Welcome. Thank you for coming. It is always wonderful to gather to celebrate the excellence around us. As always, very many of our colleagues received exciting external awards. I hope that you enjoy reading about the amazing array of accolades in the programme, and that you will join us in the reception afterwards to celebrate these impressive colleagues.

In celebrating these colleagues, it is interesting to note that the people we acknowledge for their awards come from more than 25 countries. This leads naturally into my theme this year: we are international and we will stay that way.

I’m sure many of you remember your first truly international experience. I vividly remember my first days in Europe. I was ill when I landed in Athens. I stopped at a pharmacy and was surprised to get a medication only available by prescription back home. Being an engineer helped me decipher the Greek alphabet. I made my way to the suburbs with an address written on a paper plate. Every so often, I’d ask someone for directions, showing them my plate. They warmly helped me; I understood the direction they pointed.

Friendly strangers pointing the way; it was a sort of early turn-by-turn navigation, long before Google Maps and Siri. I managed to find my group, and, before I knew it, I was staying with a widowed yaya on a Greek island, studying Greek language and mythology. I found out that my shower was a cold water douse over the toilet operated by pulling a chain. My yaya served me “chamomilla” tea. I recovered, I learned some Greek and I also learned a tremendous amount about people and about myself.

After study in Greece, I took the Magic Bus to Austria and travelled around Europe by train. I went to Italy to see Rome and Florence. I went to Germany because of my family roots. I went to Spain because I had studied Spanish in school. I ended my travels in London, expecting to understand the language. The friendly waiter serving breakfast cautioned me to take a “brolly”, as it was likely to be wet. The weather did not disappoint. It rained.

I became a different person that summer. My eyes, my mind and my heart were opened to the world.

One thing that struck me then, and has always resonated, is how much we have in common with people, no matter where we are from. We all care for family...
and friends, and, sometimes, even for strangers asking for directions. We share the desire for a good future. We appreciate a thing of beauty, a flower, a sunset, an edible child. We have a common curiosity about others and about faraway places. We thrive when we explore.

Hybrid vigour

Our similarities are complemented by our differences. Each of us has world views shaped by our families, our experiences, our schools and the local culture where we grew up. Spending my postdoctoral year in France opened my eyes to how these differences are beneficial when we work together. Sitting down to tackle a complex problem in condensed matter physics, I found my French colleagues taking a different approach from mine. While I was ready to dive into solving some differential equations, they sharpened their pencils, took a clean sheet of paper, framed the problem in an elegant and simple way, and evaluated what needed to be done. Our complementary strengths, when combined, augmented our work. We need not always agree with one another, in fact, sometimes the greatest discoveries come from disagreement.

Collaboration is important not only across disciplines, but also across cultures. It brings new insights, leads to new approaches and to new discoveries. I sometimes make the analogy between collaboration across cultures and the “hybrid vigour” or beneficial qualities that come from cross-breeding.

Many of you have experienced this hybrid vigour in your collaborations and in your own research groups. One need only to look at the award-winning work across Imperial to see the qualities our diverse community brings to us and to society.

Over the past decade, we have collectively collaborated with peers in 192 countries and more than half (56 per cent) of our research papers have had international co-authors. On our website you can find a wonderful map showing these collaborations. This is one of 105,000 research papers. Almost two-thirds (61 per cent) of our corporate research support comes from collaborations with businesses outside the UK. Our students come from more than 130 countries. Our diverse international research collaborations and our own international community produce breakthroughs benefiting us locally, regionally and throughout the world. Here are a few examples.

Recently, I had the privilege of hearing Professor Elio Riblei eloquently describe his work to a group of friends and supporters. Thanks to support by the European Union and the World Health Organization, Elio leads one of the largest cancer cohort studies in the world, following more than half a million participants from ten European countries for over 20 years. The European Prospective Investigation into Cancer and Nutrition, or, EPIC, is showing that a diet based on fruit, vegetables, whole grains and moderate consumption of poultry and fish reduces risk of obesity, diabetes, cardiovascular disease and cancer. Our new School of Public Health in White City will bring this international approach to West London, where over 120 languages are spoken in communities having a variety of traditions, cultures and ethnic backgrounds.

