, will study pluripotent stem cells.

Education, education

The second phase in developing Imperial's Education and Student Strategy is underway. Students, staff and alumni are invited to read a discussion paper and shape priorities for the College's five-year plan. This phase follows an initial consultation in February, which resulted in contributions from across the College and alumni. To read the discussion paper, to contribute online and for more information on the open meetings, visit: bit.ly/17Rdlq3

“Teachers are always saying that science can solve problems in the real world, but this is the first time we've seen that in action”

NAN HART, 16, A STUDENT FROM PATE'S GRAMMAR SCHOOL IN CHELTENHAM, WHO TOOK PART IN THE UK SPACE DESIGN COMPETITION HOSTED AT IMPERIAL. ALMOST 200 STUDENTS IN YEARS 10 TO 13 DESIGNED A SPACE SETTLEMENT FOR UP TO 10,000 PEOPLE IN JUST 24 HOURS.

media mentions

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT



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Hidden productivity

BBC RADIO 4 ▶ 07.04.2013



Despite the recession, unemployment has remained relatively low in Britain. Why is it that so many people are still in work? Professor Jonathan Haskel (Business School)

suggested a possible explanation to this question posed by Peter Day on *Radio 4's In Business*. According to Professor Haskel, many of us are doing work that has yet to show up in the official figures. "The economy is employing lots of information workers, lots of people doing design, writing software, doing R&D, but of course that's all work being done for future output," he said. "It's more like an investment, but it's not counted as current output."

Dino killer debated

BBC NEWS ▶ 22.03.2013

The extinction of the dinosaurs has long been blamed on an asteroid, but according to a new study, a comet is the more likely culprit. By studying the amount of sediment left by the space rock that created the 180km Chicxulub crater in Mexico, US researchers determined that the object must have been smaller than previously thought. But not everyone is convinced. "I don't think it is possible to accurately determine the impactor size from geochemistry," Dr Gareth Collins (Earth Science and Engineering) told *BBC News*. "Geochemistry tells you – quite accurately – only the mass of meteoritic material that is distributed globally, not the total mass of the impactor." The remainder could have landed close to the crater or been ejected into space, he said.

Life-saving transplant

THE DAILY TELEGRAPH ▶ 01.04.2013

Twenty-one years ago this month, nine-year-old Victoria Nikishina left Hammersmith Hospital after receiving a life-saving bone marrow transplant from her sister Alina. Her family had travelled from Latvia so she could get treatment for chronic myeloid leukaemia (CML). While Victoria's case is a heart-warming success story, Professor Jane Apperley (Medicine) says CML treatment has "totally changed" since 1992. "At the

time Victoria was diagnosed, the only curative therapy was a transplant," she explains. "Transplant remains a very effective treatment, but now it's used in about 10 per cent of patients. Today patients take a daily tablet of tyrosine kinase inhibitors – and about 75 per cent respond well."

'IKEA' of synthetic biology

NEW SCIENTIST ▶ 30.03.2013

Synthetic biologists have been building one-off machines for years, but industrial-scale production has been held back by lack of quality control. Typically it might take 10 bioengineers more than 10 years to build something that produced one drug. According to Professor Richard Kitney (Bioengineering), this is akin to the cottage industries of the eighteenth century, where craftsmen like George Hepplewhite would create bespoke furniture. "We went from Hepplewhite to IKEA," he says. "That's what we're trying to achieve in synthetic biology."

awards and honours

ENGINEERING

Basu winners bound for Peru

The inaugural winners of the annual Basu Prize for Civil Engineering have been announced as MSc students Melina Christina and Maud Macary. They will travel to Peru to enact their winning proposal to redesign the transport network of Lima and Callao. The prize was set up after a donation from Dr Amiya Basu, a 76-year-old alumnus of the College. The students will receive £2,400 to help them with their expenses while abroad.

NATURAL SCIENCES

Postgrad nets ecological prize

Dr Sarah Papworth has earned a British Ecological Society (BES) Young Investigator prize for research done at the College as part of her PhD. The prize – one of only five awarded each year – recognises the best research papers published in BES journals by early career scientists. Dr Papworth is now a research fellow at the National University of Singapore.

PUBLIC HEALTH

Clinical trials unit success

The Imperial Clinical Trials Unit (ICTU) has received an award in recognition of its work to improve data collection and processing



using paperless systems. After being shortlisted for the Oracle UK Customer Awards 2013, the team went on to win the award for Best Enterprise Efficiency Gain. The ICTU, which was formed in 2010, has increased the number of clinical trials it runs by more than 300 per cent, improved efficiency in the trial process, and ensured compliance with UK regulations. Pictured right to left at the awards event on 21 March: Sandra

Griffiths, Professor Deborah Ashby, Ginny Picot, Nayan Das (all School of Public Health), and Simon Collinson, Oracle.

NATURAL SCIENCES

Government call-up for Hand

The government has appointed Professor David Hand (Mathematics) to serve as a Non-Executive Director of the UK Statistics Authority for three years from 1 April 2013. Professor Hand is Head of the Statistics Section and Associate Head (Research) of the Department of Mathematics. He received an OBE in the New Year Honours in January for services to research and innovation.

Engineering ‘quakeproof’ homes could save lives

New techniques that enable people in rural communities in Central and South America to build earthquake-resistant, low-cost housing are being developed by academics from the Department of Civil and Environmental Engineering.

The traditional style of home in the region consists of timber or bamboo frames that are clad in a latticework of cane, twigs and timber strips. The walls are plastered over with mud or mortar.

If properly constructed, these single-storey homes have a high resistance to earthquakes. However, in most instances they are built by unskilled labourers who use poor construction methods to save on costs.

The team at Imperial performed experiments in the lab by building walls from traditional construction materials and placing them in a device that simulates earthquake conditions.

New techniques developed by the team include installing a lightly reinforced flat slab foundation, on top of which would sit two layers of reinforced hollow bricks that form the base of the wall. This would be covered by damp-proofing to protect the home from moisture and insects. Timber, reinforced with a latticework of treated bamboo, would form the wall frames. This,



say the researchers, would prevent it from crumbling apart in an earthquake.

This research stems from the El Salvador Project, which involved students travelling to Latin America to work with rural communities to develop more robust homes.

