

REPORTER

#308

30 OCTOBER 2018

SHARING STORIES OF IMPERIAL COLLEGE LONDON'S COMMUNITY

“ AS AN ENGINEER,
I WAS OFTEN THE ONLY BLACK
PERSON IN THE ROOM... ”

CALL FOR DIVERSITY
IN STEM 14
Alumnus Chi Unwurah MP
addresses Imperial



Q&A WITH
THE PROVOST 8
Professor Ian Walmsley
takes your questions

EDUCATIONAL
EXPLORATION 12
Bold new courses
for all undergrads



AROUND THE WORLD IN 80 YEARS

Sir Gordon Conway reflects
upon a life dedicated to
global food security.

8



EDITOR'S LETTER

New horizons

In the previous issue of Reporter we had a physics alumnus who conquered Everest in the name of science – and the theme of exploration continues here with highlights of Sir Gordon Conway’s globetrotting career in sustainable agriculture (pages 8-11). I’ve often mused about the parallels between scientific research, learning and exploration. They are all curiosity driven pursuits, defined by an innate desire to know, understand and master what lies beyond the immediate horizon – whether that involves probing the nature of dark matter (see issue 287), climbing some peak, or studying a subject that’s completely outside your normal sphere. From the teaching perspective, we’re increasingly seeing the benefit of embedding experiential learning and cross-disciplinarity into the curriculum. Of course, this has been happening, in some form, for many years now (e.g the long-running Exploration Board, page 3). But it’s now occurring across the board. Building on the success of Imperial Horizons – currently offering 171 modules in different disciplines – the College is launching I-Explore courses. Soon all new undergraduate students will be offered these for-credit modules from outside of their academic discipline. As Alan Spivey, explains on page 12, it will ‘empower our students to really make a difference in the world.’

Andrew Czyzewski
EDITOR AT LARGE

Reporter is the voice of the staff community at Imperial College London and we’re always keen to share success, both on and off campus. If you’ve a story you’d like included in a future edition, please contact Andrew Czyzewski.

▶ **GET IN TOUCH:** reporter@imperial.ac.uk

**Imperial College
 London**



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Imperial expedition leader Carla Huynh (MSci Geology and Geophysics) takes a bearing in the mountains of Crete. Supported by Imperial's Exploration Board, the team crossed 300km of mountains, valleys and coast.



IMPERIAL IN BRIEF

IN MEMORIAM

SAD FAREWELL TO WENDY

One of Imperial's most esteemed cancer researchers, Professor Wendy Atkin OBE passed away earlier this month. In an illustrious career, Wendy pioneered a new approach to bowel cancer screening and prevention, which has now been rolled-out nationwide by the NHS. It is estimated that the new approach could prevent 5,000 colorectal cancer diagnoses and 3,000 deaths in the UK each year.

► **READ A FULL TRIBUTE:** bit.ly/reporter308-wendy



BLYTH CENTRE FOR MUSIC AND VISUAL ARTS IN ON A HIGH NOTE

Oliver Gooch became Director of Music and Director of the Blyth Centre in August – responsible for fostering musicianship and musical and visual art activity at the College, including conducting the College's flagship Symphony Orchestra and supporting other student musical ensembles. Oliver is a former Associate Conductor at the Royal Opera House, Guest Conductor of the Royal Philharmonic Orchestra, Hallé, and Philharmonia and a Music Director for Raymond Gubbay Ltd.



WHITE CITY DESIGNS ON WHITE CITY

A team led by Allies and Morrison is designing a new, innovative and interconnected home for Imperial's School of Public Health at White City. The new School will amplify work in four key areas: world health, food and nutrition, community health and policy, and children's health and wellbeing. The news comes after Imperial launched a £100m fundraising campaign to support the School's expansion. A landmark £25m donation from alumna and philanthropist Marit Mohn was announced earlier this summer, which will establish a world-leading centre for children's health and wellbeing within the School of Public Health.

► **FULL STORY:** [reporter308-designs](#)



AT IMPERIAL, FOREIGN STUDENTS ARE OVERREPRESENTED ON INVENTIONS, PATENTS AND IN STARTUPS. THEY ARE NATURAL RISK TAKERS HAVING MOVED FAR AWAY FROM HOME FOR THEIR STUDIES. THEIR STARTUPS CREATE MORE JOBS THAN THEY CONSUME.

President Alice Gast comments in the *Financial Times* on the UK Government's Migration Advisory Committee report recommending modest extensions of post-study work options for international students.



Questions for the Provost

Professor Ian Walmsley, an alumnus of the College, became Imperial's Provost in September, following a highly distinguished career as a pioneering physicist and academic leader at Oxford University. Ian found time in his busy schedule to answer some questions from staff across the College.



LIZ ELVIDGE

Head of the Postdoc Development Centre

What's been the most pleasant surprise for you so far on returning to Imperial and taking up your new role as Provost?

In general, the sense of excitement and dynamism in the College – the fact that people are really passionate about what they do and really energised to make things happen.

More specifically, there were unexpected things that I was aware of but perhaps hadn't quite appreciated fully. For example, I visited the Ash scholars in the Blythe Centre yesterday. When I was a student here I was involved in music myself through the College orchestra and choirs, but I hadn't appreciated the way in which that has grown – with things like the joint degree programme with the Royal College of Music [BSc Physics and Music Performance]. It's the kind of activity I hope that we can see more of – really making use of the Albertopolis context and collaborating with the amazing range of institutions we have here around South Kensington.



TOM RUTLAND

Public Affairs Officer,
Communications and Public Affairs

What are you most proud of from your time at Oxford?

As Pro-Vice-Chancellor (Research and Innovation), helping to develop the innovation agenda and strategy, and really building that culture by working across not just the university, but also in the region and with central government, to deliver something which has the potential for a really significant impact.



DR MATTIAS BJÖRNMALM

Research Fellow, Materials

How do we ensure that Imperial can maintain and strengthen connections with Europe post-Brexit – including in funding, staffing and collaborative projects?

Clearly Imperial is a global institution and it will remain so. It will continue to be welcoming to people from all over the world, and especially from Europe. It's no secret that Imperial's success is all about its people. In terms of our European connections, that's about making sure that colleagues here can work with colleagues in Europe, students and staff are welcomed in the institution, and we build effective partnerships. I'm confident

that Imperial is very well placed to do this.

We need to continue our work helping to inform government as to the value of these connections to the nation.

We also need to ensure as best we can access to the Ninth EU Framework Programme for Research and Innovation (FP9). Whether we end up with the same amount of funding or not is an open question.



PAUL BROWN

Workshop Instrumentation Manager, Physics

What book are you reading in your spare time at the moment?

This summer I read Chris Patten’s autobiography *First Confession: A Sort of Memoir* as well as *Saving Britain: What Europe Does for Us, and How to Keep the Best of It* by Andrew Adonis and Will Hutton – which has some ideas about transforming the economy in the UK post-Brexit. Currently, I’m reading a biography of the 19th Century theologian and Oxford academic John Henry Newman – I’ve been interested in different views of education and universities over the years, especially in the period where research-led institutions were emerging.