Another multi-national group, Natural Bionics, led by Professor Dario Farina, combines his expertise in neural interfaces with experts in neurosurgery at the University of Vienna and robotic specialists at Italian Institute of Technology to take prosthetic technology into a new era. Funded by a European Research Council Synergy Grant, they are developing prosthetics that allow users to feel and command them as part of their body. The multidisciplinary and multicultural connections are literally helping us improve connections between the brain, spinal cord, and prosthetic limbs. Professor Molly Stevens leads a global group of bioengineers, material scientists, chemists, surgeons and biologists, from over 25 countries. They work with partners in the United States, South Africa and Australia to engineer human bone, liver and pancreas for autologous transplantation. Their different cultural and disciplinary perspectives have helped them form a Group transform the development of biosensors and brought bioengineering approaches to regenerative medicine.

Professor of Sustainable Chemical Technology, Jason Hallett loves how his multinational group “bring their personal history wherever they go”. New ideas, contacts and culture diversify this first World’s Fair. They say: “By far the easiest way to cross fertilise ideas is to hire people from other places, especially those with different research backgrounds.” Thanks, in part, to their group members, their vaccine work has made its way to India, Bangladesh, Vietnam and China.

Professor Hallert’s Swiss PhD student won a WEInnovate Prize for Chrysalix Technologies. The Bioengineers group transforms waste wood into material for fuel. When they couldn’t find the right hard wood in Europe, a fellow group member helped source it from China.

Our immigrant heritage

Today, while the US is building a wall with Mexico, and the UK is likely departing from the EU, it is especially important to remember that immigration is an integral part of both countries’ history.

The UK has benefitted from waves of immigration throughout history from the earliest settlers through recent recruits. Shakespeare’s London was multicultural and multiracial, including many North and West Africans, as well as Europeans. The Huguenots came to Britain in the 17th and 18th century and brought with them many capabilities in science, banking, weaving and glass. Appropriately, our major partnership with CNRS of France is named after Abraham de Moivre, a Hugenot mathematician who came to England.

After two world wars immigration was essential to rebuilding the UK. Our infrastructure was built by people from Europe, the West Indies, India, Pakistan and Bangladesh. Today, this diversity is part of what makes the UK the success that it is.

The effect of immigration on Imperial has been just as profound over the years. Decades before our 1907 founding, in 1845, Professor August Wilhelm Von Hoffmann was recruited from Germany to be the first Director of the newly created Royal College of Chemistry by none other than Prince Albert himself. Hoffmann made significant contributions to the chemistry and he mentored exceptional students. One of his students, William Henry Perkin, discovered Mauveine and started the synthetic dye industry.

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likely than others at Imperial to become students. European students are twice as 70 per cent of the participants are foreign by foreign staff and students here at entrepreneurial strength is shared to international talent.

If we are serious about achieving the UK tech founders are immigrants, even were started by immigrants and their entrepreneurial community in 43 per cent of Fortune 500 companies were started by immigrants and their children, and 20 per cent of the world’s tech founders are immigrants, even though immigrants only make up about four percent of the world’s population. If we are serious about achieving the UK Industrial Strategy and eager to develop new enterprises in the UK, our new immigration system must be welcoming to international talent.