The principal investigator of the current study, Professor Ahmed Elghazouli (Civil and Environmental Engineering), said: “It is great to see how a long-term, student-led project can lead to a range of projects in industry and academia. Ultimately, this collective effort demonstrates how simple engineering principles could potentially be employed to help to save lives.”

—COLIN SMITH, COMMUNICATIONS AND PUBLIC AFFAIRS

Tools to predict flood and drought risks

Predicting floods, droughts and contamination to groundwater in the UK could become easier with the help of new mathematical models.

Imperial academics teamed up with the British Geological Survey to develop a range of models, including one that more accurately predicts the time and location of groundwater flooding in the chalk aquifer around southern England. Areas particularly at risk include the Berkshire and Hampshire Downs, the Isle of Wight, and the North and South Downs.

Dr Adrian Butler (Civil and Environmental Engineering) said: “Despite 2012 starting out as a period of extreme drought, it ended as the wettest year on record for England. Now in 2013, if England should get a wetter than normal period, there is a distinct possibility for groundwater flooding to occur in areas dominated by the chalk aquifer.”

In collaboration with Thames Water, Dr Butler and team are also developing models to assess the effect of drought on water availability in the chalk aquifer. This will help the Environment Agency and water companies decide when to implement water conservation actions.

Ultimately the researchers’ models should help them to understand the susceptibility of the chalk aquifer to extreme weather events. The structure of the chalk, which is composed of the remains of tiny algae, means movement of water is slow, at around one metre per year. When a large amount of rain falls in a short period of time it can cause a rapid build-up and, in extreme cases, the water table can rise by metres in a few days leading to surface flooding.

—ROSEMARY PETERS, FOR COMMUNICATIONS AND PUBLIC AFFAIRS

Health risks go global

So called ‘diseases of affluence’ such as high blood pressure and obesity are no longer confined to wealthy countries, a new study has found.

Researchers at the School of Public Health and worldwide collaborators studied data from 199 countries between 1980 and 2008 on the prevalence of risk factors related to heart and circulatory

disease. In 1980, a country’s income was correlated with the population’s average blood pressure, cholesterol and body mass index (BMI).

But by 2008, there was no relationship between national income and blood pressure in men, and in women blood pressure was higher in poorer countries. BMI was still lowest in the poorest countries, but higher in middle-income countries than the wealthiest countries. Cholesterol remained higher in higher-income Western countries.

Professor Majid Ezzati (School of Public Health), who led the research, said: “If current trends continue, developing countries will be confronted with a rising tide of obesity,

diabetes and high blood pressure. Meanwhile, developed countries will continue to face an epidemic of diabetes and high cholesterol.”

The study also found that BMI has consistently been related to the proportion of the population living in cities, suggesting that urban lifestyles might be playing an important role in the obesity problem, now and in the past.

“Developed countries have succeeded in reducing blood pressure,” said Dr Goodarz Danaei, one of the lead authors of the study from Harvard

School of Public Health. “We need to replicate that success in developing countries by improving primary healthcare services, lowering salt intake, and making fresh fruit and vegetables more available.”

—SAM WONG, COMMUNICATIONS AND PUBLIC AFFAIRS





Life banks

At the interface between ICT and active research is Lead Bioinformatician Dr James Abbott (Molecular Biosciences), an academic who works at the College's Bioinformatics Support Service, pictured left.

He collaborates with an assortment of researchers across the Faculties of Medicine and Natural Sciences on a diverse array of projects that includes sequences from genome analyses, clinical research data and images from light microscopy.

Although the term 'post-genomic era' has become commonplace since the completion of the human genome project in 2003, that's far from the last word on genetics – there's a whole biosphere of organisms still awaiting sequencing.

Indeed, James worked closely with Dr Pietro Spanu (Cell and Molecular Biology) on decoding the genome of *Blumeria graminis*, a fungus that infects agricultural crops. Understanding more about this organism could have a big impact on crop yields and food security.

"That was quite a challenging project because you're working with these mixed samples of barley epidermal leaf peels, which comprise a layer of barley cells the fungus has infected. Around 10 per cent of the genetic material was fungal and about 90 per cent barley, so separating out the two was quite a computational challenge, because at the time, the genome of neither species was available," says James.

There's also much still to learn about the rich diversity of different human populations and the genetic basis of disease.

"That might involve taking a set of people with a condition and looking for commonalities – or alternatively focusing on a population in a defined geographic region, because people in a particular environment might evolve ways of better handling a condition."

For James there's also a strong sense of stewardship through taking responsibility for different projects and ensuring researchers across institutions can make best use of available resources.

Depending on privacy and sensitivity issues, project data may be made publicly available on the internet for the benefit of the wider scientific community. The challenge then lies in trying to pull together different databases in order to form the bigger picture.

"Particularly in the systems biology world, people are trying to take a more holistic approach in examining how things work, rather than the old fashioned way of getting down to the very low level and

A numbers game

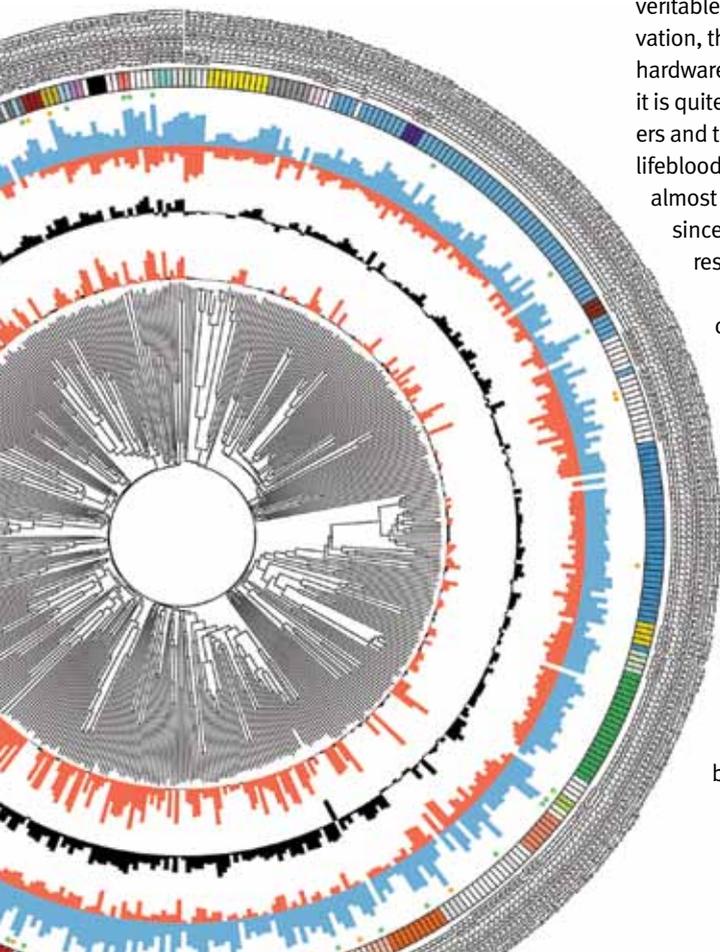
The rise of 'big science' endeavours, such as the particle smashing experiments at CERN in Geneva and the creation of biomedical databases, has created a tsunami of information worldwide that needs to be tamed and made sense of.