OLIVER GOOCH

Director of the Blyth Centre for Music and Visual Arts

What would your desert island disc be?

Excellent question! Very hard to say. It could be something like J.S. Bach’s *St. Anne/Prelude and Fugue in E-flat major* or perhaps *Cantata 147*. Alternatively, going back to my time at Imperial, I remember fondly going to see blues musician BB King at the Hammersmith Odeon.

Incidentally, my wife is a musician, and at least one of the children has inherited that passion. We met at graduate school in the US – she was at the Eastman School of Music and I was on campus at the University of Rochester, so music remains a very important part of my life.



NIKITA THAKRAR

Innovations and Entrepreneurship Manager

Are there any innovators in the world of science and technology that you admire that perhaps aren’t so well known?

I mentioned previously about developing the innovation strategy at Oxford, and won’t point to individuals, but the increasing number of students and early career researchers deciding to create their own start-up companies was really impressive. It was impressive because it combined the sense that their ideas were valuable and could contribute something to the world, together with their sense that this was a way for them to take more ownership and have a bit more control of their own destiny. Making that possibility available to a broader number of people – not just the James Dysons, Steve Jobs and Elon Musks of the world – I found that inspiring.



KELLY SWABY

Campus Services Integration and Development Manager, Campus Services

At Imperial we’re increasingly focused on looking after our own, and our colleagues’, mental health and wellbeing – how do you balance your work and life commitments?

Clearly it’s true that there are lots of different pulls and lots of different pressures on our academic and support staff and students, and keeping a balance is really important. Indeed, mental health is something that’s addressed as part of Imperial’s new equality, diversity and inclusion strategy [see page 14].

Personally, what I try to do is just ensure that there is a bit of time in each week where I absolutely prioritise other pursuits – for myself, I go for a bike ride on a Saturday morning, pretty much come what may.



ANNE BARRETT

College Archivist and Corporate Records Manager, Central Secretariat

Remembering your time as a student here was there anyone whose research/academic status you hoped to emulate in your career?

One of the reasons I came to Imperial was because of the quality of professors, and certainly whilst I was here there were ideas in physics that I was exposed to that were just so new and exciting – it was fascinating. But it was also students; friends that I made here, whose experiences and background were sufficiently different to mine own that it also opened my horizons to new possibilities. Both of those things together were a great mix.



ANDREW CZYZEWSKI

Reporter and Staff Editor, Communications and Public Affairs

What do you find most enjoyable and satisfying about academic administration and leadership?

Building an environment where people can succeed and realise their potential as thinkers and doers. The ability to do that at scale, and help people to look beyond their current horizons, is really quite exciting.

What’s the one thing you’d hope to have achieved at Imperial by the time you finish your tenure?

To ensure that we are an opening and welcoming community that is right at the cutting edge of discovery, impact, education, and innovation – I’d like to see the College continue along that trajectory. ●

Read more about Ian and the office of the Provost here:

► bit.ly-Reporter308-provost

RESEARCH NOTES

JULY–OCTOBER 2018

A cosmic symphony, volcanic insights and exposing the environmental impact of global tobacco production



ENGINEERING

Planets suite upholstered

A new Planets suite has launched at the Royal Observatory – with a little help from Imperial space scientists.

Gustav Holst's *The Planets* rocked the classical world a century ago. Shaped by an astrological understanding of our solar system, the seven-piece composition became a mainstream hit.

Now, two space explorers from Imperial have helped to mark *The Planets'* centenary by mentoring the composers of the new Earth, Mars, and Venus pieces. Helping to revamp Holst's hundred-year-old masterpieces were Professor Sanjeev Gupta, who mentored the composers of Earth and Mars, and Dr Philippa Mason, who mentored the composer of Venus. Both researchers are earth and planetary scientists from Imperial's Department of Earth Science and Engineering.

Dr Mason is currently on the science team of the EnVision mission, a European Space Agency and NASA quest to send an orbiting spacecraft to Venus – due to launch in 2029.

She mentored Shiva Feshareki in writing Venus. Dr Mason said: "The composers asked what Holst's pieces would sound like in the hands of modern composers, with today's knowledge of the solar system.

"Holst's view of Mars, the Bringer of War, was fiery and tempestuous, while Venus, the Bringer of Peace, was serene and peaceful. We now know that Mars is the quieter, almost earth-like planet, whereas Venus has a thick atmosphere with sulphuric acid rain and enough heat to melt lead."

COLLEGE

Making meds

A new collaboration between Imperial, UCL, and global pharmaceutical company Eli Lilly and Company will seek to transform medicines manufacturing. Lilly has committed £5 million to fund research into the more efficient manufacture of medicines – which could ultimately result in better and cheaper treatments for patients. The Pharmaceutical Systems Engineering Lab (PharmaSEL) will fall under the remit of Imperial and UCL's Centre for Process Systems Engineering (CPSE) and will see academics from Imperial and UCL undertake research to improve the efficiency of medicines manufacturing.



1815

The year that volcano Mount Tambora erupted on the Indonesian island of Sumbawa, killing 100,000 people and plunging the Earth into a 'year without a summer' in 1816. New Imperial research suggests that electrically charged volcanic ash short-circuited Earth's atmosphere in 1815, causing global poor weather and possibly even contributed to the defeat of French Emperor Napoleon Bonaparte at the Battle of Waterloo.

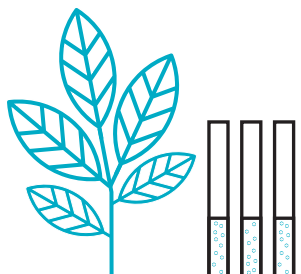
► FULL STORY: [reporter308-1815](#)



COLLEGE

Leading light for energy

Energy Futures Lab have announced the appointment of Professor Anna Korre as their new Co-Director. Professor Korre joins Energy Futures Lab’s management team as Co-Director alongside current Director, now Co-Director, Professor Tim Green. Professor Korre joined Imperial in 1993 as a Marie Skłodowska Curie Research Fellow rising to chair in Environmental Engineering in 2015, heading the Minerals Energy and Environmental Engineering Research Group.



5.3 million

Hectares of land used globally each year to produce 6 trillion cigarettes – in addition to consuming 22,200 megatons of water and 62.2 gigajoules of energy. A new report by Imperial researchers outlines for the first time the substantial impact of the tobacco industry on the environment.

