



President Xi at Imperial

Chinese state visit boosts research
and education ties with the College

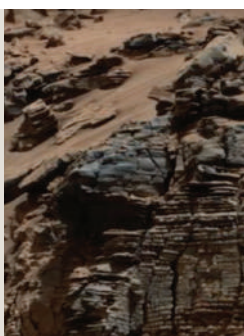
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EDITOR'S CORNER

Words and actions

Earlier in the Summer, Imperial launched its College-wide Strategy for the next five years. In the document is a call to 'collaborate with our toughest competition to create an amazing team' and to '**act courageously** and take calculated risks'. It's early days of course, but recent events certainly seem to resonate with those themes. In the past decade, Chinese science and engineering have risen to compete effectively with Europe and America; yet it's become clear that the best way to solve **global challenges** is through collaboration – something that was highlighted in President Xi Jinping's visit to Imperial this week (pages 3, 6, 7). This was also evidenced by a new joint venture to pursue risky research with MIT – one of Imperial's closest institutional competitors (page 2). Meanwhile, the College and student body have commissioned independent research into addressing gender bias and sexism at Imperial. Clearly, the **outcomes and actions** are what matters, but it is a bold and arguably courageous move, as the lead academic Dr Alison Phipps, points out herself (page 8).

ANDREW CZYZEWSKI, EDITOR

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Imperial and MIT launch joint 'risky' research fund

Two of the world's top universities, MIT and Imperial, have launched a fund to intensify research collaborations between their academics, following an agreement signed on 5 October at MIT's campus by respective presidents L. Rafael Reif and Alice P. Gast.

The MIT – Imperial College London Seed Fund will kick-start early-stage, risky and 'blue skies' research ideas that might not otherwise be pursued.

The awards are expected to cover small-scale experiments, the development of prototypes and

travel costs, among other activities that often do not receive financial support at the earliest stages. The two institutions have invested an initial \$300,000 into the programme. If the fund succeeds, the universities anticipate significantly increasing their financial support.

Imperial's President Professor Alice Gast said: "This exciting collaboration will further strengthen the ties between two of the world's great universities. The world turns to MIT and Imperial to solve a broad range of societal problems. Amid the immediacy

of these increasing external expectations, both universities need to find ways to support fundamental research where the results are less immediate and the impacts promising but less certain."

MIT's President Professor L. Rafael Reif, added: "So many of the breakthroughs that the MIT and Imperial faculty have enjoyed can be traced directly to our institutions' shared commitment to basic research. It is critical that we continue to find ways to support research interests whose payoff might be significant, but only over time."

The initiative builds on decades of strong connections between Imperial and MIT, including thousands of top-tier journal papers, hundreds of student exchanges and scores of academic partnerships.

These include a Global Fellows Programme that brings together some of the most promising PhD students from both universities, an undergraduate summer exchange scheme and many research collaborations.

—ANDREW SCHEUBER, COMMUNICATIONS AND PUBLIC AFFAIRS



Presidents Reif and Gast (L&R) discussing the seed fund

Pitch perfect

Imperial played host to Pitch@Palace Bootcamp on Wednesday 14 October, with more than 40 start-ups presenting their ideas in front of an audience of industry experts, academics, and the Duke of York.

Pitch@Palace aims to support entrepreneurs by connecting them with potential supporters and investors. Imperial is the first university to host Pitch@Palace Bootcamp, which acts as a one-day selection event to determine which teams secure a place at the final stage of the competition held at St James's Palace.

Of the five Imperial teams that took part, two were selected by the judges to pitch their ideas at St James's Palace in November.

Lifebox, led by Malav Sanghavi (Dyson School of Design Engineering), is a low cost baby incubator made from cardboard intended for use in the developing world. Also through to the final is Knyttan, co-founded by alumni Hal Watts and Ben Alun who have developed a new way of controlling industrial knitting machines enabling customers to create their own unique designs.

Professor David Gann CBE, Vice-President



Malav Sanghavi demonstrates Lifebox to the Duke of York

(Development and Innovation), who helped judge the entries, said: "At Imperial, we boast not only world-leading expertise in science, engineering, medicine and business, but a culture of innovation that few can rival. Our students and researchers are using their academic talents to find new solutions to society's grand challenges. It is therefore fitting that we are the first university to host Pitch@Palace bootcamp. I look forward to seeing what the teams have in store."

—DEBORAH EVANSON, COMMUNICATIONS AND PUBLIC AFFAIRS

Chinese President explores Imperial academic partnerships

President Xi Jinping of the People’s Republic of China visited Imperial on Wednesday 21 October as a series of new UK-China education and research collaborations were announced.

The President and First Lady Madame Peng Liyuan were joined by the Duke of York Prince Andrew, the Chancellor of the Exchequer George Osborne, Commercial Secretary to the Treasury Lord O’Neill, and several senior Chinese ministers.

They were welcomed to Imperial, the UK’s number one research partner with China, by President Professor Alice Gast and Provost Professor James Stirling.

Professor Gast explained how Imperial experts and their Chinese partners are working together on cutting-edge research in fields including nanotechnology, bioengineering, computing, advanced materials, environmental engineering and public health.

“UK-China relationships are increasingly important and increasingly beneficial to both countries. British universities have been instrumental in building and strengthening these relationships,” said Professor Gast.

“As China’s top research partner in the UK, Imperial’s academics and students benefit from collaboration on a daily basis. Chinese institutions are a great source of innovative ideas and they are outstanding partners,” she added.

Funding boost

President Xi visited Imperial’s Data Science Institute and Hamlyn Centre (see pages 6–7), before meeting a group of the College’s 2,000 strong Chinese student community.

Coinciding with the visit, came the announcement of a £3 million gift from financial services firm China UCF Group to provide support for the Data Science



President Xi Jinping meets Imperial students and representatives from Imperial College Union

“Chinese institutions are a great source of innovative ideas and they are outstanding partners.”

Institute and Hamlyn Centre. China UCF Group, telecommunications firm Keybridge and China Construction Bank International (CCBI) are to provide continued support to research and innovation conducted by the two Imperial centres.

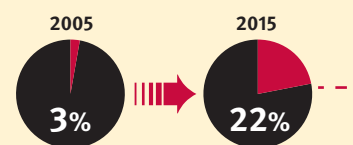
In addition, the Chinese Scholarship Council announced plans for scores of China’s most academically able scholars and students to receive funding to come to Imperial, as well as support for Imperial’s finest PhD students to undertake research work at Chinese universities.

Imperial is also set to partner with Zhejiang University, a longstanding research collaborator, on a new centre for transnational entrepreneurship to be based in London.

—ANDREW SCHEUBER, COMMUNICATIONS AND PUBLIC AFFAIRS

SOLID FOUNDATIONS

Imperial has intensified its research collaborations with China significantly over the last decade.



