

Imperial College
London



STRATEGY
2020–2025

Imperial College London's mission is to achieve enduring excellence in research and education in science, engineering, medicine and business for the benefit of society.

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President of Imperial College London
Professor Alice P. Gast

Imperial College London: For the benefit of society

When we wrote the College Strategy 2015–2020 we hoped that it would be an enduring guide. It has held up well, even in the face of unprecedented crisis and societal change.

The Foreword in 2015 was prescient:

It is 2015 and we can be confident that in ten years the world will be quite different from today. International relations, social structures and trade patterns will alter. There will be new approaches to dealing with epidemics, shortages of natural resources and environmental crises. New challenges will arise.

Unprecedented challenge abounds in 2020 and beyond. Our mission, to achieve enduring excellence in research and education in science, engineering, medicine and business for the benefit of society, is more important than ever.

Our strong foundations, great people, excellent partners and enablers including courage still frame what we aim for. We have accomplished quite a bit since 2015 and we have new and daunting challenges ahead.

Strong foundations for global challenges.

The COVID-19 crisis has showed, more than ever, the value of a strong strategy, the ability to take risks, and the need to act courageously. Right across College, our people have risen to the challenges bringing expertise and discovery in epidemiology, diagnostics, therapies, clinical practices, policies and economic impact to address the pandemic.

New partners have emerged, new levels of courage have been mustered.

We have known that universities had to change to adapt to societal evolution and our community has adapted swiftly to a rapidly changing

environment. While we might not have predicted a global pandemic shifting us to remote working and online teaching and learning, our strategies had prepared us to seize opportunities and face challenges.

We have accomplished a lot outside of this unprecedented event. Our core disciplines are stronger than ever leading to new discoveries in every field. Our Academic Strategy is based on these strong foundations and leads to tangible benefits to society. It builds on the way Imperial reaches across disciplines and embeds the educational experience in a vibrant, research-led, entrepreneurial environment. We focus on the ways we are helping society become more sustainable, healthy, smart and resilient. These attributes have never been more pressing.

Great people: our College community.

We will build upon our accomplishments improving our supportive, diverse, inclusive and highly motivated staff community where our engagement with the Race Equality Charter, Disability Confident, Stonewall Workplace Equality Index and Athena Swan have increased awareness and improved policies and practices.

Informing, influencing, inspiring.

The changes in the UK over the past year have given us opportunities to be seized and challenges to be met. There are risks to be taken and bets to be made. We have been at the heart of efforts to persuade government of the value of science, research and education to the future of the UK. We and our partners across the country in higher education, research and industry, successfully made the case for the UK investment in R&D to rise to 2.4% of GDP by 2027. We are now poised to take advantage of this immense opportunity, and we must be proactive.

Our Academic Strategy creates new opportunities to do just that. The first two initiatives in the strategy illustrate this well.

In the Towards Zero Pollution initiative, our world-leading research and education comes together with strength and purpose to systematically address the problems of pollution. This complements the way our community is rising to the challenges posed by climate change through Sustainable Imperial's work to help our campuses and every member of our community to reduce their carbon footprint.

A second initiative brings together our expertise and infrastructure, from molecular synthesis to AI, to revolutionise how we create new molecules, from new drugs to more effective catalysts, to meet a wide range of societal needs.

Making the most of these ambitious projects will require collaboration with partners in industry and research and higher education institutions across the UK and internationally. Investment must optimise outcomes for the UK as a whole.

Enablers: the way forward.

Our ability to try new things, to provide an environment supporting individuals to be bold and take risks, and to work across disciplines should give us confidence to seize opportunities.

One such opportunity is in the government's proposal to experiment with new funding approaches, giving researchers greater freedom to pursue long-range projects to tackle some of the world's greatest challenges. This is called UK ARPA, modelled on the US Advanced Research Projects Agency. This approach will be even more beneficial if its founders take a lesson from jazz, and encourage improvisation and collaboration with trusted partners within the UK and abroad.

Alice P. Gast

Imperial scientists are at the forefront of global efforts to protect the world from the Covid-19 coronavirus outbreak.



STRATEGY



Our strategy is built on underpinning **foundations** that make Imperial a great academic institution and talented, diverse and inspirational **people** who make up our university community. Our **partners** make our work possible and help us to deliver benefit to society through our research and education. **Enablers** help us to deliver our strategy.

Foundations

- We will maintain world-class core academic disciplines, continuing to specialise in science, engineering, medicine and business. All research and education must be underpinned by a deep understanding of the fundamentals.
- We will be transdisciplinary. Only by bringing together expertise from different disciplines can we solve today's global challenges.
- We will deliver a world-class educational experience. Our Learning and Teaching Strategy sets out our ambition to deliver a world-class educational experience which is research based, student-centred, evidence-based, inclusive and diverse, outward-looking and technology enhanced.
- We will translate ideas into impactful solutions through entrepreneurship, partnering with business, NGOs and government, providing services to harness the value of our world-leading research.

People

- We will build a supportive, diverse, inclusive and highly motivated staff community across all disciplines, functions and activities. This will help us to attract and retain the talented and diverse staff we need to achieve our mission.
- We will enrich the student experience in partnership with Imperial College Union. Creating an environment in which all students feel a sense of belonging and are active participants in a community will enhance the overall student experience and allow students to thrive.
- We will build strong relationships with our alumni and friends. This lifelong exchange of ideas and support benefits all of us.

Partners

- We will strengthen collaboration with business, academia, and non-profit, healthcare and government institutions across the globe. No university can achieve excellence or realise the full benefits of its work by itself.
- We will inform decision makers to influence policy. Our excellence, breadth of knowledge, connections and London location allow us to bring together and inform key decision makers in governments and industries for the benefit of society.
- We will empower society through meaningful engagement and dialogue. A key part of our mission is to make our work accessible, relevant and responsive to the needs and insights of society.

Enablers

- We will strengthen and diversify our revenues. Delivering our mission requires investment in our staff, students and facilities.
- We will provide professional support, consistent processes and appropriate technology for all of our staff and students, the pursuit of excellence in research and education requires excellence in all that we do.
- We will act courageously and innovatively when pursuing new opportunities. We need to take academic and financial risks to sustain excellence in research and education.



Clockwise, from top left: The Glycosciences Laboratory at the Hammersmith Campus specialise in glycobiochemistry, immunochemistry, chemistry, mass spectrometry and NMR (Nuclear Magnetic Resonance) • Professor Chen Xu from Tsinghua University in Beijing visits Imperial to sign the funding agreement for a joint seed fund to support early-stage bold scientific ideas • Imperial's Centre for Academic English helps international students and staff participate effectively and confidently in the academic community • Undergraduate Geology students on a field trip to Dorset.

FOUNDATIONS



We will maintain world-class core academic disciplines

All research and education must be underpinned by a deep understanding of the fundamentals.