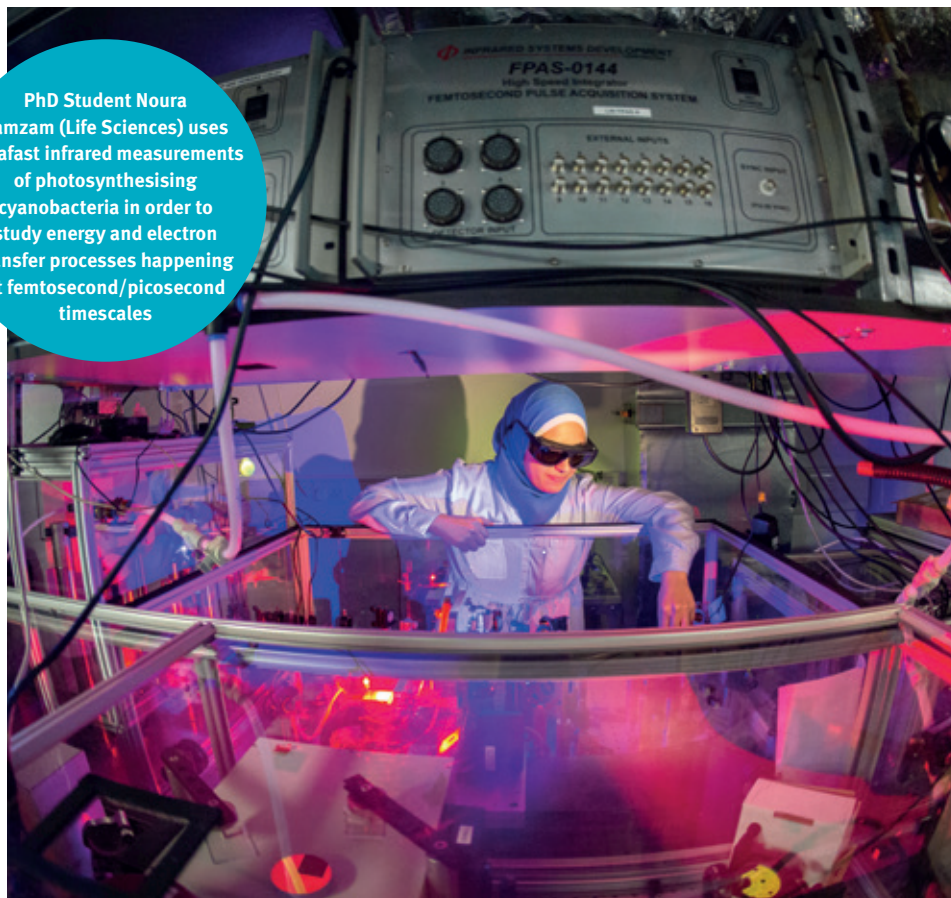
► FULL STORY: [reporter308-tobacco](#)

“
THE ROMANTIC NOTION OF THE HARDY GEOLOGIST – ONE WHO EMBRACES THE ELEMENTS FOR MONTHS ON END AND LOVES THE OUTDOORS – CAN HARM INDIVIDUALS WHO DON’T FALL UNDER THE STEREOTYPE.

Dr Cédric John, geologist and mental health champion for the Department of Earth Science and Engineering, highlights field trip mental health.

► MORE INFORMATION: bit.ly/reporter308-fieldtrip

PhD Student Noura Zamzam (Life Sciences) uses ultrafast infrared measurements of photosynthesising cyanobacteria in order to study energy and electron transfer processes happening at femtosecond/picosecond timescales



2022

The year that the European Space Agency (ESA) JUpiter ICy moons Explorer (JUICE) mission is due to launch, carrying an Imperial-made magnetometer.



Global growth agenda

As he turns 80, Professor Sir Gordon Conway recounts highlights of an extraordinary career dedicated to finding solutions to feeding the world's population sustainably.

THESE DAYS, MOST IF NOT ALL RESEARCH-INTENSIVE universities and scientists pride themselves on being wholly international in their outlook – and focussed on solving big global challenges such as climate change for the benefit of wider human society.

Yet for Professor Sir Gordon Conway FRS, his entire 50-year career has been dedicated to pioneering sustainable agriculture in developing countries around the world – ever since he found himself in Borneo in the 1960s as a fresh-faced 23-year-old graduate helping the government tackle its devastating cocoa crop failure.

“On arrival I was met with cocoa plantings infested by a variety of insect pests – despite them being sprayed with a cocktail of insecticides. But we soon realised that was part of the problem. It was indiscriminately killing the insects’ natural predators and parasites. Our solution was an integrated pest management solution which involved ceasing spraying, encouraging re-introduction of natural predators and parasites, and only using a highly selective insecticide for very resistant pests. That solution was very successful and has lasted for some 40 years.”

INTO AFRICA

More recently, Sir Gordon has been focussed on achieving food security in Africa, where over 200 million people are chronically hungry, childhood malnutrition is widespread – in some countries as many as 40% of children under five show stunted growth – and there are imports of food into the continent of around \$40 billion a year.

“We certainly know in theory how to grow crops in Africa with high yields; that’s the easy part in a sense. But the challenge in implementing that is enormous.”

Typically, smallholders in Africa might have a hectare or two of land at most, where they grow maize, which traditionally has produced a yield of 750 kilos per hectare. But if you grow a hybrid maize with drought tolerance, and use a fertilizer mix that’s appropriate for the soil conditions – also correcting for boron deficiency or lime deficiency in the soil – it’s possible to get four, five even six tonnes per hectare.

“Just imagine, the farmer wakes up in the morning and looks out at his field. He and his ancestors over the centuries, have been getting less than a tonne per hectare, and now he’s getting five tonnes. You can replicate that throughout Africa with the right kind of support and investment.”

Some of that support comes in the form a new programme, part developed at Imperial with Dr Erik Chavez, alongside the World Food Programme, World Bank and the Government of Tanzania – where it is being trialled. It aims to address the issue that many



farmers struggle to get loans to pay for vital seeds and fertilizers, or are understandably reluctant to take out loans when they have to put their entire farm up as collateral and stand to lose everything in a draught. That traps them in a cycle of low productivity and semi-subsistence.

But a special type of a loan packaged alongside a weather-based insurance product allows the farmer to invest and scale up – and if a drought means they cannot produce crops to sell and repay the loan instalments, the insurance automatically pays out. That gives both lenders more confidence that they will be repaid come-what-may and the farmers reassurance that they need not worry about collateral.

That programme, called Winners, is now expanding into neighbouring countries and the team hopes to be supporting up to 200,000 farmers in Africa next year.

Sir Gordon is also involved with an organisation called the Malabo Montpellier Panel which seeks to create cross-departmental, cross-ministerial committees on agriculture, health, nutrition and economics in countries in Africa as a way of tackling malnutrition in a holistic, joined-up way.



**IT IS VERY
REWARDING
DEALING WITH
PEOPLE WHO'VE
GOT ENORMOUS
KNOWLEDGE AND
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THE LAND. I GET
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THAT AND THAT'S
PARTLY WHY I'M
STILL ACTIVE
AT THIS AGE.**

Above: Gordon works with local farmers in Uganda growing lime trees.

Opposite (from top): Gordon in 2010 for a profile in The Times; as a young researcher working in Tanzania; and in a greenhouse in Uganda looking at early maturing bush bean varieties.



40%

percentage of children under five showing stunted growth

\$40 billion

Cost of annual food imports into Africa.



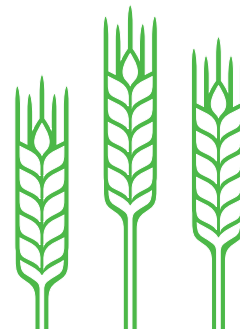
LESSONS IN LEADERSHIP

Such consensus building skills, and the ability to see the wider context of problems, have helped elevate Sir Gordon to a number of leadership roles in science and international development over the years, including President of the Royal Geographical Society (2004–2009), Chief Scientific Adviser to the UK’s Department for International Development (DFID; 2005–2009), Vice-Chancellor at Sussex University and perhaps most notably President of the Rockefeller Foundation (1998–2004), steering an endowment of more than \$4 billion dollars towards philanthropic causes.