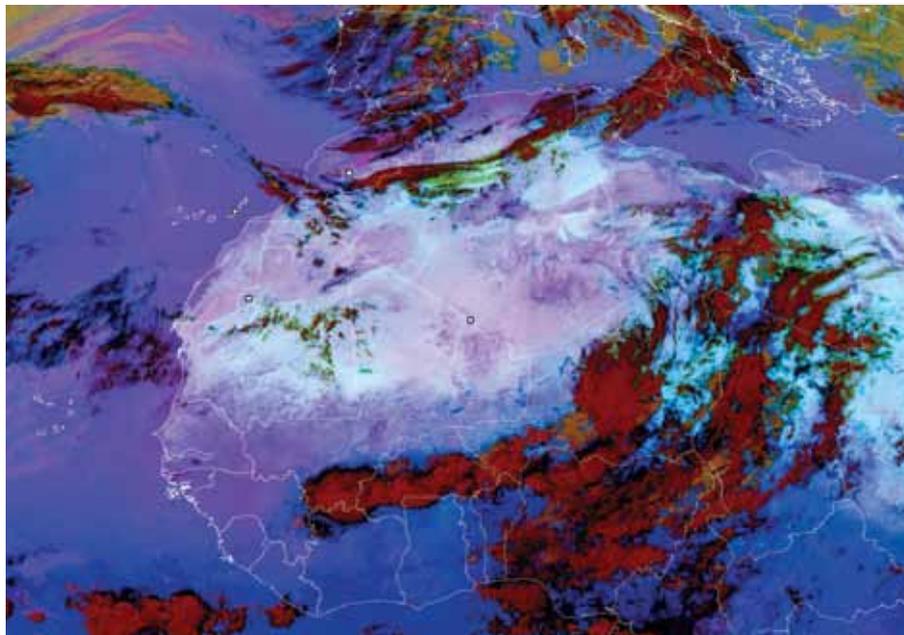
The College has been at the forefront of the use of information technology in the university sector since the birth of mainframe computing in the 1960s – and then a few decades later with the rise of the internet.

Today, the main Research Computing Facility in the Mechanical Engineering Building is a veritable treasure trove of discoveries and innovation, through its role in hosting the computing hardware of departments across College. Visiting it is quite a revelation. The endless rows of servers and terminals hum away loudly with cooling lifeblood, lights blinking intermittently. It feels almost organic – perhaps not a coincidence since it's constantly being modified and resampled, giving birth to new insights.

The Facility must keep pace with demand from academics who increasingly rely on advanced technologies like High Performance Computing, which involves clusters of computer processors all connected together to tackle long and complex scientific calculations and simulations.

Staff, under the direction of Computer Room Manager Steven Lawlor (ICT), must also ensure that it runs as energy-efficiently as possible; is secure from malicious intent; and that key systems have an uninterruptible power supply with large batteries in case of power outage.





Captions (clockwise from top left): Dr James Abbott; the Research Computing Facility in the Mechanical Engineering Building; a data visualisation from the Fennec project (see body); the genome of *Blumeria graminis* (see body).

measuring one thing carefully – so for example, integrating gene expression data, metabolomics and proteomics.”

Once projects come to a close, the research councils now require data retention for 10 years, which, given the scale of data, can be an issue.

“We archive data to tapes when the projects have finished – two copies in a fire safe, on a different site physically removed from the Research Computing Facility.”

No sooner has one batch of projects been completed another starts. The Bioinformatics Support Service is currently working on a range of diverse new initiatives such as the Chernobyl Tissue Bank, which examines the genetic make-up of tumour tissue from people affected by the nuclear fallout of 1986.

Model Earth

One area of research that is constantly hungry for more and more data is weather and climate science. Climate modelling, which tests ideas about how the climate has evolved and may change in the future, depends on the availability of accurate, long-term observational data from various sources.

The Space and Atmospheric Physics (SPAT) Group at Imperial has been a world-leader in this respect for decades now. Dr Richard Bantges (Physics) is a Scientific Project Manager at SPAT where he conducts his own research as well as performing a data stewardship role for the rest of the Group.

As Richard explains, this broadly falls into two separate spheres – Earth observation and computationally-intense outcome modelling for things like extreme weather prediction.

Incoming data generally comes from sensing equipment mounted on either meteorological aircraft, polar orbiting or geostationary satellites, the latter of which orbit in sync with the Earth and focus on a particular region.

The TAFTS (Tropospheric Airborne Fourier Transform Spectrometer) instrument for example is mounted on aircraft operated by the Met Office and measures the far-infrared radiation emitted by the Earth’s atmosphere, thereby providing vital information about heating and cooling.

Meanwhile the Fennec project, which Dr Helen Brindley (Physics) is involved with, uses data from the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) satellite ‘Meteosat-10’ to assess the climatic impact of airborne dust over the Saharan region of Africa. Data is beamed down from the satellite to a receiver on the roof of the Huxley building then sent onwards to the Research Computing Facility for processing before being made available as images on the web which are used to identify dust storms in the region. During research campaigns, aircraft pilots use these quick look images to inform the where best to fly.

Some of the work of SPAT though requires considerably more post-processing – combining data from a range of sources such as the atmosphere, ocean, waves, land and sea-ice – something Professor Ralf Toumi’s group (Physics) is focused on.