Imperial Science and Nature papers co-authored by Chinese academics

Imperial’s key Chinese research partners:

- Huawei
- China Southern Railway
- Tsinghua University
- Zhejiang University
- Shanghai Jiao Tong
- Wuhan University
- Peking University
- Chinese Academy of Sciences

in brief

Special relationship

The US Defense Secretary heard about joint UK and US initiatives in innovation during a visit to Imperial this month. President Professor Alice Gast, welcomed Dr Ashton Carter and UK Secretary of State for Defence, Michael Fallon, to the College on Friday 9 October. Dr Carter and Mr Fallon marked their visit with tour of the Royal British Legion Centre for Blast Injury Studies, where Imperial research is helping to reduce the risk and impact of limb loss.

Welcome to Woodward

The College’s newest student hall of residence were officially opened at a ceremony held on 15 October. Woodward Buildings in North Acton is the College’s largest student residence, housing 693 students and a 14 person wardening team across its three blocks.



HeForShe

On Thursday 8 October, Imperial welcomed the campaign bus for the UN’s HeForShe initiative, a global solidarity movement for gender equality. The movement aims to engage men as advocates for equality, to help support the elimination of discrimination. Staff and students were invited to visit the bus, meet HeForShe campaigners, and to pledge their support during the visit. The visit to Imperial is part of the HeForShe GetFree tour, stopping at six universities in the UK and France.



“You have learned to question, to challenge and to investigate. Believe in your capabilities and use your talents for the benefit of society.”

PROFESSOR ALICE GAST ADDRESSES IMPERIAL’S NEWEST GRADUATES AT COMMEMORATION DAY 2015

media mentions

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Cosmetics: Molecular beauty

NATURE ▶ 07.10.2015

A handful of boutique skincare manufacturers are offering personalized creams based on DNA testing, *Nature* reports. One of these, GeneU, founded by Professor Christofer Toumazou (Electrical and Electronic Engineering), offers microarray tests that assess three variants in each of two genes: MMP1, with variants indicating whether a person is a fast, medium or slow degrader of collagen; and NQO1, with variants pointing to cells' capacity to fight oxidative stress. Based on the results and on a lifestyle survey, customers receive one of 18 formulations of the cream. Toumazou says that users experienced a 24–29% reduction in different types of wrinkles, as assessed by dermatologists in a 12-week placebo-controlled, double-blind study.

Still leaning

NATIONAL GEOGRAPHIC ▶ 01.10.2015

Looks like the Leaning Tower of Pisa will keep on leaning, stably, awhile longer. In fact, civil engineer Professor John Burland (Civil and Environmental Engineering) tells *National Geographic* that his international team has succeeded in straightening the marble bell tower by 19 inches, reducing its angle of incline by about 10 percent, and slowing its once steady creep to nearly nothing. It wasn't easy. Built from 1173 to 1370 on silt and clay, the eight-story, 182-foot-tall tower resisted many efforts to stabilize it. What finally worked was a soil removal process called under-excavation and the addition of wells to regulate groundwater. "I'd be very surprised indeed if we see it lean significantly again," says Professor Burland.

Inside the City

THE SUNDAY TIMES ▶ 11.10.2015

Imperial Innovations is a real dream factory. Started in 1986 as the technology transfer office for Imperial College London, today it is the big beast in that jungle after setting up ties with Cambridge, Oxford and University College London. On Friday it closed at 482½p,

valuing Innovations at £685m. That equates to a compound annual growth rate of 3.2% from its float, when the stock debuted at 365p. Investors have never received a dividend or any form of a payout. Quite the contrary: Imperial has raised just short of £200m through share placements. The company told *The Sunday Times* that shareholders like it this way, preferring "that we reinvest in growth" rather than handing back any of its £153m cash pile. Since its founding, Innovations has invested a total of £198m in dozens of companies.

Confusing policy biggest threat to UK clean energy

THE GUARDIAN ▶ 05.10.2015

The biggest threat to renewable energy in the UK, and the country's energy systems, comes from a lack of clarity on the part of government, Rob Gross, Director of the Centre for Energy Policy at Imperial, told *The Guardian*: Under the "political machinations" of the previous coalition government, the amount bill-payers were expected to contribute in support for low-carbon power was made "subject to a cap", he said, but "there is no decision on what that cap will be after 2020", leaving energy investors in the dark.



awards and honours

NATURAL SCIENCES

Climate call-up

Professor Jim Skea has been elected co-chair of the IPCC's Working Group III, focussing on climate change mitigation and options for cutting emissions. Professor Skea, who is Chair in Sustainable Energy at Imperial's Centre for Environmental Policy, will serve in the position on the Intergovernmental Panel on Climate Change (IPCC) until 2022.



Professor Skea

ENGINEERING

Engineering excellence

Four Imperial researchers have been elected Fellows of the Royal Academy of Engineering this year. They are among only 50 new Fellows elected by the Academy. The new Fellows are: Professors Claire Adjiman (Chemical Engineering), Daniel Rueckert (Computing), Mary Ryan (Materials) and Nilay Shah (Chemical Engineering). This takes the tally of Imperial staff and associates who are current Fellows or Honorary Fellows of the Royal Academy of Engineering to 86.



Professor Adjiman

MEDICINE

Young scientists enter world stage

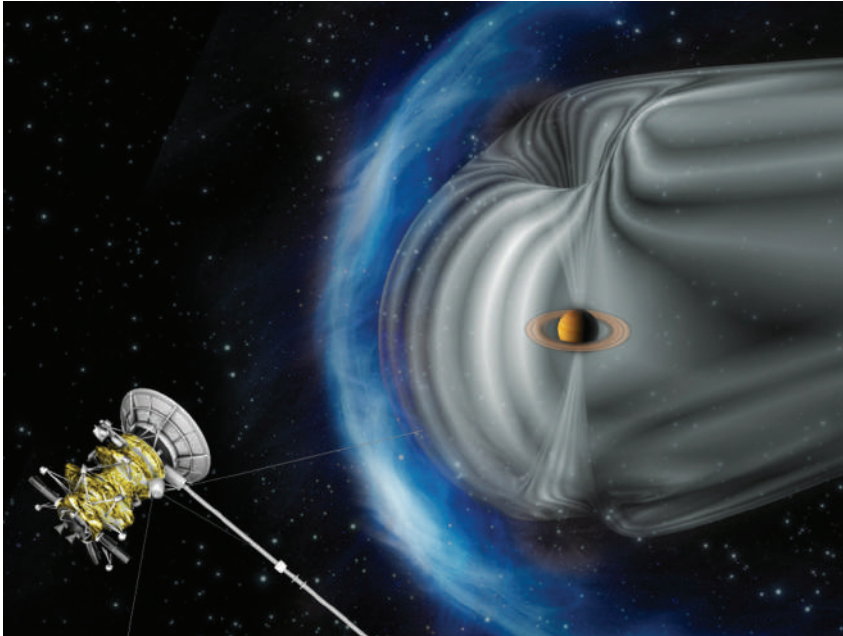
Dr Kirill Veselkov and Dr Jia Li have been selected to join the World Economic Health Young Scientist programme in China. Each year, the World Economic Forum selects 40 outstanding young scientists from around the world to participate alongside global business and political leaders in the Annual Meeting of the New Champions. Dr Li is a Lecturer in Human Development and Microbial Signalling while Dr Veselkov is a Lecturer and Principal Investigator in Computational Medicine and both work in the Department of Surgery and Cancer.