“At Rockefeller, we had a large programme for treating pregnant women in Africa with antiretrovirals, which was incredibly effective. If you treat women with antiretrovirals when they are pregnant, the babies are born without HIV – it really is as simple as that. But at the time, there were still many people dismissing AIDS as a lifestyle disease. It used to drive me absolutely mad when I heard that – those babies that have got HIV and AIDS are not suffering a lifestyle disease. We did a lot of other positive things like that along the way.”



Clockwise from top: At the former rooftop grow dome in South Kensington campus; with farmers in Senegal; delivering the annual Schrodinger Lecture at Imperial.



Despite these lofty positions, or perhaps because of them, Sir Gordon has never remained office-bound for long, and has always endeavoured to get out in the field and visit the communities around the world he is trying to help – indeed, at 80, he still visits Africa around once a month.

“I’ve spent a lot of my life just sitting and talking to farmers over the years. I’ve developed certain techniques – for example, you get villagers into groups and ask them to draw a map of their village with chalk and coloured powder. They often get very animated and excited about that task and I remember one group of farmers, they’d actually gone and got soil from the different individual fields and put it on this little map. They then started saying “this is where we think we might need a well, this is the problem we’ve got here’. They’d take charge and you were there to assist. That is very rewarding – dealing with people who’ve got enormous knowledge and experience of the land, who lead pretty rough lives a lot of the time. It’s quite a privilege to listen to them and hear what they’ve got to say. I have to say I get a kick out of that, and that’s partly why I’m still active at this age and not just playing golf!”

While much of Sir Gordon’s work is focussed on agriculture programmes, he also takes an interest in enterprise and entrepreneurship more generally in Africa. On a recent visit to Rwanda he witnessed an enterprise programme that encourages 17–18 year olds to become entrepreneurs. It provides basic training in running a business over the course of two or three months followed by a loan from the government bank to enable them to pursue their individuals ideas – not dissimilar to Imperial’s own accelerator programmes such as Welnnovate and the Venture Catalyst Challenge.

“I sat talking to them for a while: there was a cooperative selling seed potatoes, one person breeding rabbits, another growing garlic. One woman piped up, and said: “I’ve just bought a bar with my loan, and I’ve hired a very strong man to run things for me!’ In some curious way it was like being in Silicon Valley, with people who were using their skills and enthusiasm to create a decent living for themselves and other people. I found that very encouraging. When I first visited Rwanda, it wasn’t long after the Genocide and there were some awful things still bubbling under the surface. But now there’s a great deal of positive things happening there; it’s very exciting and could be a model for other parts of Africa.”

CLIMATE CONCERNS

Sir Gordon frequently talks about building resilience into systems – both in terms of resilience of agriculture to local weather fluctuations as well as a much broader definition of resilience encompassing global climate change.

He points to research showing that changes in the jetstream – which broadly speaking, divides the cold of the north from the hot of the south – are producing extreme weather events all over the world and particularly in Africa.

Farmers growing maize lose yield for every degree above 30°C and coupled to that growing seasons are becoming ever shorter. In Ghana, the rains came a month late last season and finished a month early, leaving only 100 days to grow rice. That’s just about possible if you are an Asian farmer on a really well irrigated piece of land, but in Northern Ghana it is big ask.



IN SOME CURIOUS WAY IT WAS LIKE BEING IN SILICON VALLEY, WITH PEOPLE WHO WERE USING THEIR SKILLS AND ENTHUSIASM TO CREATE DECENT LIVING FOR THEMSELVES AND OTHER PEOPLE. RWANDA COULD BE A MODEL FOR OTHER PARTS OF AFRICA.



Part of the solution, says Sir Gordon, is to have a number of different crops, rather than a monoculture, and also several streams of income where possible.

He recently visited a farm in the Sundarbans regions of India where the woman of the household was growing rice in the fields as well as a variety of root crops dotted around the house including taro and yams. Meanwhile her son was producing Chepala Vepudu (fish fry) for sale while the husband was running a small bicycle taxi service. On the thatched roof of the house was a solar panel – a fairly unusual sight in those parts.

“I do what I always do and ask lots of obvious questions: ‘why do you need a solar panel?’ and he looked at me incredulously and replied: ‘electricity!’ Then I asked: ‘but why do you need electricity?’ and he said: ‘It’s for light bulbs so the children can do their school work after their household chores’.

“It then dawned on me that if the son does his homework, he might become an apprentice at a college in a nearby town, and if the next cyclone comes and wipes everything out, at least they’ll have that money from wherever the son is. That’s the reality of resilience. Even in the West we have to build a greater diversity of systems that can cope with extreme weather in the future.” ●

COMMENT



Professor Alan Spivey
ASSISTANT PROVOST
(LEARNING AND
TEACHING)

As Assistant Provost (Learning and Teaching), Alan plays a key role in leading the delivery of the College's Learning and Teaching Strategy, engaging with staff across the College. He leads on the College-wide review of curriculum and assessment, as well as the introduction of interactive pedagogy, with a focus on supporting departments in their work. Alan is also Professor of Synthetic Chemistry in the synthesis section of the Department of Chemistry. He joined Imperial in January 2003, after moving with his research group from Sheffield University.



**WE HAVE THE
CHANCE TO
DEVELOP A
TRULY WORLD-
LEADING
EDUCATIONAL
OPPORTUNITY.**

An exploration in education

Alan Spivey steers a course to further broaden the horizons of all students at Imperial – and enhance their impact on the wider world.

IN LAUNCHING IMPERIAL'S LEARNING AND Teaching Strategy we made a commitment to provide a broader and more inclusive education experience for all students.

I'm pleased to report that from 2020/21 we will take a significant step forward in realising that ambition, with all new undergraduate students being offered a for-credit module from options outside of their academic discipline.

This offer is being developed in order to help prepare students to meet the challenges of a rapidly changing world by giving them educational experiences, skills and knowledge which go beyond the traditional limits of a university curriculum.

These new courses will be called I-Explore Modules – named for their interdisciplinarity and breadth.

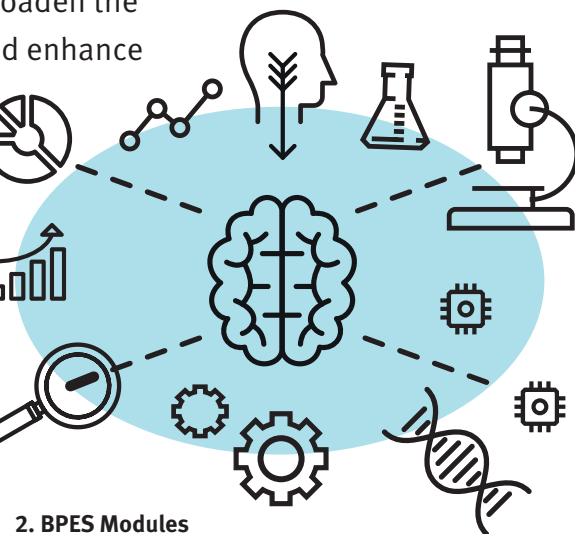
By taking part in challenging activities outside of their discipline, students will apply their knowledge in a new context, hopefully driving a transformation of their understanding and identity.

