Imperial College London

reporter

Issue 255 ▸ 13 December 2012

Sharing stories of Imperial's community

The year ahead

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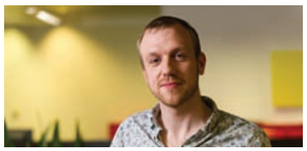

EDITOR'S CORNER

It's a wrap

As a sports and science fan, this year's been a particularly memorable one for me personally and, I'm sure, for a few others across the College. I was one of the **lucky few** to get tickets for the Olympics and saw my idol, Michael Phelps, become the most decorated Olympian in history, in what surely must be one of the world's most architecturally stunning sports venues – the aquatics centre. Meanwhile, the Mars rover and Large Hadron Collider provided their fair share of **big 'wow' discovery moments** (even if the latter took a bit of getting my head around). So, having joined the team at Imperial in November, I have the great facilities at *Ethos* to satisfy my sporting urges (see page 12 for a student perspective) and, of course, a whole body of world class research to answer those scientific curiosities. For this end of year issue I approached four Imperial academics to ask **what 2013 might hold** in terms of space missions, the economy, medicine, and climate and weather (page 8). Merry Christmas and a Happy New Year!

ANDREW CZYZEWSKI,
ACTING STAFF EDITOR

Reporter *is published every three weeks during term time in print and online. The next publication day is 24 January.*
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Business school joins global elite

The College's Business School has achieved coveted triple accreditation status from the three most influential awarding bodies – an achievement gained by less than one per cent of business schools globally.

The latest accreditation from the Association to Advance Collegiate Schools of Business (AACSB) in the USA follows previous awards from the Association of MBAs and European Quality Improvement System.

To achieve accreditation by AACSB International, business programmes must satisfy 21 quality standards relating to faculty, resources, and communication between staff and students, as well as showing a commitment to continuously improve programmes.

In its report on the Business School, AACSB International highlighted the School's dedicated, high quality faculty and staff, commitment to excellence, strong research culture and supportive environment for students as particular strengths. It also showed that the applied,

practical nature of the programmes is especially appreciated by students.

Welcoming the news, Professor Dorothy Griffiths, Acting Principal and Head of Programmes for the School, said: "We are delighted with today's announcement that confirms our position as a world-leading business school. Our programmes combine the highest academic standards with the very latest business practices."

—CHER THORNHILL, COMMUNICATIONS AND DEVELOPMENT

Imperial among top graduate recruiters

Imperial has been listed among the top 100 graduate employers in this year's *Complete University Guide*, joining Cambridge as the only universities to do so. Both were ranked in 87th place in the guide, which was published on 10 December. Heading the list was the pharmaceutical company Boots.

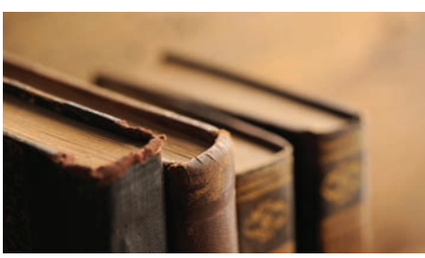
Imperial was also in 20th position among London-based employers. The listings were complied by data from the *Destination of Leavers from Higher Education* survey, which asks UK and EU domiciled leavers what they are doing on a particular reference date roughly six months after graduation. The compilers then restricted their search to graduates in full-time paid work, removing doctors, dentists and nurses from the sample and narrowing to employers with more than 50 employees. Based on the *Complete University Guide*'s calculations, Imperial recruited 35 new graduates into professional services jobs in 2010–11.

Director of Human Resources, Louise Lindsay, said: "Imperial's commitment to recruiting exceptional staff includes providing opportunities to talented recent graduates and giving them the support and opportunities to thrive. We're delighted that this commitment has been recognised in this measure from the *Complete University Guide*."

—JOHN-PAUL JONES, COMMUNICATIONS AND DEVELOPMENT

New home for science history centre

Imperial and King's College London have announced that Imperial's Centre for the History of Science, Technology and Medicine (CHoSTM) will transfer to the Department of History at King's from August 2013.



During its time at Imperial, the Centre topped the RAE tables for history in 2008, and became widely recognised for the excellence of its research.

The move follows a review by the College prompted by concerns that, despite CHoSTM's internationally recognised academic excellence, its small size might compromise its ability to maintain and develop its pre-eminent position. The review recommended that, to enable Centre staff to maintain and develop the quality of their research activities in the long term, the most viable option would be to assist them in becoming established in an academic environment that better supports their research focus.

Imperial's Pro Rector (Research), Professor Donal Bradley, said: "We are very proud of what CHoSTM has achieved during its time at Imperial. This move to join one of the strongest history departments in the country will ensure the Centre is even better placed to realise its outstanding potential fully in the future."

Professor Keith Hoggart, Vice-Principal (International) at King's, who has worked with Professor Bradley on the move, said: "Imperial has nurtured CHoSTM and encouraged its development into a world class research and teaching unit. King's is delighted to provide a new context for a further expansion of academic excellence in the history of science, technology and medicine."

—JOHN-PAUL JONES, COMMUNICATIONS AND DEVELOPMENT

Imperial-Chinese alliance to build next-gen aircraft

The College has partnered with a major Chinese aerospace conglomerate with the aim of developing the next generation of passenger aircraft.

The £5 million partnership with the Aviation Industry Corporation of China (AVIC) will see two new research centres established at the College focused on advanced materials, design and manufacturing processes.

AVIC has more than 480,000 employees and around 200 factories and research institutes across China. The two research centres that have been established at Imperial are among only a few to be funded outside China.

Work at the AVIC Centre for Structural Design and Manufacturing, based in the Department of Mechanical Engineering, will focus on developing ways to improve manufacturing methods.

Meanwhile, researchers at the AVIC Centre for Materials Characterisation and Modelling, which is based across the Departments of Mechanical Engineering and Materials, will investigate new types of advanced materials for use in aircraft manufacture.

Professor Jeff Magee, Principal of the Faculty of Engineering, said: "This new project with AVIC really plays to Imperial's strengths. We are leaders in aeronautical and mechanical engineering and in materials research, and have a very strong track record working with the aerospace industry on ways to make flying cleaner, greener and more efficient."

> "We have a very strong track record working with the aerospace industry on ways to make flying cleaner, greener and more efficient"

This initiative supports the Faculty in enhancing multidisciplinary manufacturing research. A related endeavour has seen the recent launch of the Manufacturing Futures Lab, which aims to bring together experts in future manufacturing technologies and underpinning science to enable Imperial to develop a more coherent and strategic programme in manufacturing.

—COLIN SMITH, COMMUNICATIONS AND DEVELOPMENT

Forum for future uses of former Wye College

On 7 and 8 December, consultation events were held for villagers in Wye, Kent, as part of a masterplanning process to investigate uses for the old Wye College site, formerly an Imperial campus.

Wye College merged with Imperial in 2000. However, a decline in students studying agriculture-related courses led to the closure of the Department of Agricultural Sciences at Wye in 2004, with all academic activity ceasing in 2009.

Following the end of academic activity, Imperial's Council transferred the Wye College land to the College Fund, now the Endowment Board, which manages assets that are not core to the College's academic mission, with income generated being used to support that mission.

A public consultation was launched in September this year to consider practical uses for the site, identified as a potential development area in the local authority's development plan as 'Wye 3'. The consultation has so far included public tours, meetings, a website and a forum involving people who live and work in the area.