We have tremendous strength in the core disciplines practised by our academic departments. This was demonstrated in the latest Research Excellence Framework, an assessment of the quality of research in UK higher education institutions, in which over 90 per cent of the research submitted by Imperial was judged to be world-leading or internationally excellent. This excellence is broadly found across all our disciplines, and applies equally to our research outputs, impact and environment. These strengths provide us with the underpinning capability required to work together across disciplines in order to address global challenges. Our Academic Strategy will drive our ambition to achieve these aims.

ACTIONS IN DETAIL

- We will work across our Faculties, departments and Global Challenge Institutes to identify and support new emerging disciplines and opportunities.
- While recognising that much of our strength in core disciplines derives from the nurturing of talent within the institution, we will be more proactive in identifying opportunities to recruit a diverse staff group capable of enhancing the quality of our research and education.
- We will build partnerships and engage our external stakeholders to advance and sustain parity of excellence across all our core disciplines, a key factor for successful transdisciplinary research and education.



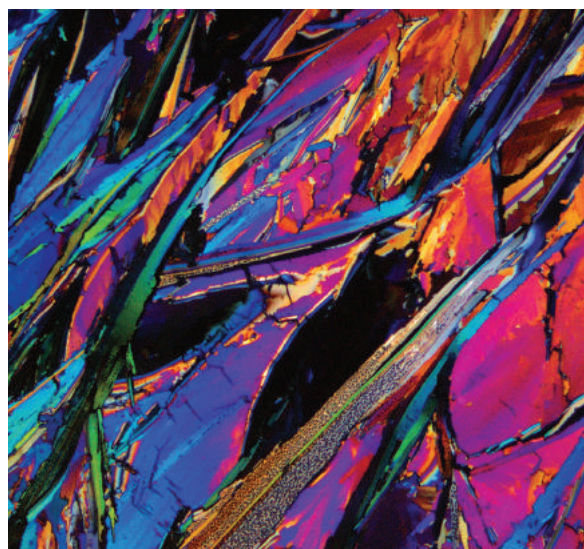
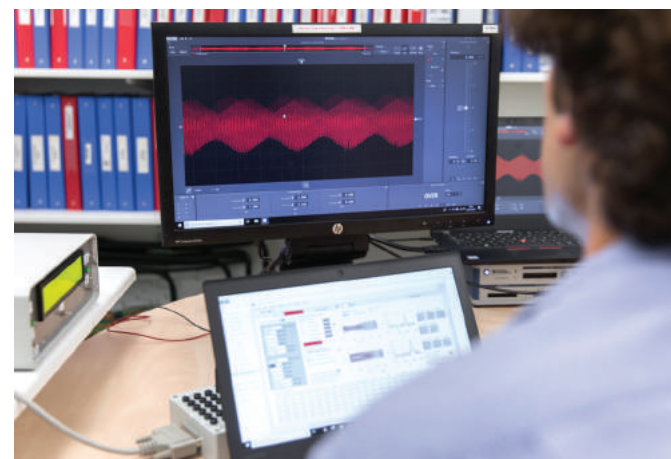
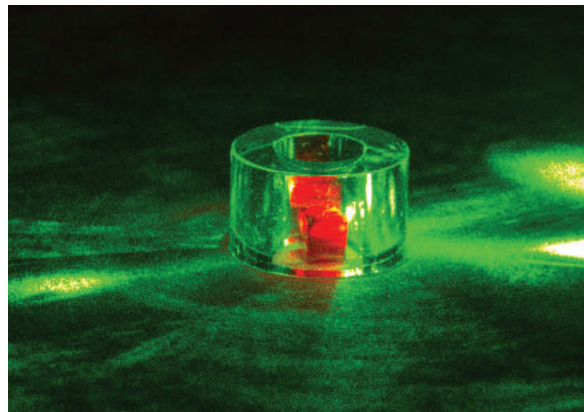
CASE STUDY 01

Fundamental physics: searching for dark matter

Dark matter is an invisible form of matter that physicists believe makes up about a quarter of the energy density of the universe and most of its mass. Its presence is inferred from its gravitational effects on visible matter and radiation in the cosmos, but its existence has never been confirmed directly. Its composition is a mystery, leading to the intriguing possibility of hitherto undiscovered physics.

Scientists at Imperial are among those leading the search for dark matter using a variety of approaches. For example, the LUX-ZEPLIN (LZ) experiment, installed 1.5km underground in South Dakota, is about to turn on and will allow researchers to look for tiny and extremely rare flashes of light that would indicate a collision between a dark matter particle and a normal matter particle. In turn, the new AION programme will deploy novel quantum sensors to search for the lightest dark matter particles using large atom interferometers. Scientists use the Large Hadron Collider at CERN to search for dark matter particles that might be produced in collisions within the particle accelerator. Imperial researchers also use cosmological data to understand the influence and properties of dark matter.

For Professor Michele Dougherty CBE FRS, Head of the Department of Physics, the discovery of what this elusive substance really is would be a fantastic achievement, and bring new insights into the nature of our universe. As she notes, “Imperial has a world-class programme in fundamental science, thanks to our excellence across different academic disciplines and our ability to bring together teams working on these different searches. I am also well aware that this is an area that excites young people of all backgrounds, helping us attract the scientists of tomorrow.”



Clockwise, from top left: Imperial spin-out company, Chrysalix Technologies, use waste wood and agricultural by-products to produce bioplastics, biofuels, biomaterials and other green chemicals • Data presented at a workshop from The Forum series, Artificial Intelligence and the Future of Work (learn more about The Forum on page 29) • A scientist from The Paediatric Microbiome Research Group inoculates a blood agar plate at St Mary's Campus • Brain stimulation work using exogenous electric fields to noninvasively modulate human brain oscillations at the UK Dementia Research Institute (DRI) • Microscope images of chiral layers of carbon based polymers generated while developing new materials for light emitting-diodes • Mazers ('microwave lasers') are already used for deep-space communications and radio astronomy but this diamond utilising room-temperature device could expand their applications to medicine, security and quantum technologies.

We will be transdisciplinary

Only by bringing together expertise from different disciplines can we solve today's global challenges.

The global challenges of today and the future are complex. We can only hope to address them through collaboration between disciplines and with partners. While we cannot anticipate all the challenges ahead, the College is well placed to contribute across four key themes: sustainable society, resilient society, smart society and healthy society.

ACTIONS IN DETAIL

- Informed by the views of our global community, we will review and refocus our research programmes on a regular basis as challenges and opportunities emerge and evolve. We will promote a dynamic exchange of ideas and staff between our core disciplines and these transdisciplinary themes. Through our flexible framework of transdisciplinary networks, centres and institutes, we will continue to facilitate working across disciplines, transcending faculty boundaries to enable the efficient progression of scientific endeavour.
- We will develop several new multidisciplinary hubs at our White City Campus that enable new routes to discovery and innovative approaches to global challenges. Like the Sir Michael Uren Hub, these hubs will be configured to encourage close team working and serendipitous encounters between engineers, scientists and clinicians. The buildings will be designed to be adaptable so that new global challenges can be accommodated.
- We will embed transdisciplinary in our teaching and learning, equipping our students to tackle global challenges which cross disciplinary boundaries.