“You just wouldn’t be able to do this sort of thing without the Research Computing

Facility. Ralf’s team has hundreds of terabytes of output data and they need it in an environment where they can move it around and manipulate it, so it can be quickly analysed and visualised,” says Richard.

Like James over in Bioinformatics, Richard also takes pride in the responsibility of maintaining and safeguarding data for his immediate research community.

“It’s about having that knowledge of how data is used and the vision for what the requirements will be and to translate between the scientific aspects and the technical side of things. I tend to liaise between the two and say to ICT – yes we’re going to need this

amount of data storage, and we need to make sure we’ve got this bit of kit and the infrastructure to support it.”

Data future

James and Richard are but two examples in the College of a relatively new class of multi-skilled team player who must combine a sound scientific grounding with complete IT savvy. It’s quite likely that this sort of role will become more and more important in the future in order to unlock the underlying value in big datasets – both from a purely scientific and commercial point of view. Indeed the College’s various industrial collaborators like Rolls Royce have come to rely on information hosted at the College.

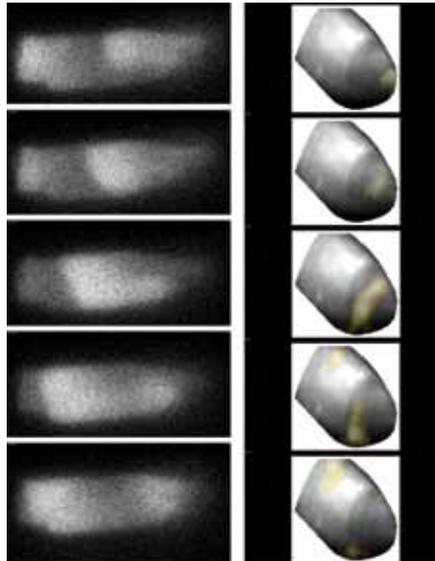
‘It’s a numbers game’ might be a hackneyed sales cliché, but it is looking increasingly relevant to range of disciplines.

—ANDREW CZYZEWSKI, COMMUNICATIONS AND PUBLIC AFFAIRS

“It’s about having that knowledge of how data is used and the vision for what the requirements will be”

Heart of the matter

The work of Professor Peter Kohl's group



Pictured: Wave of electrical excitation at the apex of the heart (right) and a single heart myocyte cell (left).

Perhaps more than any other organ, the heart has fascinated thinkers and scientists through the millennia. Indeed, the Greek philosopher Aristotle concluded that it was the seat of intelligence, motion and sensation. Of course, we now know that consciousness arises in the brain; nevertheless the allure of the heart remains strong.

For Professor Peter Kohl (National Heart and Lung Institute) – head of the Cardiac Biophysics and Systems Biology group – part of the mystique lies in the fact that the heart is self-regulating and propagates its own electrical activity.

“It’s an absolutely magical organ; the fact that the heart can continue to beat once taken out of the body is quite amazing really,” he says. “I think it’s fair to be thoroughly impressed by an organ that has the ability to beat, once every second or so, for 60, 70, 80 years.”

This reliability is possible because of built-in feedback and feedforward mechanisms, which involve cross-talk between the electrical and mechanical aspects of the heart.

“If you increase blood return to the heart – for example when you sit or lie down – the myocardial muscle senses that, and the very next beat will be stronger. That is an observation from the nineteenth century, yet we are still exploring the detailed mechanisms.”

Peter’s group is a multidisciplinary one with a diverse array of research projects incorporating aspects of clinical medicine, systems biology, physics and engineering.

They look at the heart across a range of spatial scales from cells to systems – and the real challenge lies in trying to relate what is learned from, say, studying a single ion channel to an ECG recording in a patient.

This undertaking is aided by a range of state-of-the-art tools such as computer modelling of cardiac activity, as well as optical imaging of heart tissue using fluorescent ‘reporter’ dyes (see image).

“We are very thankful to our colleagues who investigate stars because it’s their specialist cameras that are now being applied to biological systems!”

One of the key insights to have emerged from these studies is the importance of the network of supporting cells that assist the function of myocytes (muscle cells), particularly the connective tissue cells called fibroblasts.

“It’s sobering to realise that there are more fibroblasts in the heart than myocytes. As ‘signalling hubs’ they are very important for the development and normal functioning of the heart.”

In particular, fibroblasts are generating a lot of interest in the context of heart scars. This includes scars that are caused by myocardial infarction (heart attacks), or applied as a therapeutic measure in patients

with pre-existing atrial fibrillation (AF).

AF is a heart rhythm disturbance (collectively known as arrhythmias) which causes the atria to cease pumping. A standard treatment for this condition is catheter ablation, where some of the atrial tissue involved in propagating the rogue rhythm is burned away, leaving a scar. However, in up to two thirds of patients who have such ablation, electrical activity in the burned tissue makes a comeback and often the arrhythmia returns.

“One possible explanation is that the connective tissue in these scars starts to act as a conductor. That was previously seen as unthinkable, but the evidence in favour is starting to look quite compelling.”

Meanwhile, in patients who have survived a myocardial infarction, the resultant scar tissue can give rise to another type of disruptive rhythm, called a ventricular tachycardia. Here the danger lies in the fact that the scar tissue can delay the electrical wave and set up a second wave that distorts the activity of the heart, often with lethal consequences.

Peter wants to see if it is possible to make ‘better scars’ for patients by introducing targeted changes to the electrical integration of connective tissue cells with myocytes.

Ultimately, this would improve current therapies for atrial fibrillation, and reduce at least some of the risks associated with scars left after a heart attack.

“If we could only make scars left after a heart attack slightly less dangerous and scary than they are now – that would be a good thing!”

— ANDREW CZYZEWSKI, COMMUNICATIONS AND PUBLIC AFFAIRS

Peter’s group is supported by the European Research Council, British Heart Foundation, Research Councils UK, the European Commission and the Magdi Yacoub Institute.

inside*

story

mini profile

Mimi Hii

After research and teaching positions at the Universities of Leeds and Oxford, then King's College London, Dr King Kuok (Mimi) Hii came to Imperial as a senior lecturer in 2003 – rising to reader in 2009. She now heads a group of nine postdocs and postgraduate students, and collaborates widely with industry – describing herself as a “sucker for new challenges”.