At the December events, masterplanning architects presented some of the concepts emerging from the process to residents, including ideas for the future of College buildings and ways in which brownfield land could be developed while preserving the village feel of Wye.

Steve Howe, Director of Capital Projects and Planning, said: "The emphasis throughout the consultation has been to find a future for the site in partnership with the village. With that in mind we are also working with community engagement specialists to ensure we hear from as many local people as possible. Our aim is to develop a high-level plan that works well for everyone and that can be presented to Ashford Borough Council in spring 2013."

—ANTHONY WILKINSON, COMMUNICATIONS AND DEVELOPMENT

Read more on the consultation process at: **www.futureofwye3.co.uk**

in brief

EFL technology on show at Doha climate conference

Imperial researchers exhibited at the United Nations Framework Convention on Climate Change in Doha from 26 November–7 December. They showcased research on carbon capture and storage being conducted at the Qatar Carbonates and Carbon Storage Research Centre, part of the Energy Futures Lab. The exhibit included an 'elevator' experience that took observers on a 'CO_2 journey' from the atmosphere then deep down into reservoirs.

Quality of GPs varies widely in London

A report commissioned by NHS London from The King's Fund and Imperial has found significant variations in the quality of primary care in London. There were examples of excellent performance including a high rate of child immunisation in deprived parts of the capital. However, Londoners also report low satisfaction with GP services, with concerns about access to services, and quality of consultations.

Future medics put to the test in Singapore

Over 800 prospective students competing for the first 50 places at the Lee Kong Chian School of Medicine (LKCMedicine) in Singapore from August 2013 sat the BioMedical Admissions Test (BMAT) in November. LKCMedicine, Imperial's partnership with Nanyang Technological University, is the first medical school in Singapore to include BMAT among admissions requirements. Multiple mini interviews assessing aptitude and capability will form the next stage in the admissions process for shortlisted candidates.

Phenome Centre set for 2013 launch

The MRC-NIHR Phenome Centre is set to open at the Hammersmith Campus in 2013. It will analyse thousands of samples of blood, urine and tissue to discover how our genes interact with the environment to cause and affect the course of disease. The Centre is a partnership between the Medical Research Council, the National Institute for Health Research, analytical technology companies Bruker and Waters, King's College London and Imperial.

Open day insights for prospective PG students

The College put on one of its most comprehensive postgraduate open days to date on 5 December, with talks and tours at South Kensington Campus from 12.30 until 18.00, as well as a morning session for medicine at Hammersmith Campus.

Around 26 dedicated booths for course information from departments and divisions were installed in the Great Hall, while the Queen's Tower Rooms had staff on hand from Sport Imperial, the Disability Advisory Service, Student Hub, Accommodation Centre and more.

For the first time, the Open Day featured general talks with topics including *Imperial College Union – Life as a student* and *Career planning for Master's students: making the most of your time at Imperial*. There were also around 14 Rector's Ambassadors available to chat to prospective students and lead campus tours.

At Hammersmith Campus, sessions were held on postgraduate study in medicine in the morning, after which buses carried students back to South Kensington for the rest of the day's activities.

Reporter caught up with some prospective students in the Queen's Tower Rooms and asked them why they were interested in studying at Imperial, and what they were hoping to find out at the Open Day.

Leon from London said: "It's essentially a university of prestige and nostalgia and also, based on what I've read, you've got a very good chance of getting a job after graduating. I'm looking at a course in immunology. I work as a research lab technician at St George's Hospital and I want to boost my career prospects now, as I already have a BSc in Biomedical Sciences."

Meanwhile, Christian from Germany said: "I want to do a Master's in physics and perhaps go into the field of controlled quantum dynamics, which as far as I'm aware is not something available in Germany. I'm also having a look at some other subjects as well, plus I can see the city while I'm here."

Boost for projects in developing world

Student projects to create earthquake-proof homes in places like El Salvador could potentially get a boost thanks to the generosity of an Imperial alumnus.

The Department of Civil and Environmental Engineering is establishing a prize for MSc students – thought to be the College's largest prize awarded to a single student. The prize is the result of a donation from Dr Amiya Basu, a 76-year-old alumnus of the College. The annual Basu Prize for Civil Engineering will be awarded to an MSc student who submits the best proposal for undertaking their dissertation project overseas. Students will receive £2,400 to help them with their expenses while abroad. The winner will be announced in March 2013 and they will take their trip abroad in the summer, before submitting their dissertation at the end of August.

Robotics reach out

Home schooled students from around London were given the chance to carry out practical experiments at the College's Reach Out Lab recently.

Around 30 children aged between nine and 13 years, accompanied by a number of parents, learned how to programme small, mobile robots to perform simple navigation tasks.

The students later put their new-found programming skills to the test by trying to get their 'Boe-Bots' to navigate an elaborate maze.

One of the student's parents, Arif Saleem – an Imperial alumnus who graduated in Information Systems Engineering – said that visiting the Reach Out Lab was a fantastic opportunity to put into practice what the students had been learning about at home.

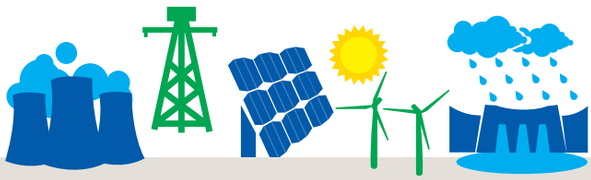
"My child is just beginning to understand what university is, so coming to Imperial is a great opportunity. I think that they really get a sense of the exciting things that happen here and the scale of it. It's something to aspire to," said Saleem.

Lord Robert Winston, Professor of Science and Society at the College, stopped by the Reach Out Lab, and emphasised the importance of applying maths skills to practical and contemporary problems such as programming at an early stage in education.

Commenting on the day, Reach Out Lab Director Alan West, pictured above centre, said: "One student did complete the maze to the absolute delight of the whole group. This is absolutely part of what the Reach Out Lab is about: creating fulfilling STEM [science, technology, engineering and maths] experiences that motivate and hopefully inspire them for the future."

media mentions

—SIMON LEVEY, COMMUNICATIONS AND DEVELOPMENT



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Dig for victory

BBC NEWS ▸ 28.11.2012

Aviation enthusiasts are hoping to excavate 36 World War II Spitfire planes that have been buried for over 60 years, reported the *BBC*. The unused planes were buried by allied forces in Burma in 1945, following fears they could be captured or destroyed by enemy forces. Dr Adam Booth (Earth Science and Engineering) said: "Our geophysical data suggests that there's a lot of buried metal in the ground. The equipment is not a 'Spitfire detector', instead it detects a high electrical conductivity. What we can say is that there's something there that's worth investigating, and it ties up with all the eye-witness reports and documentary evidence."

Expanding energy sector

FINANCIAL TIMES ▸ 25.11.2012

Britain is due to undergo an energy revolution that will require large investments and reap significant economic rewards. European and Asian energy companies already have a large stake in Britain's energy market through their designs and capital investment for new nuclear power stations, as well as solar, wind and tidal power installations. This, in turn, provides the opportunity for a growth in high-tech manufacturing in the UK. The wind industry now employs 12,200 people and one report suggests 'new nuclear' could create 22,500 more jobs. Professor Malcolm Grimston (Environmental Policy) told the *Financial Times* that "internationalisation" of the nuclear sector is "a very positive thing" for the UK, bringing with it economies of scale.