CASE STUDY 02

Grantham Institute for Climate Change and the Environment

Our Global Institutes address some of the most important issues facing the world today. Harnessing the tremendous research strength areas of the College, the Grantham Institute addresses issues including fundamental understanding of climate processes, environmental impacts, mitigation technologies and policies. A small core team works with over 200 staff across Imperial to translate their knowledge into real-world impact.

The Institute appoints cross-disciplinary Lecturers who conduct research, teaching and engagement within their home department. It teaches the award-winning Master's in Climate Change, Management and Finance jointly with Imperial College Business School, runs a UKRI NERC Doctoral Training Partnership with over 120 students across the College and recently opened a free online course in low-carbon policymaking for developing countries. The policy and communications team champion public engagement with climate change action, facilitate thought leadership through traditional and digital media, influence policy- and decision-making and run a busy events programme for stakeholders throughout the year. In 2019, the Institute launched a campaign to create a Centre for Climate Change Innovation at the White City Campus, harnessing London's concentration of entrepreneurship, climate finance and business skills to solve the climate crisis.

Ten years after it was founded, thanks to a visionary donation from the Grantham Foundation for the Protection of the Environment, the Grantham Institute is a leading authority on climate and environmental science, trusted by politicians, policymakers, businesses and the public.

We will deliver a world-class educational experience

Our Learning and Teaching Strategy sets out our ambition to deliver a world-class educational experience which is research-based, student-centred, evidence-based, inclusive and diverse, outward-looking and technology enhanced.

Our aim for our graduates is that they will: demonstrate deep conceptual understanding of their chosen discipline; work effectively in multi-cultural, international teams and across disciplinary boundaries; approach challenges with curiosity, critical thinking and creativity; innovatively apply their skills to tackling complex real-world problems; understand and value different cultures and perspectives; develop into independent learners with high self-efficacy; display a strong sense of personal and professional identity.



Dyson School of Design Engineering's annual catapult challenge gives undergraduate students a chance to apply what they have learnt in Mechanics and test their theory • Surgical design, Technology and Innovation students in The Sir Michael Uren Biomedical Engineering Research Hub (BmE Hub) use virtual reality to enhance surgical education in orthopaedics.

ACTIONS IN DETAIL

- We will take an evidence-based approach to our learning and teaching, and we will contribute to this evidence-base through our own research and evaluation.
- We will create interactive learning environments, where students take an active role and engage in curiosity-driven, authentic learning and research within their discipline and across disciplinary boundaries.
- We will maximise the benefits of digital and online technologies to reach beyond the boundaries of our physical campus.
- We will create inclusive and diverse classrooms and culture, removing barriers to learning, enabling all our staff and students to participate fully, and harnessing the benefits of diversity.
- We will take a research-led approach to learning and teaching, ensuring students directly benefit from the strength of our research community.
- We will recognise our teaching faculty for their achievements and contributions to the College's core academic mission.
- We will continually enhance our teaching. In particular, we will make timely and useful assessment and feedback a central part of our approach.
- We will work in partnership with our students to create a learning environment in which students are engaged as co-creators of research and benefit equally from new ways of learning and teaching.
- We will encourage and facilitate learning beyond the classroom, creating opportunities for staff and students to interact and build communities, helping students develop into lifelong learners.
- We will strive for excellence in research supervision and define the qualities expected from supervisors.



CASE STUDY 03

Chemical Kitchen

First year students in the Department of Chemistry have been taking part in a creative, interdisciplinary practical course that introduces them to the mind-set needed in a laboratory via the non-threatening parallel of a kitchen. It teaches practical laboratory skills, planning, creativity, safe working, precision, and dexterity.

'Chemical Kitchen' is the result of a collaboration between Imperial academics and cutting-edge gastronomy group, Kitchen Theory. Launched in the 2019/2020 academic year and capturing the imagination of students, staff and the public alike, the course is but one example of a number of grassroots projects funded by the College as part of our strategic approach to consistently and incrementally evaluating and evolving the educational experience of our students and staff.

For course leaders and developers Jakub Radzikowski and Luke Delmas, the benefits have been clear. As Luke notes: "All first year Chemistry students enter the Chemical Kitchen before taking part in their first traditional Chemistry labs, meaning we occasionally encounter some scepticism. By the end of the three-day course we find students can't believe how much of



what they learn in the kitchen resonates with what is expected of them in a lab setting. They feel more confident in their abilities, having been given an approachable 'safe' space in which to explore skills needed to practice their discipline."

Students were treated as equal partners in co-developing the course and putting each other's experience to good use. The 'StudentShapers' helped narrow down a broad range of proposed activities and invent new ones, combining maximum enjoyment and learning. Ultimately this will result in a more positive experience for students as the College considers rolling out tailored versions of the course to other departments.

We will translate ideas into impactful solutions

Imperial's focus on science and technology and medicine means that a high proportion of our staff and students are interested in entrepreneurship. Entrepreneurship offers our researchers an important route to providing societal and economic benefit from their work.

Entrepreneurship is a key means by which our staff and students apply their work for wider societal benefit. By learning alongside researchers who are experts in their fields our students gain the practical, entrepreneurial and intellectual skills to tackle societal problems. Entrepreneurial activity requires support and nurturing at all stages in the journey – from the creation of ideas, the safeguarding of these through intellectual property, the development of entrepreneurial skills to enable startups to flourish. A diverse range of support is required at each stage.

The entrepreneurial spirit flows through to engagement with industry, where Imperial encourages and helps academics and researchers to tackle industry challenges as a route to impact, through industry partnered research projects, often in a multidisciplinary approach, and through the commercialisation of academic discoveries into IP that can be licensed or form the basis of new startup businesses.

Consultancy provides another such supported route. Consulting projects allow staff to apply and extend their knowhow by providing advisory and expertise-based services, often tackling urgent problems and building new relationships.

We aim to be a destination of choice for the most innovative students and researchers from across the globe, who will be the entrepreneurs of tomorrow and who will create impactful solutions that address important economic and societal needs.

ACTIONS IN DETAIL

- We will continue to build on ways to support our students and staff in establishing startups, including convening external mentors and experts, and building our investor network to help startups flourish.
- We will create stronger connections between all parts of the entrepreneurial ecosystem, providing better support for staff, students and external collaborators.
- We will equip our students and staff with the knowledge and skills needed to turn their ideas into reality.



Clockwise, from top left: The Techcelerate and the MedTech SuperConnector programmes provide funding for researchers to explore the commercial potential of their work and access to incubator, accelerator and industry networks • Finite is a student startup developing a material from desert sand with similar structural properties to concrete but less than half the carbon footprint • Imperial is collaborating with alumnus startup Arborea to develop pioneering 'BioSolar Leaf' technology to improve air quality in White City.



CASE STUDY 04

Entrepreneurship facilities

Imperial has invested in creating a vibrant entrepreneurship support ecosystem, supporting from the very earliest stages of conceptualizing business ideas through to helping established startups to grow.