BUSINESS SCHOOL

Stream engine

A team of students has won a Dragon's Den style competition for their idea for a device that generates electricity from slow moving water. The team behind Lunagen, an energy hardware start-up, beat two other finalists to win £10,000 in the annual Innovation and Entrepreneurship Start! Challenge competition held at the Business School. Lunagen, led by new MBA graduates Lauren Dickerson and Will Penfold, aims to harness energy from rivers and tidal waters with low-speed flows to generate electricity, while allowing fish to swim upstream and downstream.





Riding off the waves of Saturn

The Cassini space probe has detected unusually strong shock waves near Saturn, which are helping scientists to understand exploding stars known as supernovae and the nature of plasma.

Like Earth, Saturn generates its own magnetic field, known as the magnetosphere. When the supersonic solar wind, the stream of charged particles blown off from the Sun, interacts with the magnetosphere a 'bow shock' forms – much like the wave in front of a moving ship.

The Cassini space probe crosses the bow shock of Saturn regularly as it orbits the planet, recording the strength of the magnetic field and the shock wave – using a magnetometer instrument built at Imperial.

In the latest study, a team of Imperial-led scientists analysed 54 of Cassini's crossings of the bow shock where Mach numbers above 25 were recorded, including events that reached approximately Mach 100.

This is comparable to the strength of supernova remnants, but these are too far away to be directly measured.

Lead author Ali Sulaiman (Physics) said: "Saturn's bow shock is proving to be a unique laboratory, giving us a rare insight into the physical processes driving ultra-strong shock waves. This has made these exotic supernova remnants, which are thousands of light-years away, somewhat within our reach."

—HAYLEY DUNNING, COMMUNICATIONS AND PUBLIC AFFAIRS

Martian lakes lived on for millennia

Scientists have shown that early Mars sustained lakes on its surface for much longer than previously thought, following an analysis of rocks.

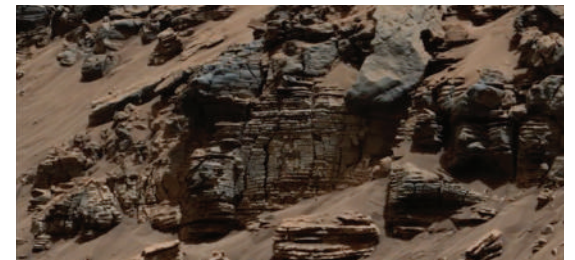
The NASA study – carried out by researchers including from Imperial, California Institute of Technology and the University of California – analysed images taken by the Mars Curiosity rover of sedimentary rocks that lay exposed on the northern region of Gale crater.

The researchers looked at layers of particles that would have been deposited on the bed of the lake and built up over time – the thickness of which gives a good indication of the lifespan of the lake. The team says the evidence point towards a lake system in the crater's basin that probably existed intermittently for thousands or even millions of years.

The findings have major implications for scientists studying the ancient climate of Mars, providing stronger evidence that there were sustained episodes of warm conditions when water was stable at the surface.

Co-author Professor Sanjeev Gupta (Earth Science and Engineering) said: "This study provides stunning evidence that Mars really did sustain a water world for what could have been many thousands or even millions of years. Other regions on Mars, such as the huge canyon network called Valles Marineris or other craters located around Mars' equator, may have also sustained lakes or rivers. Most importantly, a warmer wetter world means that early life may have had a greater chance of flourishing."

—COLIN SMITH, COMMUNICATIONS AND PUBLIC AFFAIRS



Neural switch could halt advanced Parkinson's disease

Researchers believe they have found a potential new way to 're-energise' cells of the brain affected by Parkinson's disease.

Parkinson's is currently treated with drugs, but these have severe side-effects and can become ineffective after around five years. Some patients then turn to deep brain stimulation, a surgical technique where an electrical current is used to stimulate nerve cells in the brain. But as well as being an invasive treatment, it has mixed results.

The new study examined a less invasive and more precise alternative, designed to target and stimulate a particular type of nerve cell called cholinergic neurons.

The team used a virus vector to deliver a specially-designed genetic 'switch' to the cholinergic neurons of rats with symptoms of Parkinson's disease. The rats were then given a drug that was designed to activate the 'switch' and stimulate the target neurons. Following the treatment the rats made an almost complete recovery and were able to move normally.

Dr Pienaar adds: "This study confirms that cholinergic neurons are key to the gait problems and postural instability experienced by advanced Parkinson's disease patients. It also suggests that it's possible to target those cells that remain to compensate for those that are no longer functioning effectively. If we can transfer this technique into people, we believe this could help patients regain mobility."

The researchers believe the technique could transfer into people in the next five to ten years.

—KERRY NOBLE, COMMUNICATIONS AND PUBLIC AFFAIRS

Global reach

Imperial-China research links are having an impact around the world

In the past decade Imperial has cemented its place as the UK's number one research collaborator with China – with more than 2000 high impact academic papers published with Chinese partners in this time. Imperial's Chinese research partners include businesses like Huawei, as well as scientific institutions such as Tsinghua University, Zhejiang University, Shanghai Jiao Tong, Wuhan and Peking Universities, and the Chinese Academy of Sciences. The nature of this work is incredibly broad and covers cutting-edge research in nanotechnology, bioengineering, computing, data science, advanced materials, offshore energy, environmental engineering and public health.

As part of his visit to the College, the President of China, Xi Jinping, was given a tour of two Imperial facilities with notable links to China: the Data Science Institute and Hamlyn Centre – both of which were given a recent boost following the announcement of a £3 million donation from the China UCF Group (see page 3).

Reporter took a closer look at both of the facilities and their collaborative projects.



Human-machine cooperation

The Hamlyn Centre was established to develop safe, effective and accessible technologies that can reshape the future of healthcare for both developing and developed countries. Led by Director and Co-Founder Professor Guang-Zhong Yang, Hamlyn is at the forefront of research in imaging, sensing and robotics for addressing global health challenges.

