

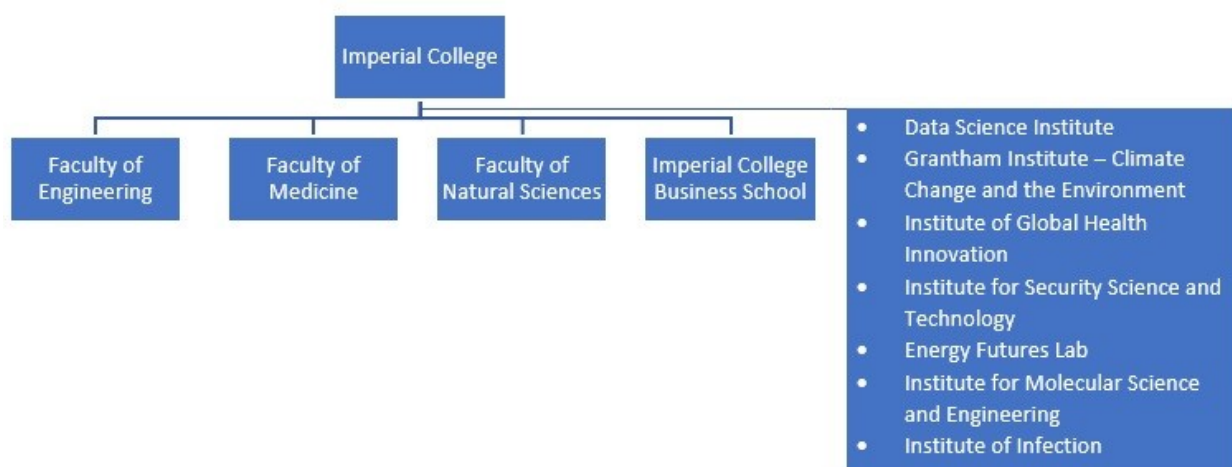
Institution: Imperial College London

1. Context and mission

Imperial College London is a research-intensive university focusing on Science, Technology, Engineering, Medicine and Business. Our four Faculties (Natural Sciences, Engineering, Medicine and Imperial Business School), 1,300 academic staff and 2,400 research staff pursue basic and applied investigator-driven research within and across Physics, Chemistry, Biology, Biochemistry, Mathematics, Engineering, Computer Science, Medicine and Business. Our seven Global Challenge Institutes bring together transdisciplinary communities (involving c.400 academic staff) to tackle significant challenges that we have identified as strategic priorities.

During the REF period the College attracted over £2.6bn in research grant and contract income from external sources. We host over 60 externally funded research centres, including the SybBiCITE Centre for Synthetic Biology, The Brevan Howard Centre for Financial Analysis, and the MRC London Institute for Medical Sciences. We are consistently ranked amongst the world’s top universities – 9th in the QS World University rankings 2020, 11th in the THE World University rankings 2021. Over 140 of our staff are either FRS, FMedSci, FEng or FBAs.

We are members of the UK’s leading collaborative research institutes: the Francis Crick Institute, The Henry Royce Institute, and the Rosalind Franklin Institute. We have a wide range of national and international strategic partnerships – e.g. with the George Institute for Global Health, the Technical University of Munich and the CNRS in Paris. We lead the Imperial College Academic Health Science Centre, a consortium of all the medical research-intensive organisations (including 9 major hospital sites, with >1m patient contacts per year) in west London. We are a member of the Russell Group of research-intensive universities and the League of European Research Universities, a network of 23 leading European research-intensive universities.



Our outlook is global: we are ranked 6th most International University in the World (THE 2020). 60% of our students come from outside the UK, and 55% of our academic and research staff have non-British nationality. Our cultural and intellectual diversity is critical to our success, helping to equip our graduates (including PhDs) for work as leaders in global companies and institutions. We collaborate extensively to further enrich our perspectives: two-thirds of our research involves international collaborators, and we have collaborations with 192 countries. We have established international partnerships with MIT, CNRS (Paris), the Technical University of Munich, Tsinghua University, Nanyang Technology University and the African Institute of Mathematical Sciences.