Imperial College Advanced Hackspace (ICAH) is a highly accessible environment for inventors, hackers and makers from around the College – student or staff – to turn their ideas into real breakthrough prototypes and solutions. ICAH provides access to specialist manufacturing equipment, training, and a network of like-minded members. There are hackspaces across South Kensington Campus, and the bespoke workshop at The Invention Rooms in White City contains a well-equipped bio lab, alongside state-of-the-art 3D printing, electronics, metalwork and woodwork equipment.

Imperial's Enterprise Lab is a hub for student entrepreneurship, offering workspace, advice and mentoring. It's home to the College's flagship student entrepreneurship programmes, such as WE Innovate, which is dedicated to helping female entrepreneurs succeed, and the Venture Catalyst Challenge, which sees hundreds of student teams apply to undertake seven intensive weeks of masterclasses and coaching. In 2018/2019, the Lab engaged 1,974 students in its activities.

Imperial's highly utilised White City Incubator provides state-

of-the-art laboratories and office spaces, and an incubation programme of training and events to help startup companies. Companies include Polymateria, which is developing a breakthrough, proprietary formulation for biodegradable and compostable plastics. Incubator graduate Mina Therapeutics is developing a pioneering platform enabling the development of new medicines that restore normal function to patients' cells and received £35m in investment from Sosei, a Japanese biotech company. Water purification biomaterials company Puraffinity provides an example of the journeys Imperial aims to support. The company idea was formed in 2014 when founding team entered the iGEM synthetic biology competition run by Imperial-based SynbiCITE. Founder Gabi Santosa won the WE Innovate female entrepreneurship programme in 2016, this was followed by further funding from SynbiCITE and the company went on to take up a shared lab in the incubator, from there the company won £1.2m in EU Horizon 2020 funding that allowed them to take their own lab in the incubator. The company raised \$3.55m in a seed funding round in 2019.

Scale Space, located within Imperial College's White City Campus, is a new innovation space, bringing together research, talent and business-building expertise from Imperial College London and the UK's leading digital venture builder, Blenheim Chalcot. It will provide unique access to an ecosystem designed to encourage and support innovation and growth to businesses focused on scaling.

New Discoveries

Our Academic Strategy sets out four themes in which, right now and in the future, the College will seek to accelerate discovery and impact to society. This will open doors to new technologies, enable applications that could have major human, physical and economic impact, offer new educational experiences and improve the environment for learning.

Imperial's core strengths and distinctive capabilities mean that we are ideally placed to address some of the greatest challenges our society will face in the next five years. This builds on our foundations in world class core academic disciplines underpinned by fundamental science, enabling research that reaches across disciplines and embedding the educational experience in a vibrant, research-led, entrepreneurial environment.



SUSTAINABLE SOCIETY

We are helping society to become more sustainable by transforming manufacturing, attitudes to consumption and economic practices.

HEALTHY SOCIETY

We are innovating new technologies and strategies to improve health services and support the prevention, diagnosis and treatment of disease by converging science disciplines and integrating them with clinical and public health practices.

SMART SOCIETY

We are enabling discoveries and developing new technologies in artificial intelligence, machine learning, statistics, data sciences and robotics, and help to better understand how they will transform lives, environments and present new challenges to the world of work.

RESILIENT SOCIETY

We are developing understanding and technologies to enable stable and robust infrastructures that underpin the delivery of services – from water, fuel and power, to data, communications and the banking system – to make our society resilient.



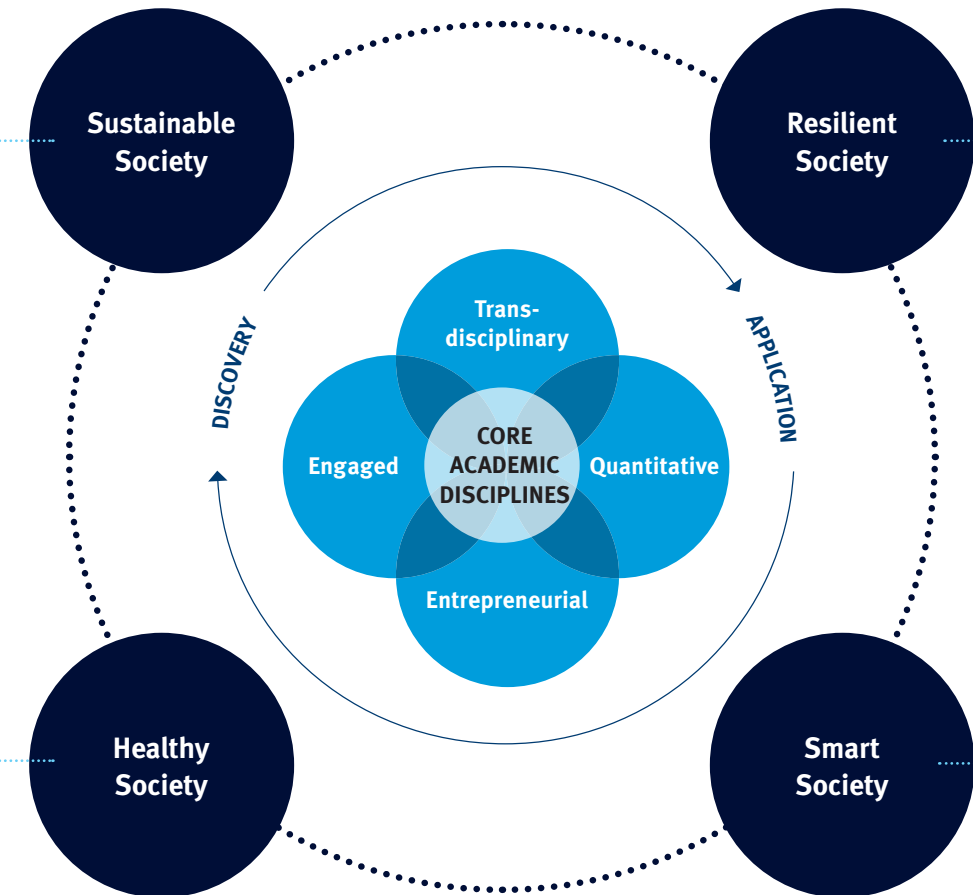
Design and biotechnology combine to create a living solar panel on paper • Molecular plant pathology work investigating the evolution of bacterial and fungal infections that can decimate crop yields • The Intelligent Behaviour Understanding Group (iBUG) studies the machine analysis of human behaviour in space and time including facial movement and body gestures.

What if...

- ... we could deliver water, energy and minerals that are secure, sustainable and affordable?
- ... we could achieve a zero-carbon and climate resilient future?
- ... we could improve our understanding of how environments impact health and disease?
- ... we could use our expertise to tackle the challenges of sustainability in business?

What if...

- ... we could build a digital world that is secure, inclusive and accessible by all?
- ... we could develop a built environment that is carbon negative?
- ... we could use technology-driven approaches to support society to live longer?
- ... we could predict the impact of financial events?