One of the main goals of medical robotics research at the Hamlyn Centre is to develop smart, cost-effective tools that enhance the ability of surgeons. These solutions incorporate a degree of intelligence and autonomy to assist the surgeons in achieving ultra-precision tasks, thereby improving safety and consistency.

One example of a bespoke robotic surgical solution being developed at the Hamlyn Centre, involves a procedure to unblock the main artery serving the heart through the insertion of a stent.

At present the surgeon makes a small incision in the groin and feeds through a catheter manually

by hand, largely judging position by touch and feel – with the help of X-ray fluoroscopy imaging. “It requires considerable skill, something that really only the senior surgeons can do after performing hundreds of these operations; the learning curve for surgical interns is very steep indeed,” says Dr Su-Lin Lee (Computing) who is a researcher at the Hamlyn Centre.

Using a small robotic wire-feeder Su-Lin is trying to automate the navigation procedure. She takes data from MRI scans of patients' main blood vessels then programmes the robot's 'brain' so it knows the path

the catheter must take through the body – even taking into account for deformation of vessels due to breathing.

“The robotic navigation techniques we're developing should

allow for a more consistent procedure with greater stability and easier manipulation,” says Su-Lin, who has been testing her system with model vessels and hopes to move to patient trials soon.

“The robotic navigation techniques we're developing should allow for a more consistent procedure with greater stability.”



Head for figures

Launched in April 2014, Imperial’s Data Science Institute was conceived with multidisciplinary collaboration at its very core. One of the headline projects seeks to understand, and in some cases predict, the complex interplay between a country’s physical infrastructure and various characteristics and behaviours of its population. The team at the DSI are applying models to both China and its neighbours and partners along the historic ‘Silk Road’ ancient trade route.

Working with a raft of collaborators, and particularly Zhejiang University and the Wittgenstein Centre for Demography and Global Human Capital in Vienna, the project draws upon 50 years’ worth of stored data on infrastructure, GDP, demographics, education profiling and much more.

“What we are chiefly interested in is human development,” says Professor Yike Guo, Director and Founder of the Data Science Institute. “So for example, if you were to build a 2500 km railway in Pakistan, how might the education of people be affected along the route? What about birth rate and life span? Will each age group be affected in the same way and will there be gender disparity? It’s the first time such a model has been used to derive causality in this way.”

The project is by its very nature ongoing and evolving and resulting models and simulations

“This has real value in managing city transportation, helping to ensure efficiency, safety and security.”

can be used by local and central government officials in China and elsewhere to assess the impact of certain policies.

“This is just the beginning,” says Professor Guo. “We are starting with the macro picture but it will gradually become more and more fine grained, such that we could even ascertain what the effect of the speed of a rail line might be on the population.”

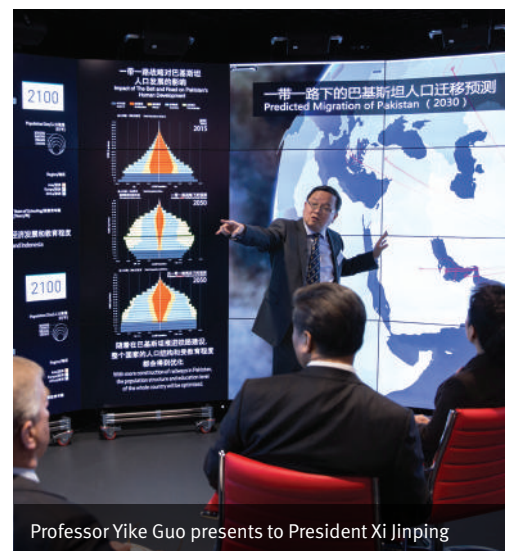
Drawing upon Imperial’s expertise in Railway and Transport Strategy Centre (RTSC), the DSI is also building models of passenger flow in the Shanghai Metro and 8 other urban rail systems in China.

By collecting second-by-second entry and exit data at every single station, they can build up a picture of how the network behaves, for

example predicting the effects that closing a station has on load distribution.

“This has real value in managing city transportation, helping to ensure efficiency, safety and security,” says Yike.

With the explosion of genomics and biomarker data in medical research, the DSI is helping to ensure its full potential and bring personalised, precision medicine to the wider population. They are developing innovative ways to allow medical researchers to see new patterns within their existing data to identify medically interesting subgroups of patients that do not respond to current therapeutic regimes.



Professor Yike Guo presents to President Xi Jinping

They are also helping discover the genes and proteins and explore the DNA mutations that drive their particular disease and visualise the perturbations of their molecular pathways.

Recently the DSI secured a deal to work with Genomics England to provide the software platform for managing data from the 100,000 Genomes Project. Formally launched by the Government last year, the project aims to sequence 100,000 whole genomes from NHS patients by 2017, with the goal being to understand the differences between people’s genetic code that leads to disease.

“That is a major project that will have an impact internationally and a significant achievement for the DSI – reflective of where we are heading,” says Yike.



President Gast welcomes President Xi Jinping and other guests

A mirror to the College

Imperial has commissioned a bold new piece of independent research to examine gender equality and institutional culture.

Earlier this year, 30 of Imperial's finest athletes put on a thrilling display as women's rugby headlined the Varsity sports series for the first time.

On field, it was every bit the spectacle that was hoped for. Yet, the event is likely to be remembered for the wrong reasons, namely, organisational failings, sexist behaviour among elements of the crowd and poor treatment of the athletes.

Following an immediate investigation by the College, which upheld many of the complaints made by the athletes, the Provost's Board requested that the Vice-Provost (Education), in conjunction with the Equality and Diversity team and the student body, commission an external academic expert to undertake a study on gender equality and to advise the College and Imperial College Union on how to address sexism in the College.

Whilst catalysed by issues related to sexism in sport, the research will go beyond this to explore Imperial's organisational culture – the basic assumptions and values that guide life in organisations, which may often be unconscious but which impact upon behaviour.

Ultimately, the aim is to produce an internal report for the College and the Union to use, with recommendations for addressing problematic aspects of institutional culture (especially in relation to gender) for staff and students.

"I've been totally clear from the outset that as a research-focused institution we are commissioning rigorous, high quality research and as such we're committed to open publication," says Professor Debra Humphris Vice-Provost (Education). "The nature of this research is that it will hold a mirror up to ourselves as an institution and provide us with that critical eye."

For this ambitious task, Debra



turned to one of the country's leading academics on the topic of gender equality in higher education, Dr Alison Phipps, Director of the Centre for Gender Studies at the University of Sussex.

Dr Phipps has conducted extensive work with the National Union of Students (NUS) into 'lad cultures' in higher education and the links to sexual harassment and violence, which contributed to an impact case study for REF 2014.

Yet she admits to being surprised when Debra reached out to her about the possibility of working together with Imperial.