I-Explore will consist of a broad range of modules grouped into four streams, two of which already exist (but which will be expanded), and two of which are entirely new. This varied range of courses should ensure that every student finds something to their taste.

Students will have the choice of selecting from four streams:

1. Horizons Modules

The current Horizons programme is being expanded in various directions, while maintaining the Horizons ethos of cross-disciplinarity and openness to all. In addition to the 171 different modules that will be available from academic year 2018/19, the offer will be further enriched in collaboration with the Advanced Hackspace, the Enterprise Lab, the Wohl Reach Out Lab and others. The opportunity to take additional Horizons modules for extra credit will remain.



2. BPES Modules

These modules will be based on the current 'Business for Professional Engineers and Scientists' modules and will be delivered in on-line and face-to-face format by Imperial College Business School. These modules are designed to provide students with a greater understanding of the financial, strategic, operational, environmental and organisational context of their chosen discipline.

3. STEMM Modules

These modules will be new and provided mainly by academic departments. A module might address a specific topical issue (e.g. 'cybersecurity', 'gene editing', 'microfabrication'), or provide an introduction to an area of a discipline not currently accommodated in the core curriculum (e.g. 'essential hacking concepts for chemistry', 'gendered robotics').

4. Interdisciplinary Project Modules

These project modules will also be new. The vision for these will be developed in partnership with the Imperial College Union, and will provide students with opportunities to collaborate on projects with peers and academic staff from across departments. Inspiration for this comes from initiatives such as the 'Engineers without Borders' programme and the 'FoNS MAD Competition'. Students will also have the opportunity to collaborate with partner institutions.

STUDENT-LED RESEARCH

Elysia Lucas, a 4th year Chemical Engineering student, took part in the innovative Global Challenges module (offered as part of the Horizons programme). Following the 20-week course, which includes group-based seminars, Elysia devised a research project focused on the empowerment of women in environmental sustainability and development. Specifically she sought to prove a link between gender inequality and environmental degradation.

She drew upon previous experience as a volunteer for Engineers Without Borders on a placement in Pondicherry, India in summer 2017. There she worked on a research project at a social enterprise called Prakti, which develops, manufactures and distributes biomass cookstoves. Elysia’s research during the summer involved testing potential materials for the cookstove to increase durability.

Elysia said: “I’ve really learnt a lot and developed my independent research skills. I’m actually staying on at Imperial to do a PhD in quite an interdisciplinary subject - the interface of Chemical Engineering and policy, particularly resource management policy and energy and food provisioning.

“I wouldn’t have known that I was interested in incorporating social elements into my future work if it wasn’t for Imperial Horizons and the Global Challenges Project.”



PROGRESS AND NEXT STEPS

The existing Horizons and BPES programmes provide a great foundation from which to build I-Explore into something that truly touches every corner of the College, and enriches the experience of every student. Establishing this portfolio of modules will require commitment from individuals across College, but this is an unrivalled opportunity to develop something world-leading.

All staff who are interested in helping to shape I-Explore are very welcome to contribute their ideas over the coming months.

With the support of our community, I believe that the I-Explore Module portfolio can embody the ambition and commitment the College has for empowering our students to really make a difference in the world. I invite you to join me in making this a huge success and something we can all be proud of. ●

TEACHING NOTES



I RUN THE XENA PROJECT, AN INFORMAL COMPUTER CLUB WHERE I TEACH UNDERGRADUATE MATHEMATICIANS HOW TO EXPLAIN THEIR RESULTS TO A COMPUTER. IN RETURN, THE COMPUTER CHECKS THEIR MATHEMATICAL IDEAS. THIS GAMIFIES MATHEMATICS, GIVES INSTANT FEEDBACK TO THE STUDENT.

Kevin Buzzard, Professor of Pure Mathematics

Care, community, collaboration

Imperial’s Undergraduate Primary Care Team, led by Dr Sonia Kumar, has won the prestigious Collaborative Award for Teaching Excellence (CATE) – established by the Higher Education Academy (part of Universities UK). Dr Kumar said: “The Undergraduate Primary Care Team’s story begins with a vision for medical education to become truly inclusive, making a transformational and sustainable difference to the health and wellbeing of patients, their families and communities.”



Ship shape education

Imperial College Union has joined with the College to promote opportunities for students to contribute to researching and innovating education. ‘StudentShapers’ will provide a hub for staff and students to explore opportunities to work together to transform learning and teaching at the College.

► **FULL STORY:** bit.ly/reporter308-shapers

£2.5 million

Investment spent on improving teaching spaces across the South Kensington and Charing Cross campuses over the summer. A further round of improvements to larger spaces, such as lecture theatres, is planned for summer 2019.

Equality matters

Imperial has launched its strategy for equality, diversity and inclusion – outlining the College’s desire to be more proactive and courageous, by supporting individuals and reforming practices.

“EXCELLENCE COMES IN FORMS THAT ARE changing as fast as changes in society,” says Professor Stephen Curry, Assistant Provost (Equality, Diversity and Inclusion). “If Imperial is to thrive in a world that has never been more diverse and inter-dependent, we must become more conscious of the benefits that will flow from moving equality, diversity and inclusion to the heart of our institution.

“Our strategy is a call to actions, to everyone at Imperial – staff and students – who believes that the dignity and individuality of every person here should be respected and cherished.”

The strategy was developed based on discussion and consultation with staff and students from across the College, including at the EDI Strategy Group and the EDI Forum. The EDI Forum includes representatives from the students’ union as well as the chairs of the staff networks.

Included in the Strategy is an action plan which lays out the College’s commitments under the following key themes:

- We will integrate equality, diversity and inclusion into all management processes
- We will integrate equality, diversity and inclusion into the student experience
- We will take positive action to improve the opportunities and experiences of under-represented groups, especially women, and black and minority ethnic, LGBTQ+ and disabled staff and students
- We will reduce the incidence of bullying and harassment - no forms of which should be tolerated at Imperial
- We will gather and publish data to monitor our progress
- We will collaborate internally and externally to develop good practice
- We will be open to dialogue and challenge on our work on equality, diversity and inclusion

► **READ THE FULL STRATEGY HERE:**
bit.ly/reporter308-EDI

ENGINEERING CHANGE

MP Chi Onwurah, Labour’s Shadow Minister for Industrial Strategy, Science and Innovation delivered a lecture on ‘The Importance of Diversity in STEM’ this month.

Chi graduated from Imperial in 1987 with a degree in Electrical Engineering. After completing her MBA at The University of Manchester in 2002, she worked internationally as an engineer and consultant, and was appointed as the Head of Telecoms Technology at OFCOM in 2004. Chi was elected Labour MP for Newcastle Central in 2010, and currently serves as the Chair of the All-Party Parliamentary Group on Diversity and Inclusion in STEM.