What if...

- ... we could eliminate the threat of infection caused by antimicrobial resistance?
- ...we could predict and prevent illness right across the life course?
- ...we could measurably reduce the burden of chronic disease?
- ...we could deliver an affordable healthcare model adjustable to all global conditions?

What if...

- ... we could use robots to build cities of the future?
- ... we could shape the production and consumption of digital goods and services?
- ... we could predict how cryptocurrency will change the face of business?
- ... we could accelerate the development of advanced materials through digital Chemistry?

PEOPLE



We will build a supportive, diverse, inclusive and highly motivated staff community across all disciplines, functions and activities

This will help us to attract and retain the talented and diverse staff we need to achieve our mission.

We need to harness our collective strength to deliver our mission. This requires a supportive, diverse and considerate community based on inclusivity, mutual respect and a commitment to excellence. The framework of Imperial expectations and values guides the behaviour of all our staff.

ACTIONS IN DETAIL

- We will provide opportunities for all staff to progress their careers at the College, and recognize all staff for their contributions to the College's mission.
- We will create an environment which is respectful, kind and collaborative and has zero tolerance for bullying and harassment.
- We will share more broadly the impact and achievements of our staff across all disciplines, functions and activities so that their work and contribution to our mission is recognised and celebrated.
- We will create an equitable environment for work and study that values diversity and promotes inclusion through the actions in our Equality Diversity and Inclusion Strategy.
- We will strive to promote good mental health and a healthy work-life balance.
- We will promote sustainable working practices across our College community.



CASE STUDY 05

Commitment to continuous improvement and an equitable experience

Imperial was a founder member of the Athena SWAN Charter in 2005 and achieved a Bronze institutional award in 2009. We successfully submitted for Silver in November 2012. Imperial was the first to achieve institutional Silver on the expanded criteria in 2016. All departments at Imperial are on the Athena journey, with the vast majority holding awards.

In January 2018 Imperial became a member of the Race Equality Charter (REC). Run by AdvanceHE, REC aims to improve the representation, progression and success of Black, Asian and Minority Ethnic (BAME) staff and students within higher education. REC provide a rigorous framework for us to identify, analyse and overcome institutional and cultural barriers for our BAME staff and students. Member institutions develop initiatives and solutions for action, and can apply for an award. We publicly launched our REC work at our 2018 Black History Month Lecture, The Importance of diversity in Science, Technology, Engineering and Mathematics (STEM) delivered by Chi Onwurah MP.

Imperial successfully became a Disability Confident Leader in 2019. Disability Confident is a government scheme designed to encourage employers to recruit and retain disabled people and those with health conditions. The Disability Confident scheme has taken over from the previous Two Ticks scheme for which Imperial originally gained accreditation in April 2012.

To help Imperial develop as an organisation that is fully inclusive of LGBTQ+ people, we participate in the Stonewall Workplace Equality Index. This scheme provides a benchmark against which we assess how we are doing. The Stonewall Index requires organisations to undergo a review process, producing a report and action plan.



We will enrich the student experience in partnership with Imperial College Union

Creating an environment in which all students feel a sense of belonging and are active participants in a community will enhance the overall student experience and allow students to thrive.

The environment, services and activities which our students encounter will be shaped in partnership with students, placing them at the heart of our academic community and creating a shared responsibility to enhance the overall student experience.

ACTIONS IN DETAIL

- We will strive for all students to have an outstanding experience.
- We will create an inclusive and diverse community, embracing our differences and creating a sense of belonging, and prioritising wellbeing.
- We will consider the entire student journey and a holistic student experience.
- We will celebrate and support staff who champion the student experience.
- We will continue to enhance the portfolio of activities, opportunities for professional development, and extra-curricular experiences available to our students.
- We will continue to develop an outstanding student services, streamlined processes and systems which underpin the student journey.
- We will continue to engage students at all points of their time at Imperial and beyond, so that they feel part of our vibrant global community, and become engaged alumni.



CASE STUDY 06

Student Activities Programme

Imperial College Union's student activities programme provides students with hundreds of opportunities to learn new skills, make friends and broaden their horizons. The programme is an integral part of the student experience at Imperial. With over 80% per cent of students joining one of Imperial's 360+ clubs and societies, thousands of students take part in activities from Kung Fu to public debating, and Drama Society to orchestra.

Engaging with activities allows students to build capabilities and support networks outside of academia that help them excel through their College journey and beyond. Involvement in activities is documented through Imperial Award, a formal programme for recognising and celebrating the skills that students develop through their involvement in a wide range of volunteering roles inside and outside of the College community. Students reflect on the value of these skills and receive a certificate acknowledging the time they have invested. The recognition of the personal development that comes with participation in activities or leading clubs allows students to recognise and celebrate the links between this development and their employability and future successes.



Number of nationalities represented among our undergraduate and postgraduate students in 2019–20



Clockwise, from top left: A finalist of the WE Innovate programme (Imperial's entrepreneurship programme for female students) showcases her idea to the public • The Outdoor Society visit Snowdonia • Imperial students cleaning up Deen City Farm's pond as part of National Student Volunteering Week • Imperial student clubs and societies take over the Campus to greet new students during Welcome Week



Clockwise, from top left: Alumni at a special event at the House of Lords, hosted by Lord Ara Darzi (Professor of Surgery, Faculty of Medicine) • Alumni exploring the campus through Alumni tours arranged over the Alumni Weekend • Alumni on an exclusive tour of CERN • Martin Lupton welcomes alumni to a special lecture in celebration of the tercentenary of Westminster Hospital

We will build strong relationships with our alumni and friends

This lifelong exchange of ideas and support benefits all of us.

Imperial's 210,000 plus alumni comprise a powerful global network. We count as friends many more people who share a common interest in our mission and support our work. Our alumni and friends are advocates for the College, role models for our students, employers of our graduates, and sources of support and inspiration for our alumni community and academic work.

We have a tremendous asset in our highly accomplished and successful alumni and friends. We will continue to forge lifelong relationships, nurture and build our relationship with these ambassadors and champions. We will encourage the mutual exchange of knowledge, expertise, connections, and support to contribute to the power of this global community, and the strategic aims of the College.

ACTIONS IN DETAIL

- We will continue to build strong strategic relationships within the College, to identify areas of mutual support and collaboration.
- We will continue to build affinity and engagement with our global community of alumni and friends of Imperial through high quality and high impact programming and initiatives.
- We will continue to mobilise alumni and friends to engage with the College and maximise their support and contribution.

Engaging with Global Alumni

The Alumni Relations programme has grown considerably over the last five years and has resulted in a vibrant, engaged and informed alumni community around the world. The global programme includes a highly expanded portfolio of communications, services, benefits, and activities. This means that alumni are being engaged in new and varied ways that support alumni and keep them informed, as well as enabling them to support and get involved with the College and the alumni community. Nowadays, alumni regularly inform us that they have noticed a step change in Imperial's outreach and communications over the last five years.