"It felt like a decisive move, perhaps characteristic of Imperial in the sense of it being a place where things get done; there seems to be a mind-set of wanting to own this and tackle it. Imperial as an institution is showing immense courage and foresight and setting an example for other universities."

To support the research, a steering group will be established at the College, comprising students and staff, and chaired by Martin Lupton, Head of the Undergraduate School of Medicine in the Faculty of Medicine.

“Imperial as an institution is showing immense courage and foresight and setting an example for other universities.”



Drs Alison Phipps (top) and Liz McDonnell

The research draw upon on a number of methods. This will include analysis of documents, mission statements and strategy; policies and procedures; as well as social events and external-facing publicity material. This will be followed by more observational style research, with in-depth interviews and focus groups with staff and members of student societies.

Much of the data collection will be conducted by the project's full time Research Fellow, Dr Liz McDonnell, who like Alison is based at Sussex.

"We want this to be collaborative, helpful and constructive," Liz says. "We're not here as the 'gender police,' to decree bad deeds and good deeds, it's about trying to understand things through an institutional framework."

Liz stresses that confidentiality and anonymity will be key considerations both during the study itself and in the write up of the data.

Ultimately, Alison and Liz hope that the results of the study will encourage a new way of thinking in the College which is more conducive to addressing equality issues at their source rather than creating 'bolt-on' schemes to deal with the effects after they arise.

The long term aspiration is for lessons learned from the Imperial review to serve as a template for similar institutions and faculties in the UK – and ultimately the entire sector.

"In truth, many institutions look for an easy way to say that they are dealing with this problem, – then swiftly move on. There are lots of quick fixes out there," says Alison. "With this work we can point to what a serious piece of research should look like. I believe people will sit up and take note."

If you are interested in potentially participating in the research, email Liz at E.J.Mcdonnell@sussex.ac.uk for more information.

inside*

story

mini profile

Helen Sharman

Dr Helen Sharman, who in 1991 became the first Briton in space, has recently joined the Department of Chemistry as Operations Manager.



You were trained as a chemist before you went into space – is that your first love?

Of course, I don't think any chemist can ever grow away from chemistry. I've always been interested in science in general and chemistry for me is one of the central sciences – it's got a bit of biological stuff, it's got a bit of physical stuff – it's got everything in it. Chemistry has given me more than I could ever have dreamed of. Now I'm managing, and you could argue I don't really need to be a chemist to do the job, but the fact that I enjoy chemistry means I just feel right having a home in a chemistry department.

What experiments did you actually conduct up on the Mir space station?

I had a whole range of different ones actually that made it quite interesting. There were lot of agricultural-type experiments, such as looking at potato roots. Roots are really interesting because they grow in all sorts of different directions in weightless conditions. Then there were protein crystals –

you can grow some protein crystals much bigger in space than you can on Earth. There were also some Earth observation experiments and medical experiments; looking at how my body was adapting to weightless conditions and any chemical changes.

You've recently been honoured by the British Science Association for your outreach efforts – tell us more

After my spaceflight I gave lots of talks about what it's like in space and more and more people were asking me about the science – not just the experiments I did but the technology of the spacecraft and why we need to do these kinds of things in space anyway. I also think it's so important that we have science as part of a democracy. If we leave out whole sectors of society from that public debate, that means we're missing out on where we really need to be in our democracy and what we're using science for.

Listen to the full podcast interview with Helen here: bit.ly/Sharman



You're hired!

Workshop technicians Giovanni Marinaro and Robert Sherer celebrated completing their apprenticeships and securing jobs at the College at a special presentation by Provost Professor James Stirling.

They are the first 'graduates' from Imperial's Technician Apprenticeship Scheme, which launched in 2011 to provide a pipeline of technician talent for the Faculty of Engineering and Department of Physics.

The technicians teams at Imperial manufacture all manner of bespoke equipment and parts for use in experiments. This can include casings for spacecraft destined for far-flung regions of the solar system; rigs to test how prosthetic limbs respond to forces; precision micrometre parts for laser experiments; and even outreach exhibits that tour science festivals and events around the country.

Apprentices study for one year at Kingston College in Surrey then come back to Imperial to work six-month rotation placements around the different workshops for three years. At present there are seven apprentices currently on the scheme at Imperial working in various departmental placements.

Robert Sherer has now taken up his new role as Laboratory Technician in the Hydrodynamics Laboratory in Civil Engineering – the largest facility of its kind in the UK, where flumes and wave machines simulate ocean conditions for ships, oils rigs and renewable energy infrastructure.

"The apprenticeship was incredibly varied and what was most interesting was the way it covered different scales – we could be making very small, intricate parts for ESA space missions in one placement then large rigs for civil engineering in another. In the end I preferred the big stuff!" says Robert.

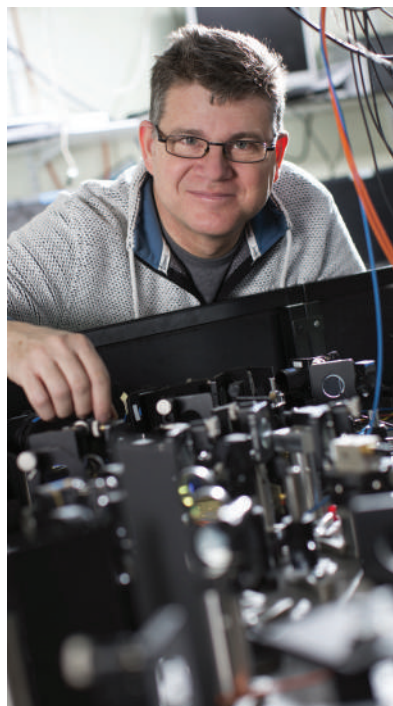
Giovanni meanwhile has joined the Centre for Cold Matter in Physics, a leading laboratory devoted to developing the quantum science and technology of ultra-cold atoms and molecules.

"I really enjoy working with researchers helping with the design of equipment. It can be challenging at times because you might be working on building a piece of kit for weeks, and then it doesn't work as hoped. But that's the nature of research and it's exciting."

Provost James Stirling with Robert Sherer (L) and Giovanni Marinaro



obituaries



PROFESSOR DANNY SEGAL

Professor Danny Segal (Physics), Professor of Quantum Optics, died on 23 September aged 55, following a period of illness. His colleague and friend Professor Richard Thompson (Physics) pays tribute.

Danny was a truly exceptional person with a boundless enthusiasm for life, a passion for physics and a genuine empathy for others.

He studied for his doctorate in Imperial's Department of Physics under Sir Keith Burnett. His work involved the use of laser spectroscopic techniques to study the physics of atomic collisions.