Controversial appointment

NEW SCIENTIST ▸ 23.11.2012

The European Union's new health commissioner has come under attack following concerns about his conservative opinions on abortion, homosexuality and divorce. Scientists and lobby groups fear that former deputy prime minister of Malta and staunch Catholic, Tonio Borg, may allow his personal opinions to affect policy. Professor Francesco Dazzi (Medicine) told *New Scientist* that Borg's election could have "profound impacts" on funding for stem cell biology and its therapeutic applications. "Although I do not dispute his technical skills, there is the risk that personal views, especially when radical in nature, will interfere with or slow down important projects which have already been endorsed by public opinion."

Big firms courting MBA graduates

THE DAILY TELEGRAPH ▸ 20.11.2012

Large firms, who were once reluctant to hire MBA graduates with significant entrepreneur coursework for fear of losing them to start up their own ventures, now recognise their value, reported *The Daily Telegraph*. "To be able to work with the uncertainties in the market, businesses are aware that they need to recruit people who have a more entrepreneurial style and disposition, with an understanding of risk," said Professor David Gann (Business School). "While some of our students go on to achieve success in their own ventures, those who take on roles as entrepreneurs are also highly valued."

awards and honours

MEDICINE

Surgeon wins Arab achievement award

Professor Nagy Habib (Surgery and Cancer) has won this year's TAKREEM Award for Scientific and Technological Achievement. The awards, which were presented at a ceremony in Bahrain on 30 November, highlight Arab excellence and leadership in a number of fields. Professor Habib was nominated for his work in liver cancer and the development of the 'Habib 4X', a radiofrequency device for use in liver surgery.

NATURAL SCIENCES

Work of George Porter commemorated

The work that Professor Lord Porter of Luddenham undertook at Imperial has been honoured by the Royal Society of Chemistry. Lady Porter unveiled a National Chemical Landmark plaque dedicated to her late husband during a ceremony on 21 November. Lord Porter came up with the idea of using a flash bulb to initiate a chemical reaction, which earned him the Nobel Prize in Chemistry in 1967. The plaque will soon be installed at the joint entrance of the Chemistry and Sir Ernst Chain Building-Wolfson Laboratories at South Kensington Campus.

MEDICINE

WISE prize for Naomi

Professor Naomi Chayen (Surgery and Cancer) has been recognised in the WISE (Women into Science and Engineering) awards. Professor Chayen received a commendation for innovation and entrepreneurship in recognition of her breakthrough research into crystallisation of proteins and for 'Naomi's Nucleant', a patented product that has attracted worldwide interest from industry and academia. The certificate was presented by HRH The Princess Royal on 3 December, pictured left.

ENGINEERING

Best exhibit for EFL students

Last month, graduate students from the Energy Futures Lab Centre for Doctoral Training (EFL-CDT) received an award for the best exhibit at the Energy CDT Network conference, with a poster and model house that demonstrated the breadth of research undertaken within the EFL-CDT. The winning team – comprising Amit Manthanwar, Bonahis Oko, Florent Deledalle, Chris Mazur, Chris Emmott and Bhavish Patel – beat 12 other teams to scoop the prize.

Silent malaria infections are major source of transmission

A study has shown that in countries where malaria is endemic, many people have a low level infection, often without symptoms.

These carriers have a small number of parasites in their blood and are usually unaware that they have malaria, but mosquitoes biting these people can still become infected and then go on to transmit the parasite to other people. In fact, low level malaria infections that are not detected by standard tests may be a source of up to 20–50 per cent of onward transmissions.

Experts from Imperial's School of Public Health and the London School of Hygiene and Tropical Medicine, together with colleagues from the Netherlands, gathered data from 106 surveys from endemic countries, which tested for malaria using both sensitive molecular techniques and routine microscopy. The sensitive methods revealed on average twice as many malaria infections, showing that low level, submicroscopic infection is common.

The study shows that submicroscopic malaria infection is more likely in areas of low malaria transmission in adults and in people with long-term, chronic malaria. Although these carriers are much less likely to transmit the infection via mosquitoes than people who have a greater number of parasites, there are so many such carriers in some areas that they are likely to be a significant source of transmission.

Dr Lucy Okell (Public Health), lead author of the study, commented: "Control programmes are increasingly considering the use of 'screen and treat' programmes and our results suggest that, in some areas, it may be worth investing in more sensitive diagnostic methods."

–SAM WONG, COMMUNICATIONS AND DEVELOPMENT

Life experiences have impact on brain's reward system

A brain-imaging study has provided new insight into the roles that nature and nurture play in our behaviour.

Dr Paul Stokes (Medicine) and colleagues focused on parts of the brain involved in processing dopamine – often called the 'pleasure chemical'. The release of dopamine in the brain is associated with reward and as such guides our behaviour and helps us to learn.

The level of dopamine release in the brain varies among everyone, but very high or low amounts are associated with mental illnesses: excessive release occurs in people with schizophrenia, while very little is seen in those with alcohol and substance use disorders.

The extent to which the dopamine system is influenced by our genes or the environment is an important question.

For the current study the researchers compared brain scans of identical twins with those of non-identical twins, which provides information about inheritance. This is because identical twins have exactly the same DNA so the differences between them have nothing to do with their genes. Non-identical twins share 50 per cent of their DNA, just like any other sibling pair, but are a better comparison to identical twins as they are also born at the same time.

Examining brain scans collected over three years, the researchers concluded that genetic inheritance and the individual experiences that make

each of us unique have an important influence on dopamine function in the brain.

"These are normally experiences that happen a little bit later on in life, in adolescence or early adulthood," explains Stokes. In contrast, factors in the familial environment, like the experience of sharing a home and growing up together, have little or no influence.

—ELIOT BARFORD FOR COMMUNICATIONS AND DEVELOPMENT

Smartphone technology to reveal health effects of pollutants

A major new EU project will employ a range of technologies to build up a complete picture of how environmental pollutants influence health.

The €8.7 million Exposomics project, involving 12 partner institutions led by Imperial, marks the EU's biggest investment in environmental health research to date.

The 'exposome' is all of the environmental components, including lifestyle factors and chemicals to which we are exposed, that influence our health over the course of a lifetime.

Researchers will use smartphones equipped with GPS and environmental sensors to monitor potential hazards encountered by participants in the study. This information will be combined with the results of blood and urine analysis to investigate whether exposure to risk factors leaves chemical fingerprints that can be detected in bodily fluids.

The scientist leading the project, Professor Paolo Vineis (Public Health), said: "The sequencing of the human genome has provided a wealth of information about genetic susceptibility involved in disease but it's become clear that the diseases with the greatest burden, such as cancer, diabetes, heart disease and neurodegenerative diseases like Alzheimer's,

are mainly caused by factors other than genetics. These are likely to include aspects of lifestyle and the environment, but the precise roles of different factors in causing diseases are not well understood."

The researchers are developing a personal exposure monitoring kit which could provide a more comprehensive assessment of the study participants' environment. The kit, which could become commercially available in the future, includes a smartphone app that records the user's physical activity and location, and a sensor that plugs into the phone to measure air pollution.

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT

Risk of childhood obesity can be predicted at birth

A simple formula can predict at birth a baby's likelihood of becoming obese in childhood, a study has demonstrated.

The formula, which is available as an online calculator, estimates the child's obesity risk based on its birth weight, the body mass index of the parents, the number of people in the household, the mother's professional status and whether she smoked during pregnancy.