Alumni communications now include a revamped Imperial magazine, monthly e-newsletters and targeted e-communications for all faculties, and several departments. Our alumni services and benefits also include an alumni email account, access to libraries across our campuses, discounts on facilities at South Kensington and a prestigious Alumni Visitor Lounge. Imperial Plexus, the online networking platform for alumni, was launched in 2018, enabling alumni to make direct connections with each other, access information about events and jobs, and online resources including career webinars and library resources.

A global network of alumni groups and associations is actively supported. Many of our groups in the UK and internationally run their own events and initiatives. In addition, alumni have treasured meeting senior leadership and academics, and having the opportunity to learn about College developments and ground-breaking research, through the delivery of around 40 events a year with Imperial's senior leadership and academics.

Imperial values its alumni, and alumni are equally keen to participate in opportunities to support the College, students and their community. In 2018–19, there were over 1,500 alumni who volunteered over an estimated 8,000 hours of their time, and working with teams across the College, the volunteering programme will continue to grow. Recent volunteering opportunities have included diverse initiatives for alumni to mentor, provide career advice and share industry expertise with students, the launch of Alumni Insights panels, focusing on alumni providing sector insights to recent graduates; and the development of Professional Interest Networks.

PARTNERS



We will strengthen collaboration with business, academia, and non-profit, healthcare and government institutions across the globe

Imperial is a global academic community where people from different cultures contribute diverse perspectives, new ideas and fresh approaches to solving complex problems. Working with partners not only helps us solve problems together, it helps us to create impact for societal and economic benefit. Our global reach is spreading further than ever with collaborations or projects in 192 countries, establishing partnerships to tackle global challenges in areas such as healthcare, engineering, technology and sustainability. We will support the internationally collaborative creativity and initiative of our individual academics and faculties to establish new innovative global relationships with businesses, universities, governments and international organisations, throughout the world, enabling Imperial to have a positive global impact on society by solving real-world problems.

ACTIONS IN DETAIL

- We will celebrate our international values and community.
- We will strengthen the support available to our College community to find appropriate partners and establish valuable and impactful collaborations, and underpin this through our ethical principles of engagement.
- We will utilise our convening power to create-multi-sector partnerships across academia, industry, government and civil society to deliver transformational research, education and innovation.
- We will seek closer and deeper relationships with our innovation partners, finding new ways to collaborate and to drive positive real-world outcomes.
- We will create platforms for research, capacity-building and knowledge exchange to achieve social and economic goals, including tackling the UN Sustainable Development Goals (for example, through our partnership with the African Institute for Mathematical Sciences).
- We will offer opportunities for students to benefit and learn from external partnerships.

CASE STUDY 08

Lee Kong Chian School of Medicine

Imperial has partnered with Nanyang Technological University, Singapore to create the Lee Kong Chian School of Medicine. This was the College's first ever overseas initiative where we have established an entirely new organisation awarding a joint Imperial/NTU degree. Established in 2010, the first students graduated as doctors in 2018 under an entirely new and innovative curriculum focussed on team-based learning and the new doctors have been enthusiastically received by the hospitals in the Singapore Healthcare Group. We have built up an expanding portfolio of collaborative research with LKC in the fields of epidemiology and public health, neuroscience and infectious diseases.

Academic Health Science Centre

Close partnership with the NHS is critical to delivering our world-class medical education and to translating our discovery science into the clinic for the benefit of patients and the population. In 2007, Imperial created the UK's first Academic Health Science Centre (AHSC) with Imperial College Healthcare NHS Trust (comprising St Mary's, Hammersmith, Charing Cross, Western Eye and Queen Charlotte's hospitals). The AHSC has now grown to embrace the two specialist post-graduate hospitals in West London – the Royal Brompton and the Royal Marsden, together with the Institute of Cancer Research; most recently, the Chelsea and Westminster Hospital joined the AHSC in 2020. The AHSC has now allowed us to develop an aligned strategy between academia and our partner NHS providers for research, education and clinical service.

Technical University of Munich

TUM is Germany's leading technological university. The TUM-Imperial Joint Doctoral Academy unites a new generation of PhD-level innovators to focus on building new London-Munich education and research partnerships in the triangle of AI-Healthcare-Robotics. The cohorts have access to world-leading academic supervisors and state-of-the-art facilities at both institutions to work across artificial intelligence, healthcare and robotics - fields where both Imperial and TUM have taken a global lead in research, innovation and breaking down disciplinary boundaries.



3 CHIEF SCIENTIFIC ADVISERS

Number of current advisers to government departments who have worked or studied at Imperial.



Clockwise, from top left: The 47th Vice President of the United States Joe Biden delivers the inaugural lecture of the Imperial Cancer Research UK Centre • Michael Gove MP launches the Government's Clean Air Strategy at Imperial • Government Chief Scientific Advisor Sir Patrick Vallance and Professor Mary Ryan, Vice-Dean (Research) of the Faculty of Engineering at the launch of the Forum, Imperial's policy engagement programme • Mayor of London Sadiq Khan opens the Molecular Sciences Research Hub at Imperial's White City Campus • Former Prime Minister Theresa May MP visits Imperial's Carbon Capture Pilot Plant to announce the Government's net zero target.

We will inform decision makers to influence policy

Our excellence, breadth of knowledge, global connections and London location allow us to bring together and inform key decision makers in governments and industries for the benefit of society.

Research undertaken at Imperial informs debates on the issues that matter to global society. Our networks and connections at local, national and global level allow us to access key decision makers. A strategic approach to connecting our researchers with policy-makers ensures the right evidence is communicated in the right way at the right time.

ACTIONS IN DETAIL

- We will ensure Government, Parliament and other key decision-makers understand what conditions world-leading science needs to thrive.
- We will raise the profile of Imperial research through strategic communications aligned to the new Academic Strategy and bringing key stakeholders to the College.
- We will provide strategic support to our researchers to provide evidence to policy-makers through The Forum programme.
- We will teach our students how to engage the public with their research, creating dialogue which informs learning and increases the impact of what we do.
- We will work to set national and global scientific agendas through connecting our thought leaders to decision-makers and contributing to all stages of policy development.



CASE STUDY 09

The Forum

The Forum is Imperial's policy engagement programme. It connects Imperial researchers with policy-makers to discover new thinking on global challenges. Launched officially by current Government Chief Scientific Adviser Sir Patrick Vallance in July 2019, The Forum supports our researchers to better engage with policy-makers and helps policy-makers develop relationships with Imperial researchers working in subject areas relevant to their work to support evidence-based policy development.

The Forum builds internal capacity through internal policy engagement seminars and regular communications on opportunities such as calls for evidence, events and secondments. Our workshops bringing together Imperial researchers and policy-makers are focussed on global challenges such as AI and data, sustainability and climate change and ageing societies – reflecting the priorities of Imperial's new academic strategy.

The Forum is already influencing policy debates. Last year Imperial's Computational Privacy Group, led by Dr Yves-Alexandre de Montjoye – who took part in a Forum workshop on data privacy – persuaded the government to make changes to the Data Protection Bill in 2017, making the case for alterations to plans to criminalise re-identification from anonymised data sets.