After a spell at Oxford University, he returned to Imperial in 1991 and in 1993 was awarded an EPSRC Advanced Fellowship. He was promoted to Senior Lecturer in 2001, Reader in 2004, and Professor in 2011.

Danny's research was mainly concerned with quantum optics experiments using laser-cooled ions in traps. He was passionate about his research and particularly enjoyed the challenge of undertaking

technically difficult experiments.

As a supervisor and teacher, he was always able to find time to give his students all the support they needed, both for technical matters and also personal issues. He was the envy of many colleagues, because he had an ability to inspire students in an apparently effortless manner and to convey complex ideas with skill and humour.

Danny was the first Warden of the Claypods Hall of Residence for postgraduate students and he succeeded in establishing an effective and supportive community for the students based there.

In September 2014 Danny was diagnosed with a serious brain tumour and underwent a long period of intensive treatment. The positive and determined attitude he took to his illness has been a true inspiration to those who were able to see him over the last year: he retained his unique character throughout, and it was always a pleasure to chat to him.

Danny will be greatly missed by all those who came into contact with him. He is survived by his wife, Helen, and two grown-up children, Rose and Jack.

long
service

Staff featured in this column have given many years of service to the College. Staff listed celebrate anniversaries during the period 1 October – 31 October 2015. The data are supplied by HR and correct at the time of going to press.

20 years

- Dr Kristel Fobelets, Reader in Microelectronics Engineering, Electrical and Electronic Engineering
- Anjali Jagpal, Higher Executive Officer, Medicine
- Professor Stella Knight, Senior Research Investigator, Medicine
- Professor Yuri Korchev, Professor of Biophysics, Medicine
- Professor Steve Matthews, Professor of Chemical and Structural Biology, Life Sciences
- Ian Munro, Software and IT Development Manager, Physics
- Geoffrey Owens, Mechanical Engineer, Estates Division
- John Payne, Security Officer, Security Services
- Sue Powell, Assistant Research Officer, Surgery & Cancer
- Professor Andy Purvis, Research Investigator, Life Sciences (Silwood Park)
- Professor Sara Rankin, Professor of Leukocyte and Stem Cell Biology, National Heart & Lung Institute
- Dr Alessandra Russo, Reader in Applied Computational Logic, Computing
- Christine Short, Research Operations Administrator, Life Sciences (Silwood Park)
- Dr Helen Tyrer, Clinical Research Fellow, Medicine
- Jennifer Wells, Personal Assistant to Head of Department, School of Public Health

30 years

- Professor Herb Arst, Emeritus Professor of Microbial Genetics, Medicine
- Professor Peter Barnes, Margaret Turner-Warwick Chair, National Heart & Lung Institute
- Professor Fan Chung, Professor of Respiratory Medicine, National Heart & Lung Institute
- Frances Fanning, Hall Supervisor, Campus Services
- Professor Jon Marangos, Professor of Chemical and Structural Biology, Life Sciences
- Professor Nigel Gooderham, Professor in Molecular Toxicology, Medicine
- Professor Gordon James, Emeritus Professor of Pure Mathematics, Mathematics

40 years

- Professor Anne Dell, Professor, Life Sciences

50 years

- Professor David Edwards, Senior Research Investigator, Mathematics

SPOTLIGHT

Professor Anne Dell, Life Sciences 40 years



Professor Anne Dell CBE is a Fellow of the Royal Society and world leader in the field of carbohydrate signalling – having discovered a range of new biological functions that depend on these sugar interactions, including parasite camouflage and human egg fertilisation.

Anne grew up on an isolated farm in Western Australia, cycling many miles each day to school and then university, where she showed exceptional promise and secured a Royal Commission Scholarship. "I suspect there were members of academic staff who thought it would be a waste for this bright female chemistry student to do what most women students did in Australia at that time which was get married, have kids and stay home. That's what was expected," says Anne.

The Commission funded Anne's PhD studies at Cambridge University, after which she came to Imperial where she has stayed for 40 years, establishing herself as a leader in her field.

Welcome

new starters

Mr Solomon Adjakloe, Medicine
 Mr Miguel Albuquerque Da Silva Matos, Aeronautics
 Miss Louise Anderson, Physics
 Dr Obinna Anejionu, Centre for Environmental Policy
 Mrs Mazna Anjum, Medicine
 Miss Anna Antoniou, Materials
 Dr James Armstrong, Materials
 Mrs Judy Asenguah, ICT
 Mr Azhaar Ashraf, Medicine
 Mr Dimitrios Athanasiou, Bioengineering
 Dr Alison Atrey, NHLI
 Dr Sebastiana Alzori, Surgery & Cancer
 Dr Benjamin Aymard, Chemical Engineering
 Ms Souad Baameur, School of Professional Development
 Miss Mohini Badiani, Faculty of Medicine Centre
 Mr Paul Baranowski, Centre for Environmental Policy
 Dr Samuel Barnes, Medicine
 Dr Danielle Belgrave, Medicine
 Dr Rebecca Bellovin, Mathematics
 Ms Melissa Berthelot, Computing
 Miss Tejal Bhatt, Medicine
 Dr Stephane Bijakowski, Mathematics
 Ms Rebecca Blaylock, HR
 Dr Shabnam Bobdiwala, Surgery & Cancer
 Miss Sara Bonvini, NHLI
 Dr Riccardo Borsato, Physics
 Dr Oliver Boughton, Surgery & Cancer
 Mr Gilvanio Bragagnolo, Catering Services
 Mr Jeremy Brown, Surgery & Cancer
 Mr Mark Bruggemann, Civil and Environmental Engineering
 Miss Katharine Buckle, Faculty of Natural Sciences
 Mr Thibault Burgy, School of Professional Development
 Dr Simon Cameron, Surgery & Cancer
 Mrs Rebecca Cameron, Surgery & Cancer
 Dr Emma Chapman, Physics
 Mr Mohammad Chaudhary, Physics
 Mr Po-Yu Chen, Computing
 Mr Wenqian Chen, Chemical Engineering
 Ms Christine Chow, Development
 Dr Ya-Yun Chu, Medicine
 Dr Matteo Ciantia, Civil and Environmental Engineering
 Mr Pedro Coelho de Almeida, Life Sciences (Silwood Park)
 Mr Nir Cohen, School of Professional Development
 Miss Kaitlyn Collins, Registry
 Dr Christopher Cook, NHLI
 Mrs Sarai Cordoba Terreros, Medicine
 Mr Charles Cotton, Life Sciences
 Mr John Craske, Civil and Environmental Engineering
 Mr Timothy D'Alessandri, Medicine
 Ms Deb Darling, Advancement
 Miss Megan Daunton, Sport and Leisure
 Kari Davies, Computing
 Dr Phillip De Grouchy, Physics
 Dr Claudia de Rham, Physics
 Miss Eleonora D'Elia, Materials
 Dr Yiwen Ding, Mathematics
 Mrs Ratih Draper, Occupational Health Service
 Mr Cian Duggan, Life Sciences
 Dr Lowell Edgar, Bioengineering
 Miss Jessie Eerens, Public Health
 Mr Mark Ellis, Public Health
 Dr Lindsay Evans, Chemistry