The researchers suggest that services such as dieticians and psychologists could be offered to families with high-risk infants to help them prevent excessive weight gain.

"Once a young child becomes obese, it's difficult for them to lose weight, so prevention is the best strategy, and it has to begin as early as possible," said Professor Philippe Froguel who co-authored the study with Professor Marjo-Riitta Jarvelin (both Public Health).

> "Prevention is the best strategy, and it has to begin as early as possible"

The researchers developed the formula using data from the Northern Finland Birth Cohort Study, which was set up in 1986 to track 4,000 children from early pregnancy onwards. They initially investigated whether obesity risk could be assessed using genetic profiles, but discovered that non-genetic information readily available at the time of birth was enough to predict which children would become obese. The formula proved accurate not just in the Finnish cohort, but in further tests using data from studies in Italy and the US.

Professor Jarvelin added: "It is evident that much more effort and resources should be allocated for understanding the mechanisms by which diseases develop from an early-life perspective. However, this area is still largely neglected."

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT

New sensor sniffs out explosives, drugs and pollutants

A powerful new sensor system has been developed to quickly detect trace amounts of chemicals like pollutants, explosives, nerve gases or illegal drugs.

According to a team of scientists from the Department of Chemistry, led by Dr Joshua Edel and Professor Alexei Kornyshev, this technology opens the way to develop devices that are compact, reusable and easy to assemble.

In one potential use, such a device could detect tiny traces of explosives or other illegal substances left behind by criminals on the surfaces they touch. The advances made by researchers could help law enforcers to identify and deal with activities involving illegal substances.

Research co-author, Michael Cecchini, said: "Our system could solve a key problem of reliable and portable chemical testing for use in the outside world. It is very sensitive and could well be used to look for very small amounts of a specific molecule even in busy, public areas".

The target molecules are identified by using an effect called surface enhanced Raman scattering of light, which works because each molecule scatters light in a unique way.

The team found a novel way to create a self-assembling single layer of gold nanoparticles that amplifies the signal by trapping the target molecule in a particular way. As a result, the system can pick out a single target molecule from 10,000 trillion water molecules within milliseconds.

"The trick to achieving this system's sensitivity was in finding the conditions at which nanoparticles would settle at the interface at close distances to each other without fusing together," said another co-author, Jack Paget.

—JENNY MITCHELL AND SIMON LEVEY, COMMUNICATIONS AND DEVELOPMENT

New understanding of visual problems in stroke

Stroke patients who have difficulty noticing objects on one side of their field of view seem to perform better in visual tests when there is a financial reward.

The study by researchers at Imperial and Brunel University could aid the development of new behavioural therapies for stroke patients.

"Clearly we can't offer patients money, but the results suggest that other sorts of motivational stimuli might be useful in stroke rehab," said lead author Dr Paresh Malhotra (Medicine).

> "Clearly we can't offer patients money, but the results suggest that other sorts of motivational stimuli might be useful in stroke rehab"

Between a third and half of stroke patients suffer from spatial neglect – a disorder of visual attention that means they do not notice objects on one side of their field of view. In some cases, sufferers have been known to shave only one side of their face or leave half of a meal on their plate.

In the study 10 patients with spatial neglect at Imperial College Healthcare NHS Trust were asked to circle images of coins among lots of similar-looking round objects on a sheet of paper. They were told they would get a pound for each coin they circled. They also performed a similar test with buttons instead of coins, and were told there was no reward for this test.

After repeating the experiments, the researchers found that patients had a tendency to perform better on the coin test where there was a reward.

The researchers think the improvement in performance might be down to a brain chemical called dopamine, which has been found to improve attention in some patients with this condition. Dopamine is thought to make people feel motivated to behave in ways that bring about the reward.

—SAM WONG, COMMUNICATIONS AND DEVELOPMENT

The world in 2013

Attempting to make predictions about science, technology and economics is a famously fraught task. Former IBM Chairman Thomas Watson apparently once remarked: "I think there is a world market for maybe five computers". But it's in the nature of thinkers and scientists to ponder what is going to happen before it actually does. Here at Imperial, we're in the unique position of having staff that can make predictions across a whole spectrum of disciplines. *Reporter* caught up with four of them to see what might be in store for 2013 and beyond...

Space

As the space shuttle was sent off to retirement in 2012, many mourned what they saw as the end of a golden era of exploration. But space science has never been more active, as the Curiosity Mars rover showed just a few months later with its incredible images of the planet's surface. Indeed, a raft of umanned robotic missions will launch in 2013 including Gaia, which will perform a 'stellar census' of around one billion stars; SWARM, which will, for the first time, use three spacecraft working in unison to map the Earth's magnetic field; and, possibly, Don Quijote, which will test whether a spacecraft could successfully deflect an asteroid on a collision course with Earth.

"Space exploration doesn't need a shuttle," says Professor Steven Schwartz (Physics). "I think, by and large, science will be done by unmanned activities. Getting a human being on the surface of Mars is incredibly difficult and getting them back alive all but impossible. One day we will do it. The human spirit is such that when we can do the one-way trip, which is easier, there'll be people queuing up to live out the rest of their lives on Mars."

> "There'll be people queuing up to live out the rest of their lives on Mars"

There's also a sense that space missions may no longer be the preserve of big budget space programmes – private organisations and even universities could get in on the action. The Virgin Galactic craft will make its maiden voyage in 2013 carrying Richard Branson, his family and a dozen or so customers who have paid $200,000 (£121,000) to go to the edge of space.

"Space is a big game and there's money to be made in it. During the early stages it has to be done through public investment, as it's too high risk. But at some point it passes over and you get technology that's sufficiently advanced and stable."

In 2013 Imperial will send two more student experiments into space by hitching a ride on board compact satellites ('cubesats'), after the success of the first such mission this year. They will perform data gathering experiments, for example of space weather. Then in early 2014 the Rosetta spacecraft, with Mr Chris Carr (Physics) as a Principal Investigator, will follow a comet as it approaches the Sun to study things like how its tail forms.

Economy

Despite a lot of retrospective finger-wagging, few people foresaw the financial crash of 2008. The big question now is how long the western economies will be stuck in first gear. Next year could be a crucial one as Obama settles in for a second term, a new leadership is established in China and Germany holds general elections.

"I'm afraid I'm one of those economists who's very depressed about the future and I don't see the prospects getting much better," says Professor Jonathan Haskel (Business School). "The reason for that, fundamentally, is an unreformed banking system and the eurozone in the disastrous mess that it's in at the moment. Unless those are reformed there's going to be no confidence and therefore no incentive for companies to make large scale investment."

> "For the past 2,000 years when nations have traded, they've both become richer – that's the whole point"

With the Chinese economy still growing steadily at around eight per cent annually, will 2013 be the year when the country finally usurps the west as the major economic superpower?

"What people think about trade is deeply misinformed," Jonathan continues. "They think that the consequence of China growing is that everybody else has to go down, so it's all a zero sum game. That's total ignorance about world history, because for the past 2,000 years when nations have traded, they've both become richer – that's the whole point. It's quite the opposite concern, namely, if China were to slow down that would slow down the demand for goods and services from here."

For the UK specifically, there's much discussion about how national infrastructure projects such as a new London airport, a second high-speed rail link and a new fleet of nuclear power plants might boost the economy.

"It's all politics," Jonathan concludes. "These are trophy projects with which ministers can get themselves onto the TV. There is one infrastructure project, which we can do in a minute, that would be incredibly helpful for growth and that's build more houses. But there's no political will to do it."