60,000 VISITORS

At the Great Exhibition Road Festival in 2019



Clockwise, from top left: The Great Exhibition Road Festival is a three-day celebration of curiosity, discovery and exploration in South Kensington which brings together science and the arts in a unique programme of creative workshops, talks, exhibitions and performances • Year 7 students taking part in hands-on science activities at the Wohl Reach Out Lab at South Kensington • Professor Roger Kneebone leading a public simulation activity with a pop-up operating theatre • The first graduation of Agents of Change, a leadership programme driving social change in the north of Hammersmith and Fulham • Year 12 students prototyping their ideas in the Reach Out Makerspace at The Invention Rooms in White City

We will empower society through meaningful engagement and dialogue

A key part of our mission is to make our work accessible, relevant and responsive to the needs and insights of society.

We want to use our education and research in science, engineering, medicine and business to be a force for good in society – globally and locally – seeking not only to inspire, but also to collaborate and find solutions together. Our strategy for engaging with society means working in partnership at different levels – with schools, community groups and residents, patients and the public more widely. It means widening participation in our student and staff body, engaging the public in our research and being an anchor institution in our local communities. Above all, it means trying to listen as much as we try to inform.

ACTIONS IN DETAIL

- We will support schools in their mission of raising pupils' ambitions and attainment in STEM.
- We will provide diverse staff role models for our students and increase diversity in our student body.
- We will nurture a strong sense of social responsibility within our students.
- We will be a trusted source of STEM expertise – locally, nationally and globally.
- We will create innovative opportunities for more people to develop STEM skills and ideas.
- We will embed public engagement in research projects and research culture at Imperial.
- We will develop accessible and inspiring programmes and platforms that empower people in topical science issues.
- We will develop the resources, infrastructure and governance to enable our staff and students to deliver effective public engagement.
- We will foster an ethos of working in partnership with community, public groups and businesses to tackle shared societal challenges.



CASE STUDY 10

The Invention Rooms

The Invention Rooms is a unique community space at the heart of our White City Campus. Inside, you can find accessible workshops, design studios, a community café and interactive spaces for innovation and collaboration between the College, the local community and our partners.

Located in a diverse part of west London, The Invention Rooms offers an inclusive environment where people of all ages and backgrounds can learn new skills in science and technology and get directly involved in research and innovation to address both local and global challenges.

Programmes at The Invention Rooms include a digital literacy programme called What the Tech?! for elderly residents living nearby, and the innovative Maker Challenge programme where local young people aged 14–18 can turn their creative ideas into reality, from trainers that play music to a bedside lamp that turns itself off automatically when you fall asleep.

The space has also hosted workshops and activities designed to bring researchers and residents together to tackle societal challenges. These have included a 'hackathon' to develop solutions for elderly patients with partial hearing loss, and LOL-Lab where local people and researchers together try their hand at stand-up comedy under the guidance of a professional comedian.

The Invention Rooms is a new model for community innovation which has relevance across the UK. It has engaged more than 20,000 local people since it opened in 2017 and has been shortlisted for national awards including the Guardian University Awards 2019.

ENABLERS



We will strengthen and diversify our revenues

Delivering our mission requires investment in our staff, students and facilities.

Financial sustainability is essential to ensuring that we are able to maintain and develop a world-class research and education environment and have the flexibility to invest in the opportunities of our choice.

ACTIONS IN DETAIL

- We will dedicate over one-third of the space at our White City Campus to diversifying our income.
- We will continue to seek philanthropic investment to strengthen our strategic priorities, and continue to grow our cash income.
- We will manage the College Endowment to generate a steady return and continue to grow the number of endowed scholarships, professorships and chairs.

CASE STUDY 11

School of Public Health

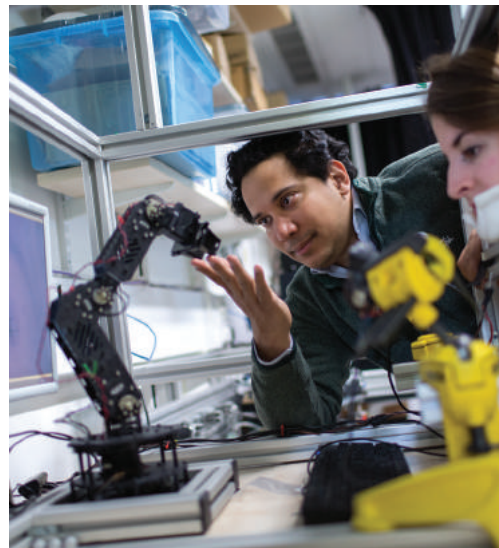
Our world-leading School of Public Health is pushing the frontiers of technological innovation, big data and scientific knowledge to address some of our most intractable health challenges, from the containment of deadly infectious disease, to the prevention of childhood malnutrition and obesity and the treatment of dementia and other age-related conditions.

J-IDEA, the Abdul Latif Jameel Institute for Disease and Emergency Analytics

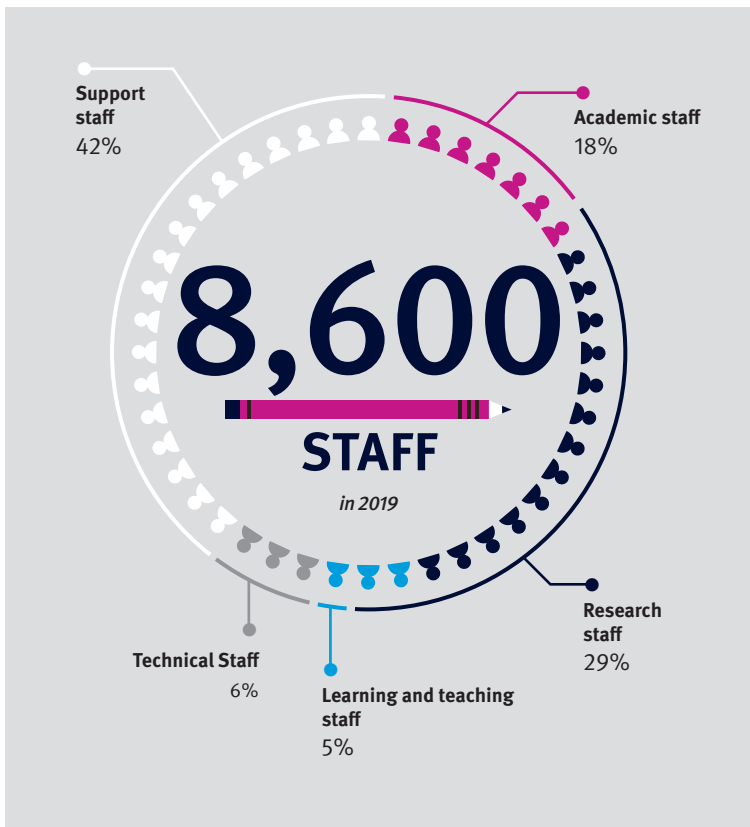
The Abdul Latif Jameel Institute for Disease and Emergency Analytics (J-IDEA) was co-founded with Community Jameel to help combat threats from diseases by rapidly responding to emergencies such as epidemics, extreme climate events, and natural and humanitarian disasters. J-IDEA's mission is to bring together global health researchers in the School of Public Health and draw on Imperial's expertise in data analytics, epidemiology and economics, to improve the understanding of diseases and health emergencies in the most vulnerable populations across the globe. The institute will tackle crises, such as Ebola, MERS and Coronavirus, alongside longer-term global priorities such as non-communicable diseases and the impact of climate change on health.