Miss Reah Evans, Medicine
 Ms Catherine Fantaguzzi, Public Health
 Dr Michail Fasseas, Life Sciences
 Miss Isabel Fernandes Freitas, Medicine
 Mr Sebastian Fischetti, Physics
 Dr Richard Fitzjohn, Public Health
 Ms Catlin Fu, Faculty of Engineering
 Mr Dieter Galea, Surgery & Cancer
 Mr Graeme Garrad, ICT
 Mr James Gilbert, NHLI
 Miss Gemma Golding, Faculty of Medicine Centre
 Miss Kirti Gorasia, College Headquarters
 Ms Kate Greenaway, Faculty of Medicine Centre
 Mr Andrew Greig, Faculty of Medicine Centre
 Dr A Emir Gumrukcuoglu, Physics
 Miss Mollie Gurney, Faculty of Natural Sciences
 Dr Brian Halliday, NHLI
 Mr Arran Hamlet, Public Health
 Miss Dorothy Hawkins, Medicine
 Ms Patricia Henne, Medicine
 Mr Balint Herdovics, Mechanical Engineering
 Ms Savannah Hersov, HR
 Mr Mark Hibbett, Medicine
 Mr Peter Hill, Clinical Science
 Mr Tomos Hill, Sport and Leisure
 Dr Sung Hong, Surgery & Cancer
 Dr Adina Ion, Public Health
 Ms Claire Itani, School of Professional Development
 Mr Greg Jackson, Computing
 Ms Hyejin Jang, School of Professional Development
 Mr Sebastian Jarosch, Physics
 Miss Sania Jevtic, Mathematics
 Mr Nicholas Johnson, Public Health
 Miss Stacey Jones, Sport and Leisure
 Dr Bernhard Kainz, Computing
 Dr Faisal Kamal, Surgery & Cancer
 Dr Chidimma Kanu, Surgery & Cancer
 Dr Erisa Karafili, Computing
 Ms Negin Karimian, Surgery & Cancer
 Mr Dimitrios Katsanos, Life Sciences
 Miss Fahima Kausar, NHLI
 Dr Daniel Keene, NHLI
 Dr Tanika Kelay, Surgery & Cancer
 Mr Will Kendall, HR
 Miss Isla Kennedy, HR
 Mr Shaun Kent, ICT
 Dr Daniel Ketover, Mathematics
 Mr Zafar Khan, Finance
 Dr Mehdi Khoury, Public Health
 Mr Alexander Knowles, Materials
 Ms Sneha Koneru, Life Sciences
 Mr Przemyslaw Korzeniowski, Surgery & Cancer
 Dr Eirini Kouloura, Surgery & Cancer
 Mr Nicolas Kyllis, Medicine
 Dr Katharina Ladewig, Public Health
 Dr Yanan Li, Bioengineering
 Miss Wen Li, Life Sciences
 Miss Zhen Li, Medicine
 Dr He Liang, Mechanical Engineering
 Dr Yevgeniy Liokumovich, Mathematics
 Mr Paul Little, Business School
 Dr TianYin Liu, Chemical Engineering
 Mr Niall Logan, Bioengineering
 Miss Robyn Lowe, HR
 Mr Xi Luan, Mechanical Engineering
 Dr Ryan Luebke, Chemical Engineering
 Dr Ian Mackenzie, Business School
 Mr Kyle Major, Physics
 Dr Antonios Makropoulos, Computing
 Mr Humza Malik, Surgery & Cancer
 Dr Ian Mann, NHLI
 Dr Ahmad Mannan, Mathematics
 Mr Jose Marin Beloqui, Chemistry

Dr James Martin, Mathematics
 Mr Guy Martin, Surgery & Cancer
 Miss Meredith Martyn, Public Health
 Miss Bailey Massa, Medicine
 Miss Sara McCallum, Chemical Engineering
 Miss Katrina McClellan, ThinkSpace
 Mr Benjamin McClure, Faculty of Engineering
 Dr Emma McGlone, Medicine
 Ms Sally Meah, NHLI
 Mr Gianmarco Mengaldo, Aeronautics
 Dr Edgar Meyer, Business School
 Dr Anita Mitra, Surgery & Cancer
 Mr Siefe Miyo, Advancement
 Ms Yasmin Mohseni, NHLI
 Dr Miguel Molina-Solana, Computing
 Dr Riccardo Montis, Materials
 Mr Ignasi Moran Castany, Medicine
 Ms Katarzyna Mordaka, Catering Services
 Mrs Kamila Mosqueda Zapletalova, Faculty of Medicine Centre
 Mr Osama Moussa, Surgery & Cancer
 Dr David Muller, Public Health
 Miss Anne-Marie Mullin, Public Health
 Mr Ronan Murphy, NHLI
 Dr Gibril Ndow, Surgery & Cancer
 Mr Jack Nicholls, Faculty of Engineering
 Dr Reuben Nowell, Life Sciences (Silwood Park)
 Mr Bogdan-Alexandru Oancea, Catering Services
 Mr Juan Olarte Plata, Chemistry
 Miss Marine Orain, School of Professional Development
 Mr Owen Osborne, Life Sciences (Silwood Park)
 Mr Jacob Page, Mechanical Engineering
 Miss Snehal Pandya, Public Health
 Mr Christian Pangerl, Mathematics
 Dr Michael Paraskos, School of Professional Development
 Mr Samuel Park, Mechanical Engineering
 Dr Ricardo Petraco Da Cunha, NHLI
 Miss Suzanne Picot, Public Health
 Mrs Monica Pirani, Public Health
 Mr Kristjan Poder, Physics
 Mr Pedro Polo Romero, Catering Services
 Dr Dmitry Ponomarev, Physics
 Dr Simon Pooley, Life Sciences (Silwood Park)
 Mr Liam Poynter, Surgery & Cancer
 Miss Johanna Preston, Public Health
 Mr Martin Price, School of Professional Development
 Mr Robert Punjani, Medicine
 Dr Aikaterini Pylarinou, Centre for Environmental Policy
 Mr Alberto Ramirez Ramos, Catering Services
 Miss Priya Rehal, Public Health
 Miss Stephanie Reid, Chemistry
 Ms Sophie Rena, ICT
 Miss Ann-Kathrin Reuschl, NHLI
 Ms Kate Richards, College Headquarters
 Dr Christopher Rosen, Physics
 Mr Kevin Rue-Albrecht, Medicine
 Mr Timothy Runcorn, Physics
 Emeritus Professor Berc Rustem, Computing
 Miss Celine Ruzafa, School of Professional Development
 Mr Lee Sadler, Catering Services
 Dr Fernan Saiz Poyatos, Chemistry
 Mr George Sammonds, Design Engineering
 Dr Rosa Sanchis-Guarner Herrero, Business School
 Mr Guillem Santapau, Business School
 Dr Peter Sarkies, Clinical Science
 Ms Agnieszka Sarna, Catering Services
 Dr Andrea Sauerwein, Life Sciences
 Miss Marta Sawicka, Medicine
 Dr Rajiv Shah, Surgery & Cancer
 Mr Zhiyuan Shi, EEE
 Dr Christopher Sibley, Medicine