Medicine

The idea that we might one day be able to regrow damaged body parts with patients' own cells is perhaps one of the most powerful in medicine, and it has slowly become a reality. This is because scientists now understand that stem cells are quite sensitive and need nurturing if they are to reach their potential and form complete organs.

"The cells live in a micro-environment, you cannot just separate the cells from the environment," said Emeritus Professor Dame Julia Polak (Medicine). "At the beginning, there seemed to be two separate fields: people studying stem cell biology and those developing novel biomaterials but now they are coming together. People are now aware they can use smart materials and cells and grow them in a bioreactor."

After successful 'self-transplants' of relatively simple tissues like the trachea, 2013 could be the year when we see major breakthroughs with more complex organs.

"Each organ presents its own challenges. For instance the heart – could you regenerate scar tissue after a heart attack? We're particularly focused on lung regeneration, which is difficult because there are so many different cell types."

In the immediate future, Julia and Professor Athanasios Mantalaris (Chemical Engineering) will be working on a €5.6 million EU project with medical device company Novalung to develop a 'hybrid' artificial lung that incorporates human lung cells.

Climate and weather

Of all the topics discussed here, climate and weather patterns have the potential to have the greatest impact globally. Just ask the residents of New York in the wake of superstorm Sandy or even people affected by recent flooding in the UK. But it's a contentious topic.

"It is too soon to say that there is irrefutable evidence that this collection of extreme events is associated with climate change, and this may remain the case until it is too late to do much about it. However, we can say that some of the events are more likely to occur because of the greenhouse gases added to the atmosphere by human activity," said Professor Sir Brian Hoskins Director of the Grantham Institute for Climate Change. "We're currently looking into how extreme storms might change in the future but the models and records we currently have aren't good enough to make a confident prediction."

Nevertheless, with the El Niño climate pattern likely to reach a peak in its cycle quite soon, we could well see a particularly eventful 12 months for climate and weather.

"I'll be surprised if we don't get a record year soon. The multi-decadal trend of increasing global temperature is very clear; of the 10 hottest years on record, nine of them have occurred over the last 12 years."

That could in turn mean more Arctic sea ice melt next summer and the possible consequences that brings.

"If you talk about 2°C or 4°C warming people say 'oh we can adapt to that', but beyond a certain point the entire climate system will change and we're going to see massively different weather patterns."

—ANDREW CZYZEWSKI, COMMUNICATIONS AND DEVELOPMENT

‘Brighton rock’ retires

For someone who insists she’s never had a real career plan, Debby Shorley can look back with pride and perhaps a little surprise as she retires as Director of Library Services, with a clutch of professional accolades, publications and modernising campaigns behind her.

Reflecting on a path that has taken her from the heart of 1970s Belfast, torn by civil strife, via Brighton to the dynamic campuses at Imperial, the first thing that Debby notes is that she’s “done everything by mistake”.

“There weren’t many opportunities in mid-70s Belfast for arts graduates, so I went to library school not knowing what else to do. My first professional post was in Belfast Central Library, which at the time was designated a ‘legitimate target’ by the Provisional IRA. I remember us carrying out searches for incendiary devices that might be hidden on the shelves. I subsequently moved to the University of Ulster and stayed there until I became Librarian of the University of Sussex in 2000. I arrived at Imperial in 2007 and I can say in total honesty I’ve loved (almost!) every minute of it. Different universities have different cultures, and the College has a real indefinable but unmistakable buzz about it.”

In a digital age, printed books and libraries are beginning to occupy very different roles, but Debby doesn’t believe that this has altered her own responsibilities – and nor will it reduce demand for the services of librarians.

“I’ve said before that Imperial is likely to have the first bookless library in the UK university sector, although it won’t happen overnight. I think that libraries will always be a focal point, a place where people can study together, and that the information resources we provide, albeit electronically, will still need to be gathered together, organised, disseminated and explained using the skills librarians have.”

A major focus for Debby during her time at the College has been the open access campaign, which ultimately aims to ease the spread of research knowledge. Currently, Imperial pays over £4 million each year for subscriptions to information resources, and access to published research still depends on the finances of individual institutions.

> “Imperial is likely to have the first bookless library in the UK university sector”

For the best science to be done, in Debby’s view, scientists must have access to as much information as possible, and the current system is far too restrictive. Following the seminal Finch Report, research councils have made it clear that from now on they will expect any research they fund to be made publicly available. However, the future is still extremely uncertain in this area. “I am cautiously optimistic about the prospects for more open access provision over the next five years. In 20 years’ time I think the model will have been turned on its head – I’m not sure quite how, but the landscape will look very different.”

In fact, a campaign led by Imperial has recently secured considerably better deals from the largest commercial publishers for all UK higher education libraries. Debby hopes to remain involved with the open access campaign, which she feels passionately about, but retirement will naturally bring a change of a pace.

She will, however, miss the working environment: “I feel very privileged to have been somewhere with so many talented, impressive colleagues. I love the speed of it all; I have learned a lot and watched some very clever people doing things well – and that’s very inspiring. But I shall appreciate not having to get up at 05.45 in the morning to travel in from Brighton! I intend to spend more time at my house in Burgundy, and I shall enjoy taking the time to do things, like cooking, properly.”

On a final note, Debby addressed the question many across the College have wondered at some point – her unique approach to email composition. “It was born of the fact that I hate typing, and so I got into the habit of doing everything in lower case and without punctuation. But there is also something a little serious there – I believe that emails should be short, and I pride myself on doing things concisely. And when you become known for something, you can’t stop doing it. I can’t start being sensible about it now!”

—ANTHONY WILKINSON, COMMUNICATIONS AND DEVELOPMENT

inside* story

mini profile

Terry Rudolph

Ever since being introduced to quantum physics as an undergraduate, Professor Terry Rudolph (Physics) has pondered its mysteries, even getting up in the small hours to think of new ways around problems. *Reporter* caught up with him in what is his eighth year at Imperial.

Is it possible for the layperson to understand quantum theory?

I suspect that once we, the quantum theorists, understand it properly ourselves then it will be easier to explain it! On a very basic level, it's the theory that governs the behaviour of microscopic objects such as atoms. The problem is, if you try to explain quantum mechanics in a way that relates to objects we do understand, then you lose the essence of what makes it such a fascinating field to work in.

Why build a quantum computer?

A quantum computer would harness the power of atoms and molecules to perform memory and processing tasks. It would let us simulate very complex systems that our current computers can't handle. Even supercomputers have relatively basic, naïve models that have to run for many years to do certain calculations. A quantum computer, on the other hand, could do these tasks very efficiently. It would give us a lot more power over chemistry, biochemistry, condensed matter physics and materials design. The key thing to emphasise is that a quantum computer is not just a small, fast version of our current computers. Rather it would process information in a completely different way.

What is the process of doing theoretical physics like?

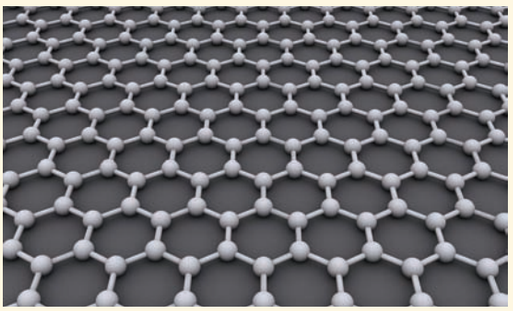
I do most of my research at home between 04.00 and the time that I come into work – and also at weekends. This type of research needs lots of time. It takes perhaps half an hour to get your brain into the problem-solving mode, so it doesn't work to snatch time between teaching commitments, personal tutoring and administration. There are plenty of fun, eureka moments in theoretical physics but, normally, once I have an idea that I know has merit, I pass it on to the student with the most knowledge about the problem from their project.