The Mohn Centre for Children's Health and Wellbeing

The Mohn Centre will be a new state-of-the-art hub for health and wellbeing research, education and community engagement, and is founded on the premise that all children deserve the best chances in life. By preventing chronic disease and infection in the early years of life, Imperial can ensure that future generations have every opportunity to thrive and succeed. The Centre will pioneer a combined approach to mental and physical health, with a focus on early intervention to prevent young people from developing chronic disease that can persist throughout their lives. As well as having a global impact, the Centre will convene local organisations such as the NHS, the local authority, schools, voluntary organisations and mental health and wellbeing services with the College's expertise.



Clockwise, from top left: Imperial scholarship recipients on Dalby Court • The Student Hub provides comprehensive information about services and support available to Imperial students • Eyetracking and kinematic studies investigate how the brain and its neural circuits are designed to learn and control goal-directed movements • Catering Supervisor, Flavia Zago, wins gold at The University Caterers Organisation's (TUCO) Barista Skills competition in 2019.



We will provide professional support, consistent processes and appropriate technology for all of our staff and students

The pursuit of excellence in research and education requires excellence in all that we do.

Everyone in the university, irrespective of discipline, function or activity, has a role to play in helping Imperial to deliver its mission. Excellent research and education must be underpinned by a professional team focused on ensuring that our academics and students have the time, support and resources they need to deliver their very best. Excellence comes not just from 'what' we do, but also 'how' we do it.

ACTIONS IN DETAIL

- We will promote a positive working environment and culture, where all who show a commitment to excellence are recognised and given respect, whatever their role or field.
- We will empower staff at all levels to deliver change for the better.
- We will design and implement consistent processes which minimise time wasted, support academic excellence and encourage collaboration.
- We will continue to invest in the technology needed to support our mission.
- We will achieve the highest standards of safety.
- We will create a positive, kind and values-based workplace which enables a diverse staff group to do their best work and deliver excellence.



CASE STUDY 12

Technician Commitment

Attracting, developing and retaining skilled technicians is vital to the work of the sector and to the success of the UK economy as a whole. Faced with a technical skills shortage, the Technician Commitment is a sector-wide initiative that aims to ensure visibility, recognition, career development and sustainability for our technical staff.

Imperial was one of 35 founding signatories to the Technician Commitment, which now number more than 80 higher education and research institutes. We are working towards a two-year plan with actions ranging from delivering a programme of Technicians' Network events to developing a visible technical career pathway. One of our successes has been to introduce a dedicated programme of support for science technicians to gain professional registration. 14 technicians from across the College were awarded RSci or CSci status as part of the pilot and eight more are in the process of making applications. We have been awarded Employer Champion status by the Science Council in recognition of this work. From 2020, we will be extending the programme to support our engineering technicians.



Clockwise, from top left: Studies of air pollution and cloud formation using high resolution satellite images at the Global Data Observatory in the Data Science Institute • The Aeronautics Flight Simulation Laboratory houses a full motion, 6 degrees of freedom enclosed flight simulator capable of accurately reproducing the flight characteristics of existing and novel aircraft. The lab also houses two fixed base simulation stations used for prototype testing and teaching • The Facility for Imaging by Light Microscopy (FILM) uses the latest equipment in light microscopy to observe life as it happens, visualising it in still images or live films • Innovation Design Engineering students compete in the Rio Tinto Sports Innovation Challenge, which focussed on making sports more accessible to people with disabilities by improving sporting and training equipment.

We will act courageously and innovatively when pursuing new opportunities

We need to take academic and financial risks to sustain excellence in research and education.

As the frontiers of knowledge cannot be predicted, agility and flexibility are integral attributes for success. This means that Imperial must take risks: academic risk through starting new areas of research, before we know whether funding or acclaim will follow, measured risks in education, being bold to try innovative teaching and supporting students in venturing into new territory in their learning and development; and financial risk, in order to achieve the returns we need to fund our mission. The Excellence Fund for Learning and Teaching Innovation and the Excellence Fund for Frontier Research both reward excellence, while promoting courageous and innovative ideas in research and teaching.

ACTIONS IN DETAIL

- We will adjust our processes so that we can make swift informed decisions to seize opportunities and both start and stop new initiatives.
- We will invest funds to pursue the new and risky.
- We will support ideas which are potential breakthrough programmes that put us in a leadership position, even if these ideas have not yet received outside funding.
- We will take innovative approaches to learning and teaching, using the evidence-base to ensure our risks are measured.
- We will support our students in understanding the value of ambiguity and in how to take informed risks through curiosity-driven learning.
- We will recruit a diverse staff and student population, as diversity drives innovation and creativity.



CASE STUDY 13

White City

At White City, we are building a major new research and innovation campus that will bring together scientific researchers, corporate partners, entrepreneurs and the local community to co-create on an unprecedented scale, turning cutting-edge research into real-world benefits for society.

The White City Campus is a £2bn investment across 23 acres and is taking place in one of London's most exciting, dynamic and rapidly changing neighbourhoods. The area is home to pioneers in arts, culture, innovation, science and learning – including BBC, Royal College of Art and Novartis.

Alongside transdisciplinary research facilities and space for commercial partners, the White City Campus north site houses accommodation for postgraduate students and a flagship residential development – known as Eighty-Eight Wood lane – which provides affordable accommodation for Imperial's staff and key workers.

Adjacent to the White City station, the White City Campus south site is home to Scale Space, a new innovation space for west London, bringing together the best research, talent and business-building expertise. The College's long-term masterplanning ambitions for the south will provide further dynamic co-location facilities that support collaboration, innovation, and the sharing of ideas.

Our White City Campus is a place where great academics can work on world-leading research with corporate partners, entrepreneurs and residents to catalyse economic and social benefits on both a local and global scale.

Our campuses



NORTHWICK PARK AND ST MARK'S CAMPUS
 CENTRAL MIDDLESEX CAMPUS
 SILWOOD PARK CAMPUS

CENTRAL LONDON Campus locations

Key	Campus shuttle
Imperial College Campus	Stops at:
Hospital and Campus	SOUTH KENSINGTON CAMPUS
Campus shuttle	WHITE CITY CAMPUS
Underground station	HAMMERSMITH CAMPUS
National Rail station	Free to staff and students on weekdays.
	For more information search for campus shuttle bus at www.imperial.ac.uk

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