Mr Vicente Simon Moreno, Catering Services
 Dr Arabella Simpkin, Public Health
 Dr Laura-Jane Smith, NHLI
 Miss Amy Smith, Medicine
 Ms Sabrina Smith, Public Health
 Mr Naissen Soobrayen, Faculty of Medicine Centre
 Miss Annie Stephenson, Public Health
 Mr Ilia Stoyanov, Catering Services
 Mr Bor Svab, Public Health
 Dr Lynne Sykes, Surgery & Cancer
 Miss Anastasia Sylaidi, Bioengineering
 Mr Rohan Takhar, Public Health
 Mr Jonathan Tate, Materials
 Mr Philipp Thomas, Mathematics
 Dr Andrew Tolley, Physics
 Miss Alexia Toufexi, Life Sciences
 Mrs Karina Townsend, School of Professional Development
 Mr Nikolaos Trasanidis, Medicine
 Dr Hagen Triendl, Physics
 Dr Enrico Tubaldi, Civil and Environmental Engineering
 Mrs Angela Urasala, ICU
 Dr Martina Valentini, Life Sciences
 Mrs Anna Valentino, Registry
 Dr Catherine Van Der Straeten, Surgery & Cancer
 Dr Dennis Veselkov, Surgery & Cancer
 Mr Mihai-Dorian Vidrighin, Physics
 Miss Dunja Vucenovic, Clinical Science
 Mr Martin Vymazal, Aeronautics
 Ms Aimee Walton, Advancement
 Dr Haixing Wang, Surgery & Cancer
 Mr Xiaofeng Wang, Mechanical Engineering
 Miss Hiba Wanis, Public Health
 Dr Kate Ward, Business School
 Miss Jennifer Ward, Chemistry
 Dr Claude Warnick, Mathematics
 Miss Catherine Watkinson, Physics
 Miss Julia Way, Careers
 Mr Paul Wedrich, Mathematics
 Miss Ke Wen, Medicine
 Professor Jennifer Whyte, Civil and Environmental Engineering
 Miss Kate Wighton, Communications and Public Affairs
 Mr Freddie Witherden, Aeronautics
 Mr Adrian Woodmore, Finance
 Dr Katherine Wright, Life Sciences
 Mr Douglas Wylie, Chemistry
 Mr Haobo Yang, Civil and Environmental Engineering
 Ms Sunnn Yun, School of Professional Development
 Dr Ewelina Zatorska, Mathematics
 Dr Jan Zika, Physics
 Mr Frank Zou, Mechanical Engineering
 Dr Nicholas Zufelt, Mathematics

This data is supplied by HR and covers staff joining the College during the period 1 – 31 October. This data was correct at the time of going to press. For Moving On, visit the online supplement at www.imperial.ac.uk/reporter

✉ 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.

19 OCTOBER – 1 NOVEMBER, 12.00

Heart and lung convenience store

Imagine a future where you can diagnose flu from a handkerchief or match a personal healthcare plan to your genetic make-up. The Heart and Lung Convenience Store is a pop-up collection of interactive exhibits

exploring these themes at the Kings Mall, Kings Street, Hammersmith. Visitors can discover the future of heart and lung healthcare and find out about fascinating research conducted by Imperial's National Heart & Lung Institute.



take note

Fright night

30 OCTOBER, 17.30–20.00
 QUEEN'S TOWER ROOMS, £10

Get your groove on to some spooky inspired music at the Staff Halloween party. There will be drinks and nibbles, pumpkin carving, apple bobbing, mummies, the Thriller Dance, games and some extra hocus pocus. Dressing up optional (face paint will be supplied)!



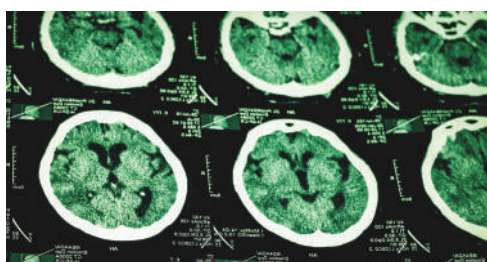
Buy your ticket: bit.ly/Imp-Halloween-15

28 OCTOBER, 17.30

Science, space and security

With so much of our modern world and its infrastructure reliant on space assets – from navigation to telecommunications, earth observation, environmental monitoring and weather forecasting – we have become vulnerable to many threats that could have economic

and national security consequences. The Rt Hon David Willetts, former Minister for Universities and Science and now Chair of the British Science Association, addresses this issue and more at the Institute for Security Science and Technology's annual Vincent Briscoe lecture.



2 NOVEMBER, 19.00

Trauma: healing the brain

A friends of Imperial ticketed talk by neurologist Professor David Sharp.

4 NOVEMBER, 14.30

Global Agenda: COP21 and global warming

Join the audience at a debate produced by Japanese broadcaster NHK World.



4 NOVEMBER, 18.00

Magnetic Resonance Imaging: visions of life

MRI pioneer Jürgen Hennig gives the 2015 Hounsfield lecture.



5 NOVEMBER, 17.30

Fireworks

Bonfire Night Fireworks Display event at Heston Sports Ground.

5 NOVEMBER, 17.30

Following Shipman: finding killers with the NHS data detectives

Discover how forensic examination of hospital information could reveal major mistakes that would otherwise be overlooked, at Professor Paul Aylin's inaugural lecture.



9 NOVEMBER, 17.30

Wii Games Night (Staff only)

Come and play a sport without having to change, get wet or get sweaty! Play Wii tennis with colleagues from around the College for £2. Spaces are limited so please book to avoid disappointment: bit.ly/wii-games-night-15

12 NOVEMBER, 17.30

Is the microprocessor under threat?

Professor George Constantinides shows how state-of-the-art technology design is countering ever-increasing power needs of microprocessors at his inaugural lecture.

16 NOVEMBER, 18.00

The story of a molecule

2014 Nobel Laureate William E Moerner explores how we are able to see a single molecule and what that means for our understanding of biological processes at the 2015 Ernst Chain lecture.



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