—SAM TRACEY FOR COMMUNICATIONS AND DEVELOPMENT

SCIENCE FROM SCRATCH

As explained by Chris Clarke, MSc Science Communication

Is graphene a wonder material?



Graphene is the latest revolutionary material that has scientists and engineers salivating.

What is it? Well, take a lump of pencil lead (graphite), which is essentially stacked layers of carbon, put some tape on it, then peel it off. Take some more tape then peel it off the first piece and so on, until you have an atom thick layer of carbon that looks suspiciously like chicken wire when seen through a microscope. That's how two researchers, Andre Geim and Konstantin Novoselov, first made graphene in 2004 at the University of Manchester, later winning them the Nobel Prize in Physics.

Not only is graphene exceptionally thin, but it's heroically strong and an unrivalled conductor of both heat and electricity at room temperature. The trick is to get it to stop conducting on demand, which is vital if it is going to be used in microelectronics in our phones and laptops. If successful it could finally usurp silicon as the material of choice for the industry.

Stronger materials for aircraft? Graphene. Electric vehicle batteries that last for hundreds of miles? Graphene. Super-efficient solar cells? You get the idea...

Not bad for two blokes with some tape and a lump of pencil lead.

To view a talk on graphene that co-inventor Prof Novoselov gave at Imperial, visit: **bit.ly/YXOMOM**

Awardees Dr Yiannis Demiris and Clare Drysdale (both Electrical and Electronic Engineering) having their photo taken by Debra Humphris.

Excellence in education recognised

On 11 December, President & Rector Sir Keith O'Nions and Pro Rector (Education) Professor Debra Humphris hosted a reception celebrating staff who have made a significant contribution to the student experience at Imperial. They presented the Rector's Awards for Excellence, recognising outstanding contributions to teaching, pastoral care, research supervision and supporting the student experience. Staff completing Postgraduate Certificates, Diplomas and MEds in University Learning and Teaching were also presented with awards at the event.

INVENTOR'S CORNER

Capturing brain waves

Professor Danilo Mandic from the Communications and Signal Processing Group (Electrical and Electronic Engineering) is developing a discreet, wearable device that can measure the brain's electrical activity using a method known as electroencephalography (EEG). At present EEG is largely restricted to controlled environments in the laboratory or clinic, but Danilo's device could allow non-invasive EEG recordings in normal surroundings like the home.

What are the benefits of EEG?

Traditionally, EEG has been used as a diagnostic tool for detecting brain disorders like epilepsy, but this is now expanding to include a range of potential applications, such as the monitoring of fatigue and stress, and as a means of enabling patients with 'locked-in syndrome' to communicate using their thoughts. However, this wider role for EEG is limited by the bulky and costly nature of most recording systems.

An early prototype of Danilo's device

Example of an existing EEG device used in epilepsy

Why is this device different?

We're trying to create an unobtrusive, fully wearable system in which the electrodes are embedded on a customised earpiece, using existing hearing aid technology. This improves user comfort and facilitates EEG recordings in natural environments using wireless technology. In fact, the device will allow for continuous 24-hour monitoring over a period of days, enabling us to analyse sleep and stress-related disorders. It could be particularly useful for fragile populations, such as the elderly, to detect seizures or help in stoke rehabilitation.

How are you developing this technology?

The next step is to better understand the neuro-physiology of how EEG signals are propagated from the brain to the ear canal, and work towards a more advanced prototype. I am collaborating with Professor Mary Morrell (NHLI) to establish the extent to which these devices can be used for sleep monitoring, supported by a Biomedical Research Unit Pump Priming Award.

—KAILEY NOLAN, IMPERIAL INNOVATIONS

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

blog SPOT

Student blogger Dehydys on

My *Ethos*:

After having my induction at *Ethos* within a week of joining Imperial, it took me around five years to start using it! This year I contacted one of the personal trainers and started working out like never before. I learned the concept of free weight training with dumbbells or doing chin-ups and dips. It turns out that working out the right muscles increases your metabolism and makes your overall body stronger and trimmer. Everything I carry around now seems lighter. *Ethos* is also full of surprises, so whilst training, you may find yourself surrounded by elite athletes – I personally saw the Australian rugby team and trained next to them!

www.imperial.ac.uk/campus_life/studentblogs

Dehydys with Wallabies Michael Hooper and Dave Dennis

HOSTs with the most

A number of international students from Imperial will be spending time with British families over the festive period, as part of a scheme run by the charity HOST UK together with the College's International Office.

The host families are spread across the UK, and are selected for their hospitality, eagerness to learn more about other cultures and let students experience their traditions.

The International Office covers the cost of applying to the scheme for Imperial students and their spouses, and there is no charge for the accommodation.

Priyank Hirani (Electrical and Electronic Engineering) is a postgraduate student from India who will be heading north to the small coastal village of St Bees in the Lake District.

"The whole idea of letting a stranger visit you for a couple of days amazes me and it goes to show how the world today is becoming a global village. I've just completed my undergraduate studies in Goa, which is known for its beaches, so it will be interesting to see how St Bees compares! I've certainly missed the sea. I am looking forward to meeting new people, finding out about their culture and sharing my own – probably by cooking an Indian dish for them."

Another postgraduate student, Jiaqi Xu (Humanities), spent time with a host family (pictured right) in Hempnall, near Norwich, in early December.

"The family were very nice and hospitable and had many pets in their home. We had a great time walking along the beach with the dogs in Walberswick and Southwold, and nearby villages. I also enjoyed the local food and decorating the Christmas tree."

To find out more about the HOST scheme visit: **www.hostuk.org.uk**

Close to the bone

A collection of bone specimens from Victorian times, demonstrations of keyhole surgery and an exploration of brittle bone disease, using different kinds of chocolate bar, were some of the attractions at an event on 29 November.

The *Cutting close to the bone* event was part of the Imperial Fringe – a new series of monthly evening public events exploring the unexpected side of science, inspired by research at the College. Visitors attended a talk, met academics and performers, and took part in hands-on demonstrations, learning more about bone research being carried out by scientists, engineers and medics at the College.

A Wellcome speaker

The Imperial College Women's Club, which generally meets once a month to listen to prominent speakers and discuss members' matters, recently hosted Dame Bridget Ogilvie, former director of the Wellcome Trust, who gave a talk titled *From the Bush to the Boardroom via the Bench*. President of the Women's Club, Emeritus Professor Dame Julia Polak (Medicine), reports back on the event.

"Bridget has had the most amazing career, which she traces back to her childhood in a farming community in Australia. Her father encouraged her to aspire to great things and she obviously had a lot of drive as she ended up being head of the Wellcome Trust.

She had a fantastic research career, studying at Cambridge in 1960 then working for the National Institute for Medical Research at Mill Hill, looking at the immune response to parasites, before she moved to the Wellcome Trust. She went on to describe the history of the Trust, how the money actually came about, how they decided to distribute it and how the Wellcome Trust Sanger Institute that sequenced the human genome was created.