Over 300 guests consisting of staff and students attended the talk and were given an opportunity to ask Chi questions.

Reflecting on her career in telecoms, Chi explained: “I attended many conferences and would present to around 2,000 people in a room – and I would be the only Black woman. I was memorable, which has some advantages, but ultimately it was a very isolating and exclusive environment. As an engineer, I was often the only Black person in the room, the only woman, the only working-class person, the only Northerner, the only socialist and the only Newcastle United fan! It wasn’t the latter that made me feel like an outsider.”

Chi also reflected on her experiences as an undergraduate at Imperial, including when racist jokes appeared in a student publication. “Imperial has changed hugely since I left. However, it is still important to recognise that these experiences matter as it informs the experience of engineers who are my age, or even younger, in terms of their training. It is one of the reasons why there are fewer female engineers.” ●



AS AN ENGINEER, I WAS OFTEN THE ONLY BLACK PERSON IN THE ROOM, THE ONLY WOMAN, THE ONLY WORKING-CLASS PERSON AND THE ONLY NEWCASTLE UNITED FAN! IT WASN'T THE LATTER THAT MADE ME FEEL LIKE AN OUTSIDER.

Chi Onwurah MP





(From top) Some of this year's Imperial Calibre Leadership Programme graduates; Imperial staff and students at Pride 2018; Stephen Curry gives guest speaker Chi Onwurah a tour of South Kensington Campus



EMPOWERING TALENT

The fifth cohort of Imperial's IMPACT programme for Black, Asian and Minority Ethnic (BAME) staff completed the development initiative last month.

IMPACT, which stands for Imperial Positive About Cultural Talent, is a four-month talent development programme run by the Equality, Diversity and Inclusion Centre. It supports BAME staff by giving them the tools and confidence to advance their career through highly-tailored workshops, one-to-one mentoring, and networking opportunities.

Eleven members of staff completed the IMPACT programme this year. The participants worked in teams on projects during the programme to strengthen their project management skills and consider how they could give something back to Imperial.

We spoke to some of this year's IMPACT graduates.



KIERON BLAKE

Clinical Academic Training
Office Coordinator in the
Faculty of Medicine

"I am a six-foot-four black man, and I felt like I had to be invisible at work. BAME staff like me aren't occupying higher level positions at the top, but since joining the IMPACT programme I've learned to believe in myself. When I applied for IMPACT, I was intrigued by the management and leadership skills I would gain. At the beginning, I didn't have much self-belief but now, my confidence has sky-rocketed."



MUMINA BEGUM

Academic Model
Administrator in the
Registry Department

"Before I joined IMPACT, I wouldn't apply for a role if I felt that I didn't tick all the right boxes. I'm Bangladeshi, and women are often taught to be timid and reserved. Sometimes, this can feed into your professional life – especially when you want to apply for senior positions. It can turn into a battle of who you are and who you need to be."

LONG SERVICE

Staff featured in this column have given many years of service to the College. Staff listed celebrate anniversaries during the period 01 July 2018–31 October 2018. The data are supplied by HR and correct at the time of going to press.

30 YEARS

- Professor Eric Alton, Chair in Gene Therapy, National Heart and Lung Institute
- Mark Bennett, Mass Spectrometry Service Manager, Life Sciences
- Professor Phillip Bennett, Clinical Professor, Surgery and Cancer
- Pete Brown, IT Support Specialist, Information and Communication Technologies
- Dr Adrian Butler, Reader in Subsurface Hydrology, Civil and Environmental Engineering
- Mr Antonio Parrado, Supervisor, Estates Division
- Harish Harjivan Dawda, Technician, Physics
- Professor Denis Doorly, Professor of Fluid Mechanics, Aeronautics
- Professor Sevket Durucan, Professor of Mining and Environmental Engineering, Earth Science and Engineering
- Andrew Gregory, Technician, Physics
- Tracy Halsey, Head of Early Years Education Centre, Campus Services
- Peter Higgs, Dynamics Group and VUTC Administrator, Mechanical Engineering
- Wiesia Hsissen, Senior Group Administrator, Electrical and Electronic Engineering
- Dudonna Matticks, Student HUB Assistant, Campus Services
- Professor Martin McCall, Professor of Theoretical Optics, Physics
- John Nyman, Senior Library Assistant: Faculty Support Services, Library Services
- Professor Peter Openshaw, Clinical Consul for the Faculty of Medicine, National Heart and Lung Institute
- Professor Roland Smith, Head of Plasma Physics and Professor of Laser Physics, Physics
- Professor Stephen Underwood, Professor of Cardiac Imaging, National Heart and Lung Institute

40 YEARS

- Ian Clark, Technician, Natural Sciences
- Maria De Freitas Abrunho Maio, General Technician, Aeronautics
- Maria Khaleeq, Technician, Physics
- Mr Faruq Noormohamed, Anaesthetic Laboratory Manager/Administrator, Surgery and Cancer
- Dr Richard Sayles, Senior Research Investigator, Mechanical Engineering
- Professor David Shepherd, Principal Teaching Fellow, Business School
- Professor Howard Wheeler, Senior Research Investigator, Civil and Environmental Engineering

50 YEARS

- Emeritus Professor Martin Clark, Senior Research Investigator, Electrical and Electronic Engineering

SPOTLIGHT

TRACEY HALSEY
30 YEARS



“ I joined the College in 1988 and started working with babies in a very small nursery of 33 children. The waiting list has grown year on year and we have continually expanded to our current capacity of 158 children. As I gained more experience I rose to deputy, and then in 2016 the Head of the Centre. So much has changed at the College and the EYEC and we are constantly evaluating and improving. It is exciting as well as challenging – with new legislation, governance and frameworks that we work to, in addition to OFSTED and other inspections.

In the early days, as well as looking after the children we had to cook their lunch and tea and some staff still wore nurses uniforms. We had limited resources but the children still loved it.

I have looked after thousands of children over the years and met many memorable and interesting people. The most rewarding part of the role, as well as supporting the children and parents, is when children return as adults and they have such fond memories of being at EYEC. Seeing what they achieved makes me feel proud that I have been part of their early development.

HONOURS

NATURAL SCIENCES

Driving change

Dr Emma Chapman was awarded the Royal Society’s Athena Prize earlier in the summer for driving nationally impactful policy changes concerning sexual harassment issues in higher education. She will be awarded a medal and a gift of £5,000 at the Royal Society’s Annual Diversity Conference in November 2018.



COLLEGE

New fellows

Professors Timothy Green, Yi-ke Guo (pictured), and Ricardo Martinez-Botas from Imperial College London were among 50 new Fellows admitted to the Royal Academy of Engineering in September. The announcement brings the total number of Imperial Fellows at the Academy to 87. Meanwhile, Professor Sir William Wakeham, former Head of Chemical Engineering at Imperial, has been awarded the President’s Medal, one of the highest accolades of the Royal Academy of Engineering.



PAAN

A decade of staff support

Ten years ago, the PA and Administrator Network initiative (PAAN) was founded – supported by the Learning and Development Centre (LDC). It was envisaged as a network to increase collaborative relationships, share good practice and identify tailored development opportunities within the College.