At MIT I did an informal study of our patent data and found that foreign students filed more patents than their domestic counterparts. This entrepreneurial strength is shared by foreign staff and students here at Imperial where they are also more likely to file patents than their UK peers. In our Enterprise Lab for student entrepreneurs, 70 per cent of the participants are foreign students. European students are twice as likely than others at Imperial to become student entrepreneurs. On a recent visit to our White City Incubator, I talked to the founders of CustoMem who are making adsorbent materials to rid water of chemical pollutants. They have rapidly grown to ten employees, one of the fastest growing businesses in the UK. Our WEInnovate awards last week showcased five finalist female entrepreneurs with amazing pitches. They and their teams came from 11 countries. Why is this the case? Why are immigrants overrepresented as entrepreneurs, as tech founders, as corporate leaders? I have always thought that students who travel far away from home are already risk takers. They are immersed in a culture that is different from theirs and they take in new ideas rapidly and readily. We have such risk takers at Imperial. International innovators are improving lives, creating jobs and making the world a better place. Some have stayed in London. Like Hiru Patel eighty years earlier, Malav Sanghavi came to Imperial from India and now he is saving lives. Working in the Dyson School, Malav set out to solve a problem in neonatal survival in his home country. He founded LifeCradle to create a neonatal incubator that is 90 per cent less expensive than existing incubators and can be used as a cot when incubation is no longer needed. Malav is a serial entrepreneur now running two businesses in London. One day we need not worry about being hit by an autonomous vehicle if our alumni from the Netherlands has his way. Leslie Routteboom is staying in London to develop Autonomy to help autonomous vehicles better predict human behaviour such as jay-walking pedestrians. There are many more such examples and we need our immigration policies to encourage more of them to stay. There are also many such who leave London and the UK. They take with them their formative experiences at Imperial and they remain global citizens, and they improve the world around them. You can see this in the thriving entrepreneurial communities in Shenzhen where many of the entrepreneurs you meet are Imperial alumni. From wineries in Western Australia, to tech startups in California, our alumni are talented, innovative, and entrepreneurial. We need to stay connected and ensure that they have opportunities to come back.

Risk takers

I often hear people talking about the successes of the Silicon Valley or the Boston area. What is the key to success in these areas? One element is that American entrepreneurs are working side by side with, or often led by, foreign-born talent.

In my view, these agreements should apply in two primary areas: (1) mobility of our colleagues and students, and (2) fostering and supporting our collaborations across the world.

Academics are among the best diplomats

There is a long history of scientists working across borders, even during times of conflict. The Royal Society of London appointed its first foreign secretary in 1723, long before the British government did. CERN was established in 1954 and played a key role in rebuilding relationships that had been divided by the war. Likewise, SESAME, a synchrotron for the Middle East, modelled on and supported by CERN, opened in 2017. SESAME won the AAAS Award for Science Diplomacy this year. In addition to supporting research in environment and health, SESAME will foster peace and international collaboration.

The reality of science diplomacy or, more broadly, academic diplomacy is that academics can and will work across political and cultural differences. In 2010, I was privileged to be named US Science Envoy to Central Asia and the Caucasus. Whenever I travelled, I was warmly welcomed by the scientists, academics, community members and fellow university leaders. Never forget the young people who came to my “chai chat” in Tashkent with impressive questions and exciting ideas. Science diplomacy needs nurturing. I have been asked by the Minister for Universities, Science, Research and Innovation to chair the Newton Prize Committee. I am pleased to help with this important mission to recognise excellent science, research and innovation in support of economic development and social welfare in Newton Fund partner countries.

A network of respect and collegiality connects universities, laboratories, and research groups. It is true that, through our common search for discovery and our common language, academics and scientists can talk. In fact, we will need to be diplomats. I believe that this is still true today and is more important than ever. I am proud that Imperial is making international engagement a high priority. We have new and growing collaborations in Africa, Asia and the Middle East, and are augmenting and strengthening our collaborations in Europe and the Americas.

What does the future hold?
What can we do?

The operative word of the day is uncertainty. We have unclear futures before us. We see shifting policies and politics across the world. We must not, and will not, let the uncertainties of these times distract us from the important work before us.

Our international engagements make us stronger and we will continue to build them. We will not relent in our quest to keep our doors open to students, collaborations and colleagues from around the world.

In terms of the immediate issues of Brexit, we are witnessing unprecedented political turmoil. We must lift EU collaboration out of politics. If there can be side deals for fisheries there can be agreements for research collaborations and student and staff mobility.

In my view, these agreements should apply in two primary areas: (1) mobility of our colleagues and students, and (2) fostering and supporting our collaborations across the world.

Mobility

In order for academics and scientists to be excellent entrepreneurs, collaborators and diplomats, they need the ability to work together across borders. We must be ambitious in liberating mobility for academics and students. A 2017 poll showed that 86 per cent of the British public want to increase or maintain levels of migration of scientists and researchers.