There was a lot of interesting discussion about the career paths of senior women in science and industry, and about how women are very good at promoting themselves to the middle layers of management but then experience some barriers reaching the very highest levels. Although Bridget obviously did manage this, she said she noticed challenges higher up and there were many such examples from people attending. We talked about how more support, encouragement and, perhaps, quotas for women in boardrooms might help this."

The Club is open to applications from all female staff, whether current, former or retired, and women who are partners of Imperial's staff: **www3.imperial.ac.uk/womensclub**

Ground breaking student *a cappella* group

At the College we're used to having staff with an international profile but it might come as a surprise that, in our midst, is a student musical outfit that has toured Europe and the US, featured in a Sky TV show and just released their first professionally produced album.

Enter The Techtonics – Imperial's premier all male *a cappella* group. Originally formed in 2009, the group has seen members come and go but is now 12-strong.

"I'd never heard of *a cappella* before I came to university. I didn't know you could sing without instruments other than in a choir setting," says current group president Peter Scott (Medicine), who joined in 2011 after seeing the group perform at Fresher's Fair.

> "I'd never heard of a cappella before I came to university, I didn't know you could sing without instruments"

After successive tours to Edinburgh, Europe and the USA this summer, Peter is now organising next year's tour off the back of the group's debut professional album *Groundbreaker*. It was recorded in the IC Radio studio then produced in America and is available on CD and iTunes.

"The projects have gotten slightly bigger but the drive has also matched it," explains Peter, who is keen to point out that they invest income from appearances back into projects and tours.

With the festive season now in full swing the group is busy performing, with nine gigs in the last 10 days of term.

"We had one or two gigs last year and from that it's snowballed. People have hired us to do their weddings, sometimes even proposals – for example, we sang *All You Need is Love* in flashmob style at Greenwich Park, which was great fun."

Although the group has diverse influences from Bollywood to drum and bass, they will be succumbing to a few Christmas classics in their upcoming performances – in particular a mash-up of *The Twelve Days of Christmas* originally written by professional US *a cappella* group Straight No Chaser in the 1990s.

"It's the most enjoyable song to sing: it's hilarious – a play in itself, really," Peter says.

obituaries

SEAN BARRETT

Dr Sean Barrett, Lecturer in Quantum Dynamics (Physics), was tragically killed in a car accident in Perth, Australia, on 19 October. Professors Myungshik Kim and Terry Rudolph pay tribute to their friend and colleague.

"Physics was Sean's passion, a vocation he had embraced wholeheartedly. Over his career he demonstrated an extraordinary versatility in understanding deeply the physics of very different physical systems.

After graduating from Cambridge University he stayed on at the Cavendish Laboratory to attain his pioneering PhD, which led to a prominent junior position at HP Labs in Bristol.

He then came to Imperial briefly as a postdoc, went to Macquarie University, Sydney, and finally returned to England to hold a prestigious Royal Society University Research Fellowship at the College.

One of Sean's ambitions was to play a fundamental role in building the first quantum computer. He knew that such a device would have a transformative impact on society, and he wanted to be part of that (see page 11).

Working with Sean was a joy. He organised Wednesday breakfast meetings for the Controlled Quantum Dynamics Group and his charismatic personality was a crucial part of their success. He sometimes amazed the speakers with his fast grasp of new ideas and then entertained them with silly questions as well.

Sean cared deeply about the careers of his graduate students and those he taught. He was an energetic and extremely clear lecturer, and greatly inspired many people.

We will miss Sean's humour, his reliability, his basic 'mateship' and his fundamental decency as a human being."

long service

Staff featured in this column have given many years of service to the College. Staff listed below celebrate anniversaries during the period 23 November–1 January. The data is supplied by HR and is correct at the time of going to press.

–ANDREW CZYZEWSKI, COMMUNICATIONS AND DEVELOPMENT

20 years

- Nigel Tyndale, Gifts Assistant, Communications and Development
- David Cane, Senior Security Officer, Security Services
- Sandie Coward, Administrative Assistant, Department of Surgery and Cancer
- Dr Andrew Walton, Senior Lecturer, Department of Mathematics
- Dr Barbara Shollock, Senior Lecturer, Department of Materials
- Sharon Sheenan, Tuition Fee Administrator, Finance Division
- Professor Peter Nixon, Professor of Biochemistry, Department of Life Sciences

SPOTLIGHT

David Cane, Senior Security Officer, Security Services 20 years

Few security professionals can say they helped ensure the safety of a reigning monarch and famous writer in hiding. But these were responsibilities that David Cane handled when Her Majesty The Queen opened the Sir Alexander Fleming Building in 1998; and when the College hosted Salman Rushdie in secret after a fatwa was imposed on him. But after 20 years in the Security Operations Unit he says the most memorable incident was when a team of students on expedition called to say they were stuck on a glacier in Alaska. "We thought it was a joke at first and we were like, 'OK, pull the other one'. We nearly put the phone down. But in the end we took down their coordinates, called the Metropolitan Police and eventually got through to the Canadian rescue service, and the students got off in the end."

What makes an entrepreneur?

Mike Wright is Professor of Entrepreneurship at the Business School; founder and Director of its Centre for Management Buy-Out Research; and author of several books including the forthcoming *Entrepreneurship: a very short introduction*. He talks about the qualities he thinks are essential in entrepreneurs.

"You need imagination first of all. You need to try and find something that someone has not thought of before – things that become obvious when they are pointed out afterwards. You also need be to be stubborn and tenacious. You might point out something that you think the world needs. But because it's a big change, no one has thought about it, and it's difficult to get people to accept.

One of the things shared by a lot of entrepreneurs is the feeling that there is something there. They are not sure what it is. It takes time to tease out, see the potential and decide it's something worth pursuing.

An entrepreneurial venture doesn't need to involve a completely new product or enter a new market, and it certainly isn't restricted to an entirely new start-up. It can simply be that you radically change the way things are done. For instance, you could change the way you distribute a product.

EasyJet and RyanAir were entrepreneurial as they created a new way of running airlines and buying tickets. That's one of the cases I mention in my book *Entrepreneurship: perspectives and cases*, along with the business story illustrated by Kylie Minogue. She concentrates on high-margin jobs, such as tours, as ticket sales offer much greater revenue than album sales, and premium events, such as a VIP concert to open a hotel in Dubai. Minogue buffers her finances from the unpredictability of celebrity income by diversifying her brands into other areas, such as perfume, homeware, clothing and books. She's also expanded geographically into the Middle East."

Read more of Mike's thoughts on entrepreneurship: **http://bit.ly/RKOymC**

Mo money

The annual 'Movember' campaign where men grow moustaches for the month to raise awareness and money for men's health – specifically prostate cancer and testicular cancer – seems to be gaining momentum each year and the College certainly hasn't escaped the phenomenon. This Movember, a total of 141 individuals raised £7,766, competing in teams of around 10. The Business School team (members Tim Ruthven and Ali Kanani pictured above) emerged victorious with an impressive £1,275, followed by the International Health Management team (£901) and RAG (£869) – the latter including the brave efforts of a couple of women aided by marker pen. Recently Movember established the Movember Centre of Excellence as a multidisciplinary hub for UK prostate cancer research with an initial £5 million investment.