What is your research about?

It falls into the broad area of catalysis, which is a key underpinning technology for nearly every challenge posed by modern society; whether that's low-carbon energy generation and environmental clean-up, or the production of more sustainable raw materials for use in everyday products.

What scientific achievement do you want to see in your lifetime?

My ‘beauty queen’ answer is that one day, our current energy and environmental crisis can be solved by solutions that are free and accessible to all, in a similar manner to how the web has democratised information. Personally, I enjoy the day-to-day challenges of practising science, particularly in interdisciplinary areas. I am constantly amazed by how solutions often come from the most unexpected sources, and often, the simplest solution is the best.

How do you engage external collaborators?

Mostly through my work with the Royal Society of Chemistry's applied catalysis group and Dial-a-Molecule grand challenge network. I have also been involved in the Imperial-led Pharmacat Consortium since its inception in 2008. This is an exciting network of chemists and chemical engineers from Imperial and process chemists from five major pharmaceutical and agrochemical companies (AstraZeneca, GlaxoSmithKline, Pfizer, Syngenta and Eli Lilly). The idea is to come up with innovative, practical, green and scalable solutions to some of the most pressing problems faced by the manufacturing industry.

—SIMON LEVEY, COMMUNICATIONS AND PUBLIC AFFAIRS

To find out more about industrial collaborations in the Faculty of Natural Sciences such as the Pharmacat Consortium see the new Corporate Partnerships brochure Let's Create a Reaction: bit.ly/ZsyLeO



MRC event

You could be forgiven for thinking that the College's Main Entrance on Exhibition Road had been caught in a time warp earlier this month as it hosted a free interactive exhibition that celebrated a century of progress led by the Medical Research Council. Running from 4–14 April, Strictly Science compared scientific endeavours from 1913 with those of today, and invited visitors to speculate on the next 100 years. In the picture, scientists re-enact experiments on the nervous system, war wound treatment and vitamin deficiency disease, in a century-old laboratory installation.



▶ SCIENCE FROM SCRATCH

As explained by Chris Clarke, MSc Science Communication

How do you look for dark matter?

Matter is something that we can see or touch, owing to the way it interacts with light and other matter. So how do we examine matter that doesn't interact with light or almost anything else in the known universe? How do we even know that this ‘dark’ matter exists?

In 1932 Dutch astronomer Jan Oort was the first to propose the existence of dark matter to explain the movement of certain stars in our galaxy. At the time it was assumed that this movement was dependent on gravity exerted by the surrounding matter; but there just didn't seem to be enough matter at that location to explain it. Oort deduced that there had to be some strange missing matter, which he named ‘dark matter’.

Since then, various studies of galaxies and the universe as a whole have been able to tell us that around 85 per cent of the matter in the universe is dark matter.

For example, an experiment on the International Space Station – the Alpha Magnetic Spectrometer – has been looking for the tiny antimatter particles that are thought to emerge when particles of dark matter collide. Early this month NASA announced the detection of these particles, giving a tentative hint of the existence of dark matter.

Then on 13 April, an experiment located deep underground in Minnesota, USA – the Cryogenic Dark Matter Search (CDMS) – announced three interesting results that could be the first direct glimpse of dark matter. This experiment has been trying to locate dark matter directly by looking for rare interactions with regular matter.

Scientists at CERN plan to join in the search for dark matter when the Large Hadron Collider gets going again in 2015.

obituaries



BRIGITTE ASKONAS

Brigitte Askonas, Honorary Visiting Professor of Leukocyte Biology and Fellow of Imperial died on 9 January aged 89. Professor Peter Openshaw (National Heart and Lung Institute) pays tribute to his friend and colleague.

Ita, as Brigitte was widely known, was respected and loved by several generations of immunologists, not only in the UK but throughout the world. She helped to establish the basic theory behind the body's immune response to infection, and her work ultimately led to the development of many new vaccines.

Her career was remarkable not only for her many scientific achievements, but also because she was deeply committed to encouraging students and young researchers who were interested in developing a career in immunology. Indeed, many individuals she mentored went on to become influential immunologists in their own right.

After working for many years at the National Institute of Medical Research in Mill Hill, Ita was appointed a visiting professor at Imperial in 1989 and awarded a fellowship of the College in 1999 – one of the highest honours that Imperial bestows.

During the 25 years of her retirement she regularly met with students at St Mary's and South Kensington Campuses and attended many of our seminars and research meetings. Her insights were always stimulating, and her support and mentorship to the immunology community at Imperial was invaluable.

She will be sadly missed.



Staff featured in this column have given many years of service to the College. Staff listed below celebrate anniversaries during the period 1–31 March. The data is supplied by HR and is correct at the time of going to press.

20 years

- Barbara Claxton, Research Group Secretary, Department of Computing
- Dr Nicholas Dibb, Reader in Cell Signalling, Department of Surgery and Cancer
- Professor Marina Botto, Professor of Rheumatology, Department of Medicine,
- Professor Jane Apperley, Chair of the Department of Haematology, Department of Medicine

30 years

- Ronald Lanagan, Rotating Shift Security Officer, Security Services
- Professor Constantinos Pantelides, Professor, Department of Chemical Engineering

SPOTLIGHT

Barbara Claxton, Research Group Secretary, Department of Computing 20 years

I came to Imperial in January 1991 to cover a maternity leave for six months working for Margaret Cunningham in the Department of Computing. Possibly the funniest anecdote from that time was when I was photocopying; paper was coming out of the machine at different ends and a work colleague told me I was using the shredding machine. I nearly cried and I thought I won't stick it here. But once the maternity leave cover finished I started working full-time for Professor Manny Lehman as his PA, which I enjoyed immensely as his research was very interesting. I was made a permanent member of staff in 1998, dealing with postgraduate admissions. This was very interesting as I was working with new intakes of students, both for our taught courses and research programmes. I still do this, but lately I've been working with various academics within the Department as a research secretary.

Correction: *The last issue of Reporter incorrectly stated anniversaries being 1 February–1 April, when it should have stated 1–28 February.*



Power house

Many believe that there aren't enough scientists and engineers in positions of power in the UK – so it was refreshing to see 180 early-stage career researchers, including 16 from Imperial, at the House of Commons last month.

As part of the SET for Britain event, held on 18 March, they presented their science to politicians and expert judges.