We are entrepreneurial: we are ranked 10th most innovative university in the World (Reuters Top 100). We undertake research oriented towards real-world impact, whilst recognising that the most significant impacts often arise from fundamental science. Our research is supported by an infrastructure designed to give easily accessible, high quality support to researchers (including students) wishing to commercialise their research, to influence policy, or to work in and with the

community. We value and reward entrepreneurial activity and see it as a key component of our mission.

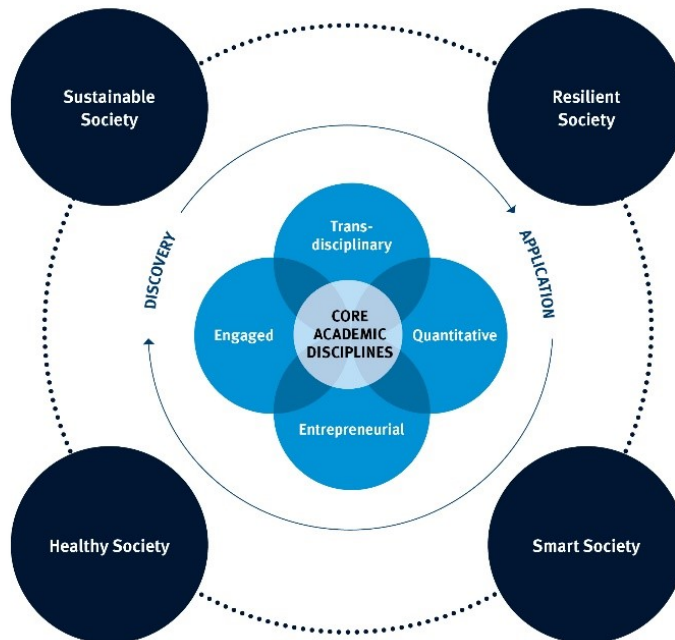
Recognising the strengths on which we build, we also seek to address historic weaknesses, for example in the diversity of our community. The College has made significant progress towards being a more inclusive place to work and study over the REF period (see 'People' below), and we hold an Athena Swan Silver Award at institutional level.

Education and research at Imperial are mutually re-enforcing, and the College holds a Gold award in the TEF. Undergraduates are partners in our research, with 71% of our Science and Engineering students undertaking four-year degrees with a substantial research element. Approximately 600 students per year undertake paid research through our Undergraduate Research Opportunities Programme.

The College is headquartered in South Kensington. The Faculty of Medicine has a significant research presence at the Hammersmith Hospital, St Mary's, and the Royal Brompton. Our campus at Silwood in Berkshire provides a non-urban environment for staff and students engaged primarily in ecological research. In total, we operate 161,000 sqm of academic space. In 2009, the College acquired land formerly occupied by the BBC at White City and in 2013 further adjacent land, providing 23 acres of development capacity for a new research and innovation campus. This once-in-a-generation opportunity to develop new research infrastructure to meet the needs of academia and industry in the 21st century is discussed in Section 4.

2. Strategy

Imperial's research strength is built upon the ideas, discoveries and inventions of our research community, working in small teams within academic departments. We value top-down and bottom-up, challenge-led and curiosity-driven, transdisciplinary and single-discipline research. The President's Excellence Fund for Frontier Research is an investment of up to £750,000 per year of College funds in high-risk and fundamental research.



Our Academic Strategy sets out our distinctive approach (our four 'capabilities') and identifies themes for strategic cross-College investment. The four themes encompass c. 75% of the research undertaken at the College but are not exhaustive. They represent areas where our particular strengths are aligned with opportunities for significant and important impact.