For members, who all perform vital roles within College, it's an opportunity to counteract the isolation some may feel in their local work environments, whilst forging links with like-minded colleagues.

The Network has almost 500 members, with various job titles encompassing Administrators, Personal Assistants (PAs), Executive Assistants (EAs), Executive Officers (EO), Sectional Administrators, Project Co-ordinators, Departmental Operations Administrators amongst many others.

Events and training opportunities are organised by a volunteer committee with support from LDC – including presentations by Directors across Imperial, careers talks and action learning sets.

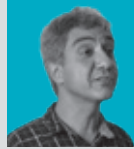
For new starters, the PA and Administrator buddy scheme is an initiative run by a small dedicated group of volunteers in the Network to help new starters through their first few months at Imperial in an informal capacity.

From Autumn, the Network will be trialling Microsoft Teams, which will provide a platform for better communication and knowledge sharing. One of the main benefits of PAAN membership is that when last minute requests come in to organise a meeting, arrange an external lunch or book a taxi and all regular options have been tried, you can draw on the expert knowledge of your Network colleagues, who are always quick to offer advice and help.

► **ENQUIRE ABOUT JOINING THE PAAN COMMITTEE:**
pa-admin-network-committee@imperial.ac.uk

IN MEMORIAM

Dr David Cittern



Dr David Cittern, Honorary Research Fellow in the Department of Computing, passed away suddenly and unexpectedly in May this year, aged 32 years. David's supervisor Professor Abbas Edalat pays tribute to his outstanding work and research in the department.

“David undertook an MSc in the department from 2010–2011, selecting a project on the ‘Dynamics of child/parent interaction in Attachment Theory’, which forms a scientific basis for developmental psychology.

Despite the fact that he had no previous knowledge of in the area he stood up to the challenge and acquired a keen intuition for child/parent interaction. His eloquently written MSc report was evaluated as a distinguished project and was uploaded on the department's website.

By now David had demonstrated several exceptional qualities, in particular his great selfless devotion to work and his strong resolve to undertake difficult challenges in research. It was a real blessing to have David so interested in this subject.

After having been awarded an EPSRC studentship, David started his PhD at Imperial. In the first stages of his doctorate, David developed a deep appreciation of the huge impact of children's attachment types on their future adult lives and hence on society as a whole. He became particularly interested in self-attachment therapy and its potential in tackling the root causes of psychological disorders.

In the final year of his PhD work, David developed a computational model to explain how toddlers learn, and respond to, the parenting style of their primary caregivers. This was yet another huge challenge that David successfully took up and impressed the extended scientific community with some astonishing results.

David's remarkable scientific achievement in such a short period of his academic career is underlined by several high ranking conference papers and two top journal papers. It was also reflected in his viva in January 2017 when his PhD thesis was accepted without a single correction or change, a real rarity in the academic world.

Yet, David will also be remembered for his commendable gratitude, humility and generosity. He provided ample support to undergraduate, MSc and PhD students and to his colleagues.

Thank you very much David for choosing to work with us and for playing such a vital and fruitful role in our research group first as a highly productive student and then as an expert and truly generous colleague. We will all greatly miss you but we will make sure in the years to come that your legacy lives on to create a better life and a better world for future generations.”



REVIEW

LOL-lab: An experiment in funny

LOL-LAB: AN EXPERIMENT IN FUNNY, 20 SEPTEMBER 2018

Imperial researchers and local people came together in September to try their hand at stand-up comedy in White City.

Over the course of three weeks, participants were given a comedy crash-course by stand-up comedian and comedy writer, Simon Watt, as part of a unique community engagement programme called LOL-lab.

The programme came to a side-splitting climax with a charity comedy night at The Queen's Tavern pub in White City, which raised more than £400 for Hammersmith & Fulham Mind.

LOL-lab was piloted last year by the Patient Experience Research Centre (PERC), a part of Imperial's School of Public Health. PERC aims to promote communication between patients, researchers and clinical staff to help drive improvements in healthcare.

The programme was founded by Dr Nathan Green, Research Fellow in Imperial's School of Public Health, and supported by local stand-up comedian Nina Joshi-Ramsey.

Local resident Sandra Anlin participated on the programme. She said: "I knew that I could write humorously but didn't know if I could write a funny stand-up routine. Three workshops with the amazing Simon Watt and two sessions with support from Nathan and Nina later, it would seem I can! Imperial really are changing lives in all sorts of unexpected ways!"



REVIEW

A meeting of the minds

DIVISION OF BRAIN SCIENCE ANNUAL RETREAT

More than 100 members of the Division of Brain Sciences gathered in September for an annual retreat to celebrate the best of brain research.

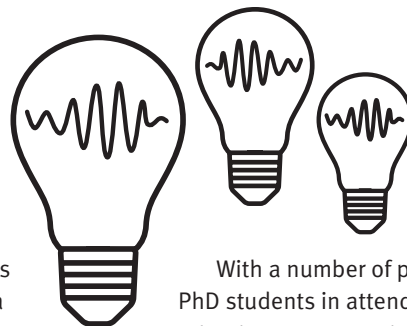
The programme featured a series of short talks by speakers that included the Division's own researchers – from Fellows to PhD students – and distinguished guest speakers from the wider brain sciences community.

The College's involvement in dementia research was highlighted with all three Fellows of the UK Dementia Research Institute (DRI) at Imperial speaking about their research. Established last year, the Centre led

by Professor Paul Matthews, is part of the wider UK Dementia Research Institute which fosters new approaches to dementia research.

Founding Fellow, Dr Nir Grossman, spoke about a non-invasive technique for stimulating the brain with electrical fields – which could hold the key to treating a range of brain disorder, such as the stiffness and tremors experienced in Parkinson's disease.

Meanwhile, Dr Marco Brancaccio (who joined Imperial as the third UK DRI Fellow in October) delivered a talk on circadian rhythms in the context of Alzheimer's disease.



With a number of postdocs and PhD students in attendance, the retreat was an opportunity for early career researchers to network with other members of the Division and communicate their research. Over 30 early career researchers took part in the afternoon session by either presenting a 3-minute 'blitz' talk of their research or a poster presentation.

Reflecting on the day, Professor Matthews recalled: "There was such a 'buzz' in the room – tremendous engagement by everyone. The day was a real testimony to the vibrancy of the Division!"

Coming up this Autumn at Imperial

Heading into the festive season via digital policing, neural codes and Imperial Lates: Xmaths

► SIGN UP FOR A EVENTS FULL LISTING: www.imperial.ac.uk/whats-on

9 NOVEMBER, 10.50–11.10

An act of remembrance

An act of remembrance and personal reflection, dedicated to members of the College killed during the two world wars, including an introduction including information from the archives; a two minute silence; laying of wreaths; and a short piece by musicians at the College.

Main entrance, South Kensington Campus



14 NOVEMBER, 17.30–18.30

Cracking the neural code and disentangling the wiring diagram

Professor Simon Schultz present an engineer's view of his career spent developing and harnessing new technologies.