To find out how Movember money was used in the past to support research at Imperial, visit: **http://bit.ly/UrNRgM**

Welcome
new starters

Dr Sanj Balakrishnan, Clinical Sciences

Miss Jamie Berry, Medicine

Mr Victor Casambros, Imperial College Union

Mr Dong Chen, ESE

Miss Katie Coffield, Registry

Mr Jonathan Cottam, Sport and Leisure

Miss Helen Coutinho, Medicine

Mr Gil Daniel Da Costa Machado, Materials

Mr Matthew Gold, Surgery and Cancer

Mr James Hall, Chemistry

Ms Vera Janev, Faculty of Medicine

Ms Hannah Magdziarek, Surgery and Cancer

Mr Luigi Marongiu, NHLI

Miss Rebecca Mawhood, Environmental Policy

Mrs Jaymini Patel, NHLI

Mrs Lucy Rayner, Life Sciences

Ms Cris Silva-Santisteban Mondonedo, Life Sciences

Miss Natasha Smyth, Public Health

Mr Lawrence Soung Yee, Physics

Miss Sina Stapelfeldt, Mechanical Engineering

Dr Marko Storch, Life Sciences

Miss Louise Wong, Life Sciences

Ms Elena Yaklych, NHLI

Dr Anna Zekavati, Clinical Sciences

Farewell
moving on

Ms Nadia Aref-Adib, Library (25 years)

Dr Maurice Berk, Medicine

Dr Robert De Vries, Public Health

Dr Sairam Geethanath, Clinical Sciences

Miss Sara Giesz, NHLI

Mr Sijin He, Computing

Miss Tharshika Jeganathan, Medicine

Mrs Irena Jennings, Careers Advisory Service (18 years)

Dr Helen Johns, Medicine

Mr Duncan King, Faculty of Medicine

Dr Stephen Lui, NHLI

Dr Jason Maroothynaden, Surgery and Cancer

Mr Oliver Robinson, Public Health

Mr Michael Strevens, Faculty of Medicine (5 years)

Dr Kuen Tsoi, Computing

Mr Neil Turtell, Accommodation (22 years)

Mr Jose Uriguen Garaizabal, EEE

Dr Samantha Westrop, Medicine (6 years)

Dr Weimin Zhang, Chemistry

Miss Anna Zielonka, EYEC

This data is supplied by HR and covers the period 7–18 November. 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.

moving in. moving on.

Film review: *The Theory of Everything*

A new short film about cosmology, particle physics and love was released online this month by production company Catsnake. It was written by Stephen Follows with script advice from Dr Roberto Trotta (Physics) and is reviewed here by Matin Durrani, editor of *Physics World*, who attended a private screening at Covent Garden.

The film will be released online in early December, so I won't spoil the plot, such as it is. Suffice to say, the five-minute professionally produced film draws a parallel between the search for love and the search for dark matter. You know both are there even if you can't see either. Love affects everyone, just as dark matter and dark energy affect the universe.

If you think that sounds cheesy, well, it could have been – in the wrong hands – but I was impressed with the film. It packs in a surprising amount of 'real' science, which was accurate too, thanks to Imperial cosmologist Roberto Trotta, who acted as informal script advisor.

> "There's so much more to science and to creativity in science than meets the eye"

Visually, I liked the way the film tried to explain the expanding universe through the main character – an astronomer – dropping a jar of chocolate Smarties onto a table and showing them scatter in all directions. There's also a nice touch where he uses the stem of a bunch of flowers as a measuring stick, snipping off the final four per cent of the tip to illustrate just how small a fraction of the universe we really understand.

"*The Theory of Everything* would have been cheesy in the wrong hands"

Both Follows and Trotta hope the film, which was made at an observatory in Mill Hill, London, reveals the human side of science. As Trotta told the audience before the screening: "There's so much more to science and to creativity in science than meets the eye".

Follows envisages the film being just the first in a series of projects carried out in partnership with Imperial.

To watch the film, visit: **http://vimeo.com/54774554**

events highlights

FOR COMPLETE DETAILS:
www.imperial.ac.uk/events

13 December 2012

13 DECEMBER ▸ IMPERIAL FRINGE

A feast for the sciences

Join us on a festive journey through a fusion of food and drink, agriculture, medicine and more at the December Fringe event. This feast of hands-on research explores the food life cycle from beginning to end, with demonstrations on nutrition and sustainable food to digestion and composting. Taste Imperial honey, make your own seasonal drink, try CO_2 sorbet or stay for a bite of a Christmas dinner made entirely of cake. Fringe events are free and open to all, no booking necessary. A pay bar will be open throughout.

16 JANUARY ▸ PUBLIC LECTURE

Non-invasive ventilation: the first few millennia

References to non-invasive ventilation – breathing support by air blown into the nose and mouth or the application of negative pressure to the chest wall – stem from biblical times. There are accounts of expired air used to resuscitate infants in the 1400s and glass masks placed along the Thames riverbank and south coast in the 1700s for near-drowned sailors. In her inaugural lecture Professor Anita Simonds (NHLI) traces the history of ventilation and her own research into it over the last 20 years.

13 DECEMBER ▸ GRANTHAM LECTURE

Coping with Climate Change: Issues in Science, Policy, and Communication

Dr John Holdren, Director of the White House Office of Science and Technology Policy

10 JANUARY ▸ MUSIC

Lunchtime concert

Louise Alder (soprano)
Gary Matthewman (piano)

16 JANUARY ▸ PUBLIC LECTURE

Curiosity: landing and roving on Mars

Professor Sanjeev Gupta (Earth Science and Engineering)

17 JANUARY ▸ MUSIC

Lunchtime concert

Touchwood piano quartet

23 JANUARY ▸ PUBLIC LECTURE

A mathematician's view on Asimov's psychohistory

Professor Dan Crisan (Mathematics)

23 JANUARY ▸ PUBLIC LECTURE

Amazing quantum worlds

Dr Simon Foster and friends (Physics)

PHOTO EXPO

A new exhibition in the Blyth Gallery, Flatland*, takes its name from a narrative by English clergyman and Shakespearean scholar, Edwin A. Abbot.* Flatland *follows the journey of a square, resident in two-dimensional Flatland, which travels and intersects with other geometric shapes from different spatial planes. The works shown are: (from top, clockwise) Geoff Diego Litherland,* Let's Make Better Mistakes Tomorrow*; Louisa Chambers,* Mobile Transmitter*; and Daisy Richardson,* Bed.

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

take note

Carols by Candlelight

The Chaplaincy is welcoming all staff, students and alumni to the College carol service, which will be held on Thursday 13 December from 18.00–19.00 at Holy Trinity Church, Prince Consort Road, SW7. After the service there will be mince pies and drinks at the back of the church. The event is open to all staff, students and alumni.

MEET THE READER

Nic Dent, Waste and Recycling Manager, Facilities and Property Management

What are you doing in the picture?
Correctly disposing of this copy of *Reporter* by placing it in a paper recycling bin ... after reading it from cover to cover of course!

What would you do if you were editor of *Reporter* for a day?
I think many people are unaware that the College is charged for waste disposal but not for recycling. Everyday waste items, such as glass, cans, tins, hard plastics, paper and card, can all be recycled without incurring any cost – provided they are placed in the right bin. So by making sure that we recycle as much material as possible, not only are we reducing our impact on the environment and contributing to our carbon reduction commitment, but we are also saving money.

Who would be your cover star?
If I could measure performance on an individual basis, then it would be great to celebrate some of the people who are reusing or recycling most successfully.

Want to be the next reader featured in Reporter*? Send in a picture of yourself with a copy of* Reporter *in your location of choice to:* ✉ **reporter@imperial.ac.uk**

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