We must seize this sentiment, as we design a new post-Brexit immigration system. I applaud the new two-year Startup Visa. Extending the duration of the Graduate Entrepreneur visa is long overdue and is a welcome step towards our shared goal of making the UK a haven for entrepreneurs. Just this afternoon, the Chancellor announced PhD level roles would be exempt from visa caps and that overseas research activity will count towards residence when applying for settlement in the UK. These are positive steps for science and research. But we can, and we must, be bolder. Here are three ideas:

1. Invite and welcome exceptional talent. Create a single Tier 1 visa for exceptional researchers, PhD students and graduate entrepreneurs. A single route for all academic and entrepreneurial talent, and removing number caps for all, would serve as a clarion call to make the UK a beacon for talent.

2. Make it easier for talented immigrants.

• Liberate visa sponsorship to allow trusted university employers to sponsor talented staff;
• grant automatic visa sponsorship to all recipients of major international research funding such as the Wellcome Trust, Gates Foundation and ERC;
• allow the visa to follow the researcher so that they can move from one sponsor to another; and,
• lower salary thresholds for Tier 2 skilled migrant visas for talented staff like our technicians.


Post-study work visas for all undergraduates and postgraduates, with a duration of two years for STEM graduates, will help meet the UK’s £1.5 billion skills shortage. It will future-proof businesses as they adapt to a rapidly changing global economy where STEM skills are increasingly vital. This would put us on a level playing field with competitors like the US.

Supporting collaboration

We will continue to establish partnerships and collaborations in Europe and throughout the world. We call on our governments and partners to lift concerns or government restrictions, or work with others who share our commitment to furthering research, education and science diplomacy, no matter where they are from, no matter what their current government has done, and no matter what others are accusing them of.

We are international. Our international community, our collaborations, our partnerships, and our own experiences in other cultures and places have an immeasurable and profound effect on the world. We have a great heritage of mixing people, ideas and cultures to create wonderful discoveries and insights. We must ensure that such mixing continues for our benefit, and for the benefit of society.

Professor Alice P. Gast
13 March 2019
We take great pride in the many members of Imperial's academic and alumni community who received external awards and accolades during the past year. In celebration, we here present their names and a brief description of their achievements. The number and variety of awards reflects the breadth of talent and expertise at Imperial, which helps us to deliver our mission of excellence in research and education for societal benefit.

**Professor Jane Apperley**  
Chair of Design Engineering, and author of ‘Built’; MSc, Civil and Environmental Engineering 2005  
MBE for services to engineering

**Olivia Ahn**  
Co-founder and CMO, Polipop; Medicine 2017  
Winner of the 2018 Mayor of London’s Co-founder and CMO, Polipop; Medicine 2017

**Professor Martin Hairer**  
Chair in Economics, Imperial College Business School  
CBE for public services to economics

**David Havelock**  
Former Director of Credit Risk Group, UK Export Finance, Department for International Trade; Physics 1968  
CBE for services to the economy

**Professor Alfonzo Canedo**  
Professor of Chemical Engineering, Chemical Engineering  
Appointed to a panel member for the 2021 Research Excellence Framework

**Professor Stephen Cowley**  
Professor of Applied Mathematics, Mathematics  
MBE for services to mathematical sciences

**Professor Richard Craster**  
Professor of Applied Mathematical Sciences, Mathematics  
MBE for services to mathematical sciences

**Professor Keith Cooper**  
Professor of Applied Mathematical Sciences, Mathematics  
MBE for services to mathematical sciences

**Professor John Hassell**  
Professor of Performance Science, Department of Design Engineering  
CBE for services to the arts

**Professor Richard Jones**  
Professor of Performance Science, Department of Design Engineering  
CBE for services to the arts

**Professor Jim Leach**  
Professor of Performance Science, Department of Design Engineering  
CBE for services to the arts

**Professor Jonathan Haskel**  
Professor of Economics, and St John’s College to UK-based researchers under the age of 40