Lecture Theatre 200, City and Guilds Building, South Kensington Campus

28 NOVEMBER, 17.30–18.30

Eradicating malaria: A journey down the lens of a microscope



Professor Jake Baum celebrates his team's key ally in the fight against a formidable enemy.

Lecture Theatre 200, City and Guilds Building, South Kensington Campus

10 DECEMBER, 18.00–19.00

College Carol Service by Candlelight

A service of readings and carols with music from the Imperial College Chamber Choir. Followed by festive refreshment. Free admission.

Holy Trinity Church, Prince Consort Road, (next to Beit Quad)

UNTIL 30 DECEMBER, 14.30, 19.30

The Wider Earth

A play about the story of a young Charles Darwin, featuring remarkable puppetry, an original score and cinematic animations to bring to life uncharted landscapes.

Jerwood Gallery, Natural History Museum



UNTIL 9 MAY 2019

The Sun: Living with our Star

The awesome power, beauty and dark side of the sun is revealed in a major new exhibition this Autumn.

Science Museum, South Kensington Campus

HIGHLIGHTS



14 NOVEMBER, 17.30 – 18.30

Digital policing: The changing role of technology in law enforcement

Commissioner of the London Metropolitan Police Service, Cressida Dick, will discuss effective digital policing and the need for careful, ethical application of technology in law enforcement in the 2018 Vincent Briscoe lecture for the Institute of Security Science and Technology.

Sir Alexander Fleming Building, South Kensington Campus



6 DECEMBER, 18.00–21.00

Imperial Lates: Xmaths

Join our world leading mathematicians for a warming beverage and learn hear how they visualise the equations they mull over and how Maths is being applied to understand everything from black holes to how people behave in crowds.

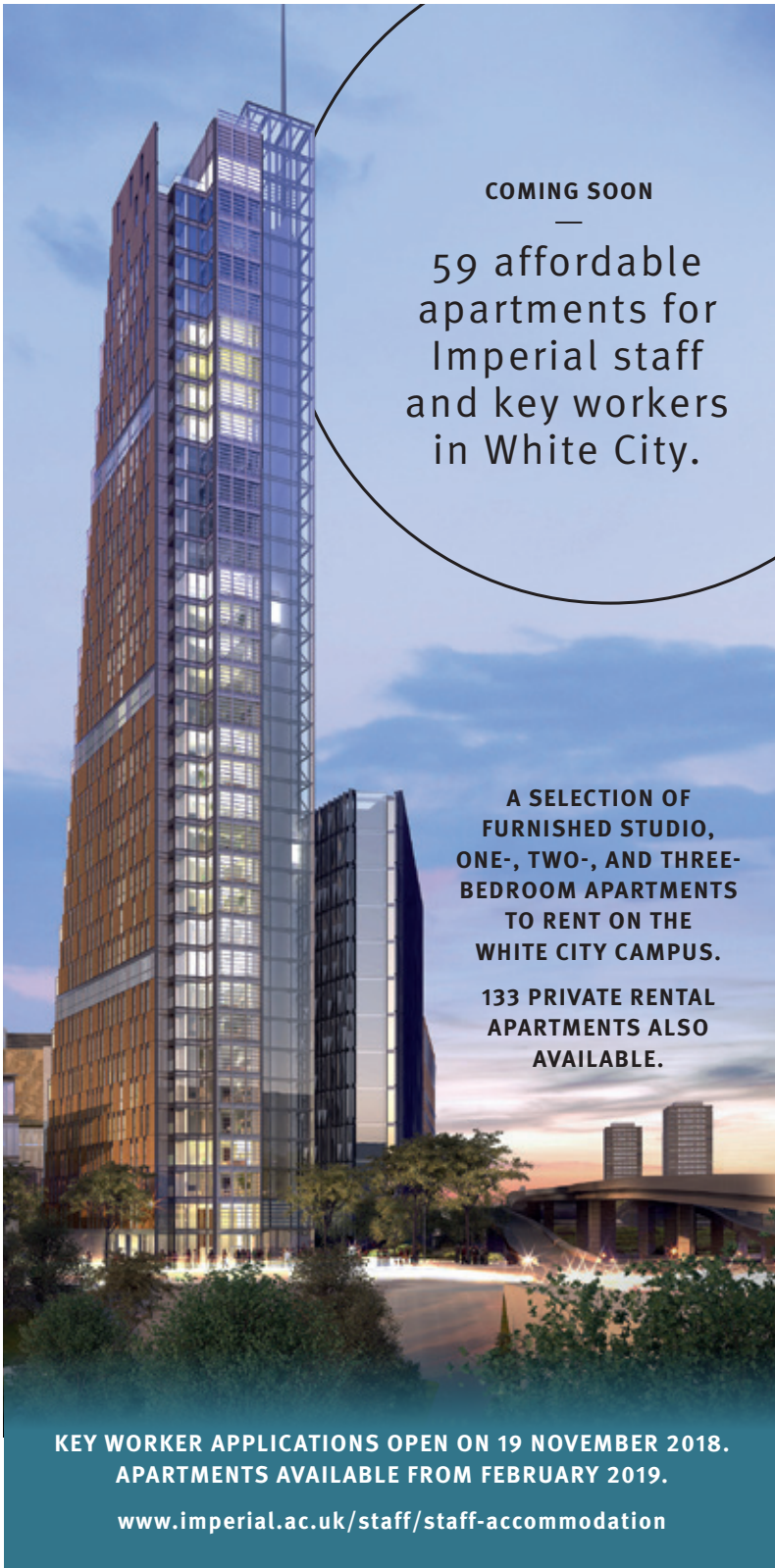
South Kensington Campus

10 DECEMBER, 17.30–18.30

Great Ideas of Biology

Professor Sir Paul Nurse, Nobel Laureate and Director of the Francis Crick Institute, will be presenting The Hammersmith and White City Campus Distinguished Christmas Lecture on the Great Ideas of Biology. This will be followed by a drinks and canape reception to celebrate the festive season.

Wolfson Lecture Theatre 1, Hammersmith Campus



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APARTMENTS AVAILABLE FROM FEBRUARY 2019.**

www.imperial.ac.uk/staff/staff-accommodation

TAKE NOTE

Have your say

Imperial recently became a member of the Race Equality Charter (REC), which aims to improve the representation, progression and success of Black, Asian and Minority Ethnic (BAME) staff and students. One of the first steps is to survey the views and experiences of our staff and students (regardless of their background or ethnicity). This information will help inform our REC process and develop our Action Plan for the future. All information will be held in the strictest confidence.

- ▶ **COMPLETE THE SURVEY BY 3 NOVEMBER:**
bit.ly/reporter308-survey
- ▶ **CONTACT SALLY FOR MORE INFORMATION:**
s.parekh@imperial.ac.uk



You make Imperial

Everything that makes you, you, helps make Imperial. Having more accurate data about our staff means that we can make sure that we have the right policies and services in place to support you and your colleagues. By collecting information about your protected characteristics – for instance if you have a disability, the gender you identify with, or if you have a religious faith – we can tailor our equality and diversity activities to suit your needs and better understand groups that may be underrepresented at Imperial.

- ▶ **COMPLETE YOUR PERSONAL DETAILS:**
bit.ly/reporter308-monitoring