All presenters were entered into categories, namely engineering, biological and biomedical sciences, chemistry and physics after being short-listed from hundreds of applicants.

On presenting his research, Dr Davide Fabozzi (Chemical Engineering), a Marie Curie Experienced Research Fellow, said: "It was a unique opportunity. My research deals with one of the greatest challenges of our era: the integration of renewable

energy resources. While my work addresses the scientific aspects of the problem, ultimately it is the politicians who set the policies for our future. I am hopeful that fruitful discussion may come from the interactions with MPs."

Miss Inês Cecílio, a PhD candidate also in the Department of Chemical Engineering (pictured with Brian Iddon MP), presented a poster on her research into new signal analysis methods for monitoring the production of natural gas.

"It's a chance to help demystify the idea of science as unreachable and inapplicable, and to draw the attention of our leaders and the wider public to the key role of scientific research to social and economic growth."

Andrew Miller MP, Chairman of the Parliamentary and Scientific Committee, said: "These early career



engineers are the architects of our future and SET for Britain is politicians' best opportunity to meet them and understand their work."

SET for Britain was established by Dr Eric Wharton in 1997. Following his untimely death in 2007, the Parliamentary and Scientific Committee, with support from the Royal Academy of Engineering, the Institute of Physics, the Society of Biology, the Royal Society of Chemistry, the Physiological Society and the Society of Chemical Industry, is working to further his legacy.

—SIMON LEVEY, COMMUNICATIONS AND PUBLIC AFFAIRS

Welcome new starters

Miss Samanta Adomaviciute, Public Health
 Miss Werd Al Najim, Medicine
 Dr Hamidreza Alidousti, Mechanical Engineering
 Mr Gilead Amit, Communications and Public Affairs
 Mr Andrea Anfosso, Medicine
 Dr Alberto Artola, Bioengineering
 Mr Dane Austin, Physics
 Mr Arta Babae, EEE
 Mr Carlo Bagnato, Bioengineering
 Miss Edina Balczó, Medicine
 Miss Karen Belton, Imperial College Union
 Dr Joao Bettencourt Cepeda Malhado, Chemistry
 Mrs Sabin Bilal, Business School
 Mr Michael Bloom, Physics
 Dr David Bode, Medicine
 Dr Peter Budd, Business School
 Mr Prem Chana, Surgery and Cancer
 Miss Jee-Sun Cho, Life Sciences
 Miss Caroline Clark, Physics
 Dr Sergio Coda, Medicine
 Dr Alexandre Coninx, EEE
 Mr Sean Conner, Faculty of Engineering
 Miss Helen Coutinho, Medicine
 Mr Billy Crashaw, Finance
 Dr Hutokshi Crouch, Public Health
 Dr Tyler Davis, Life Sciences
 Dr Thomas Davison, ESE
 Mr Charles Dean, Chemical Engineering
 Mr Paul Dingwall, Chemistry
 Mr Clement Doire, EEE
 Mr James Dunbar, Faculty of Natural Sciences
 Dr Bridgette Duncombe, Chemistry
 Miss Kerri-Anne Ellis, Business School
 Dr Enas Elsaifa, Medicine
 Dr Noushin Emami, Life Sciences
 Dr Niklas Feldhahn, Medicine
 Ms Catherine Fletcher, Chemistry
 Miss Marta Garcia Bellmunt, Bioengineering
 Dr Diogo Geraldes, Mechanical Engineering
 Dr Karena Ghaus, Medicine
 Miss Kaboutar Gholami Babaahmadi, Medicine
 Dr James Glover, Mechanical Engineering
 Mr Christopher Green, Mathematics
 Mr Jacek Grzegorzec, Sport and Leisure
 Mr Ricardo Guerrero Moreno, Computing
 Dr Rory Hadden, Mechanical Engineering
 Dr Christine Hallgreen, Public Health
 Dr Xingsi Han, Aeronautics
 Miss Barbara Harder, Computing
 Dr Victoria Harding, Surgery and Cancer
 Dr Joanne Harris, Public Health
 Mr Henrik Hesse, Aeronautics
 Miss Samantha Hodges, NHLI
 Mr Michael Hoewel, Environmental Policy

Dr Stefan Holzer, Faculty of Medicine
 Mrs Emily Johnson, Catering
 Ms Harriet Jordan, Medicine
 Dr Marcin Kacperczyk, Business School
 Dr Tahereh Kamalati-Buluwela, Faculty of Medicine
 Miss Sadia Kanvil, Life Sciences
 Mr Richard Kelwick, Life Sciences
 Mr Paul Kendrick, Library
 Miss Reema Khorshed, Life Sciences
 Professor Thomas Knopf, Medicine
 Mr Jim Kuo, Computing
 Dr Anna Lavygina, Computing
 Dr Florian Le Goupil, Materials
 Dr Mark Lee, Life Sciences
 Mr Bjorn Lellmann, Computing
 Dr Emanuela Leoni, Medicine
 Mr Martin Lisboa, Business School
 Miss Ruth Lismore-Jones,
 Mr Jose Lopez, Bioengineering
 Dr Xiaomei Lu, Chemical Engineering
 Dr Patrick Mallia, NHLI
 Miss Alexandra Martins dos Santos, Library
 Miss Lisa McNeil-Duncan, Business School
 Miss Zenobia Mehta, Medicine
 Dr Victoria Militsis, Medicine
 Mr Edward Mitchell, Physics
 Dr Luke Moore, Medicine
 Mr Alexander Morris, Bioengineering
 Dr Rafal Mostowy, Public Health
 Mr Carl Mount, EEE
 Miss Katherine Mudge, Medicine
 Mr Sanjay Naran, Research Office
 Mr Chun Ng, Computing
 Mr Simon Parker, Civil and Environmental Engineering
 Miss Maria Parkes, Mechanical Engineering
 Dr Silvia Pedroni, Clinical Sciences
 Mr David Pierce, Civil and Environmental Engineering
 Dr Mohsen Rahmani, Physics
 Dr Neela Rambaruth, Life Sciences
 Dr Subinoy Rana, Materials
 Miss Priya Raniga, Medicine
 Miss Relinde Reuvekamp, Business School
 Dr Catherine Roberts, Medicine
 Miss Minttu Ronn, Public Health
 Dr Jose Sanchez Alonso-Mardones, NHLI
 Mr Andreas Schiffer, Aeronautics
 Mr Samuel Schifferes, EYEC
 Dr Jeroen Schillewaert, Mathematics
 Mr Andrea Serio, Materials
 Mrs Nataliya Shiraz, Business School
 Mr Neil Simpson, Surgery and Cancer
 Ms Catherine Simpson, Life Sciences
 Dr Janet Stowell, Medicine
 Professor Jonathan Stoye, Medicine
 Mr Matthew Streeter, Physics
 Dr Sandeep Sundriyal, Chemistry
 Miss Marta Szklarz, Medicine
 Mr Ge Tan, Clinical Sciences
 Mr Jonathan Tinnacher, Student Recruitment and Outreach
 Mr Stefan Truppe, Physics

Mr Arthur Turrell, Physics
 Dr Paolo Turrini, Computing
 Dr Maria Tziraki, Surgery and Cancer
 Mr Nicholas Wardle, Physics
 Dr Haibao Wen, ESE
 Mrs Theresa White, Catering
 Professor Tom Williams, Medicine
 Dr Ernie Wong, NHLI
 Mr Adam Wright, Computing
 Dr Xu Wu, Materials

Farewell moving on

Dr Hassan Abdulrazzak, Surgery and Cancer
 Dr Ozlem Adiyaman Lopes, Mathematics
 Dr Saima Afaq, Public Health
 Miss Rachael Akinwunmi, EYEC
 Mr Syed Ali, Computing
 Mr Azhaar Ashraf, Medicine
 Miss Elizabeth Atkin, Development
 Dr Anne Aucher, Life Sciences
 Dr Sami Barri (7 years), Chemical Engineering
 Dr Istvan Bartok, Medicine
 Ms Rebekka Bauer, Life Sciences
 Mr Kevin Behan, Surgery and Cancer
 Miss Elisa Belian, NHLI
 Dr Jude Bowyer, Physics
 Dr Gareth Brady (6 years), Medicine
 Mr James Brook, Public Health
 Mr Michael Brown, Public Health
 Dr Alexander Cameron (6 years), Life Sciences
 Mr David Carr, Life Sciences
 Mrs Tessa Chambers, Public Health
 Miss Nastassya Chandra, Public Health
 Mr Jay Chatterjee, Surgery and Cancer
 Mr Oliver Coen, Library
 Mrs Paula Coles, Library
 Dr Jens Cordes, Chemistry
 Dr Shaun-Paul Cordoba, Life Sciences
 Ms Serena Coultrass, Computing
 Dr Amy Cruickshank, Materials
 Dr Wei Dai (5 years), Surgery and Cancer
 Dr Siobhan Darrington, Faculty of Medicine
 Dr Sofia de Noronha (5 years), NHLI
 Dr Alessandra de Paula Alves Sousa, Medicine
 Dr Sami Dib, Physics
 Mr Keith Doel (10 years), Security Services
 Mr Clement Doire, EEE
 Dr Xueliang Dong, Chemical Engineering
 Dr Warren Elder, Physics
 Dr Stuart Ellison, Medicine
 Mr Christopher Exeter, Surgery and Cancer
 Dr Paul Facer (14 years), Medicine
 Mr Rhys Farrer, Public Health
 Dr Nicolas Foin, NHLI
 Dr Esther Forte Serrano, Chemical Engineering
 Mr Adam Frampton, Surgery and Cancer
 Dr Mathieu Gaudin, Surgery and Cancer
 Ms Eva Gledhill, Physics
 Dr Carolyn Goh, Bioengineering
 Miss Susan Goss, Estates Projects
 Dr Jane Gregory, Environmental Policy
 Dr Andreas Griesmayer, Computing
 Mr John Grover (24 years), Estates Facilities
 Mr Ioan Hadade, Mechanical Engineering
 Mr James Hall, Chemistry
 Dr Ulrich Hannemann, Materials
 Dr Pascale Hazel, Life Sciences
 Dr Taigang He (9 years), NHLI
 Dr Martin Hedegaard, Materials
 Mrs Lucinda Hellings (10 years), NHLI
 Dr Shanthi Herath, Medicine
 Ms Caroline Holden, Educational Quality
 Dr Boris Houska, Chemical Engineering
 Dr Michio Iwami, Medicine
 Ms Diana Jimenez Nova, Catering
 Dr Anamika Jithoo, NHLI
 Mr Andrew Jones, Computing
 Ms Teresa Kennedy-Lydon, NHLI
 Miss Pippa Kennedy, Life Sciences
 Dr Sujatha Kesavan, Surgery and Cancer
 Dr Cadence Kinsey, Professional Development
 Miss Charlotte Knight, Faculty of Engineering
 Dr Okanya Kokas, Chemistry
 Dr Elisabeth Kugelberg, Medicine
 Mr Giuseppe Laudani, EEE
 Mr James Lawson, EEE
 Dr Luis Lima Valente, Life Sciences
 Dr Christian Litterer, Mathematics
 Miss Lojini Logesparan, EEE
 Mr Simon Logsdail, Materials
 Dr Jordi Lopez Tremoleda, Clinical Sciences
 Ms Sanela Lukanovic, Business School
 Mrs Nuala Lyons (8 years), Faculty of Medicine
 Dr Yajie Ma, Computing
 Dr Hugo Macedo, Chemical Engineering
 Miss Maria Marquez Daza, Catering
 Dr Nadine Martin, Clinical Sciences
 Ms Polly Meudell (5 years), Legal Services
 Miss Naomi Miller, Physics
 Mr Stefano Miraglia, Business School
 Dr Brian Mitchell, Professional Development
 Dr Jeremy Mitchell, Physics
 Miss Rie Mizumoto, Public Health
 Dr Uwais Mufi, Surgery and Cancer
 Mr Christopher Nicolay, Surgery and Cancer
 Dr Pavel Novak (6 years), Medicine
 Dr Danielle O'Donnol, Mathematics
 Mr Yury Oparin, Computing
 Ms Lucy Parker (6 years), Faculty of Medicine
 Dr Steven Patterson (13 years), Medicine
 Mr Daniel Peterson, Business School
 Mr Silviu Pistalu, Imperial College Union
 Mr James Plumer, Medicine
 Dr Louisa Pollock, Medicine
 Miss Thurka Poobalasingam, NHLI

Mr Abhishek Pradhan, ICT
 Mrs Sunami Putt, Life Sciences
 Dr Alexander Quinn, NHLI
 Dr Jonathan Radcliffe, Faculty of Engineering
 Dr Chandra Ramakrishnan, Life Sciences
 Dr Anna Renz, Surgery and Cancer
 Dr Dominika Rudnicka, Life Sciences
 Mr Bharath Rudraraju (5 years), Surgery and Cancer
 Ms Edna Russell (6 years), ICT
 Mr Antonio Santos, Medicine
 Miss Jennifer Scriven, Public Health
 Dr Jimmy Seiberg, Chemistry
 Dr Safa Sharaf, Chemical Engineering
 Dr Kodikara Silva, Materials
 Dr Brian Slafer, Chemistry
 Dr Karl Smith (6 years), Civil and Environmental Engineering
 Mrs Paula Smith, Bioengineering
 Dr Timothy Sprosen, Public Health
 Dr Kevin Stacey, Life Sciences
 Mr Gerald Stanje, Computing
 Dr Vladimir Stanojevic (6 years), EEE
 Mr Richard Starkey, Surgery and Cancer
 Dr Anny Sykes, NHLI
 Mr Donatas Talmontas, Catering
 Mr Weparn Tay, Chemical Engineering
 Mr Timo Tiirikka, Life Sciences
 Dr James Tomlinson, Clinical Sciences
 Mrs Minna Turkila, NHLI
 Dr Amy Unsworth, Professional Development
 Miss Beatriz Valcarcel Salamanca, Public Health
 Dr Carline Van den Dool, Public Health
 Dr Laxman Varsani, Public Health
 Dr Surender Vashist, Medicine
 Miss Irene Votta, Materials
 Miss Alena Vrzalova (6 years), Imperial College Union
 Mr Daming Wang, Materials
 Professor Dave Wark (9 years), Physics
 Dr Thomas Weissensteiner, EEE
 Mr Robin Winter, Surgery and Cancer
 Dr Malte Wohlfahrt, Chemistry
 Mr James Wood, CHOSTM
 Dr Marzena Wylezinska-Arridge (7 years), Clinical Sciences
 Ms Celine Yan, Medicine
 Mr Liyang Yu, Materials

This data is supplied by HR and covers the period 5 March–8 April. This data was correct at the time of going to press.

✉ Please send your images and/or comments about new starters, leavers and retirees to the Editor at reporter@imperial.ac.uk

The Editor reserves the right to edit or amend these as necessary.

BRING THE FAMILY!

IMPERIAL FESTIVAL

★ 3-4 MAY 2013 ★

Join us as Imperial springs to life this May Bank Holiday weekend with hands-on science demonstrations, music, comedy, dance and art for all ages. This year's Festival programme builds on the best science and arts on offer from Imperial staff, students and alumni with a packed schedule of talks, performances and activities for all ages to enjoy. The Festival runs from 16.00-22.00 on Friday 3 May and from 12.00-18.00 on Saturday 4 May.

TALKS INCLUDE:

► FRIDAY 3 MAY

How do psychedelic drugs work in the brain?

Dr Robin Carhart-Harris
(Medicine)

The sun and the climate

Professor Joanna Haigh (Physics)

The improvising brain: music and complex systems science

Professor Henrik Jensen (Mathematics)

► SATURDAY 4 MAY

Brains behaving badly

Dr Aldo Faisal (Bioengineering)

Web 2.0 – revolution and revelation

Hosted by the Institute for Security Science and Technology

Why bladder control is good for your financial decisions

Dr Mirjam Tuk (Business School)



For the full programme of talks and activities, visit: www.imperial.ac.uk/festival/programme

OTHER EVENTS HIGHLIGHTS

15 MAY ► PUBLIC LECTURE

Small, smart turbines – a low carbon need

Since the internal combustion engine was developed, it has been used in almost all our transport vehicles, from jet aircraft to cars. However the move towards low carbon vehicles and challenging emissions standards is pushing the engine beyond the limits of current technology. Professor Ricardo Martinez-Botas (Mechanical Engineering) uses his inaugural lecture to explain how turbocharger research could help us boost the power so the engine can be downsized, meeting the challenge of low carbon vehicles.

2 MAY ► MUSIC

Lunchtime concert

Noriko Ogawa (piano)

2 MAY ► SEMINAR

Perspectives in education: creating cultures of powerful learning

Professor Guy Claxton, University of Winchester

8 MAY ► PUBLIC LECTURE

Heart genetics – predicting the future?

Café scientifique at the Royal Brompton Hospital

9 MAY ► MUSIC

Lunchtime concert

Cavaleri Quartet

9 MAY ► PUBLIC LECTURE

What's wrong with the banking system and what to do about it

Professor Anat Admati, Stanford University

16 MAY ► MUSIC

Lunchtime concert

Julian Jacobson and Mariko Brown (piano)

21 MAY ► PUBLIC LECTURE

Myocardial contrast echocardiography: a technique comes of age

Professor Roxy Senior (NHLI)

take note

Free portraits for academic staff on 30 April

The College is providing a free photo opportunity to any member of academic staff who would like to have a professional portrait taken. This is a fantastic chance to get a properly lit portrait picture quickly, to use on your Professional Web Page (PWP) and elsewhere.



Sign up: <http://bit.ly/13qxesM>

MEET THE READER



Dr Simon Foster, Outreach Officer, Department of Physics

What are you doing in the picture?

I'm just practising for the Festival in two weeks' time, where we'll be doing some cool science tricks – like this one where you rub a Chinese bowl and the water spits out when you get the frequency just right.

What would you do if you were editor of Reporter for a day?

I'd probably wander round the entire campus investigating all the labs and looking in all the places I'm not allowed to go. I'd like to find out what everyone is doing, as we all squirrel ourselves away in our offices and labs not really talking to each other. I suppose this is why the Festival is so good, as it gives us all an opportunity to speak to our scientific neighbours and join up the dots!

Who would be your cover star?

The students and researchers I work with in Physics and the Centres for Doctoral Training.

Want to be the next reader featured in Reporter? Send in a picture of yourself to: reporter@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