Our capabilities

Entrepreneurial

We are ranked 10th most innovative university in the World (Reuters Top 100 Most Innovative Universities). Since 2013, >2,100 invention disclosures were made, >800 patent applications were filed, and >450 patents were granted. The total number of active patents in the portfolio in any given year was between 330 and 440. In 2018-19, we received £65m in Research income from >400 companies. We have a track record of licencing our technologies and have raised £13.2m in licencing income over the REF period. We support our staff in undertaking consultancy work, and in offering science-led services (e.g. medical testing and aerodynamic measurements), with over £46.6m of revenue from these sources over the REF period.

Our Business School is at the forefront of academic research in entrepreneurship, advancing the understanding of the entrepreneurial phenomena at Imperial and elsewhere, and engaging in the development and application of the latest findings and methodologies.

We have long-term multi-million pound strategic relationships with companies such as Shell, BP, Rolls Royce, ABB, Agilent, Dyson and GSK, and significant collaborations across a broad range of sectors - with Boehringer Ingelheim, Sinopec, Mitsubishi, Samsung, Huawei, Citibank, Lilly, Sainsbury's, BASF and Proctor and Gamble, as well as with >50 SMEs. Our breadth allows us to develop unique, cross-sectoral insights, as well as delivering science and technology-driven interventions.

We are proactive in seeking funding for start-ups and have raised over £2m for a seed investment fund in collaboration with Parkwalk Advisors since March 2020. From 2013-14 to 2018-19 there have been 43 new IP start-ups, with financing of over £900m. In 2018-19 there were 72 active College IP start-ups. Successes include SLAMcore, a specialist in spatial intelligence for autonomous location and mapping, which has recently raised \$5m and tied up with NVIDIA, and GraphicsFuzz and HARK, both recently acquired by Google. Process Systems Enterprise (PSE) was founded in 1997 and by 2019 had 170 employees at the point that it was sold to Siemens. Myricx – a small molecule drug discovery company – launched in July 2019.

In 2018–19, a record 59 student startups were incorporated, 350 jobs were supported by student-based startups, and over £39m investment was received. The three-year survival rate for companies founded by Imperial students is 70% compared with a London average of around 50%.

Our Accelerator Programmes help early career researchers to explore the commercial potential of their work. Since January 2018, Techcelerate has offered 34 postdocs a three-month programme of entrepreneurship training to explore the market pull of their business ideas. Four cohorts have now completed this programme. In June 2018, an Imperial-led consortium launched the MedTech SuperConnector entrepreneurship programme, with £5m funding from the Research England, to boost the commercialisation of new medical technologies. Fifty-five Early Career Researchers have participated, and the first two cohorts have raised over £2.4m in venture capital and further grant funding. Seven patents have been filed and five spin-outs launched. Our partner the Royal College of Music have commercialised their first technology IP through this collaboration.

WE Innovate is a nine-month pre-accelerator programme with one main goal – to increase the number of women in leadership positions, running startups and raising funding. Since 2017, it has supported between 60 and 70 women per year. The programme involves 25 teams of women entrepreneurs who are offered masterclasses, coaching and networking opportunities. Five teams progress to the WE Innovate Final and pitch their idea for a share of the £15,000 Prize Fund and a tailored mentoring programme.

Engaged

We are a trusted source of STEM expertise. Our experts engage extensively with local, national and international media, and provide advice to Governments and legislators both at home and abroad. For example, Robin Grimes, Professor of Materials Physics, is the Nuclear Chief Scientific Advisor at the MOD, and Profs David Miles and Jonathan Haskell have served on the Monetary Policy Committee of the Bank of England. The Imperial Forum provides an opportunity for a large number of experts to engage with Westminster and has organised engagements with c. 130 civil servants over the last three years, on topics ranging from Food and Nutrition, Data Security, AI, and Decarbonisation. Over the course of the last year, Imperial academics have played leading roles during the COVID-19 pandemic through membership of SAGE and NERVTAG.

We embed public engagement in research projects and research culture at Imperial. Our Societal Engagement Seed Fund enables a wider range of staff to become actively involved in engagement activity; involving our communities in the design of our research. Our medical researchers involve patients and the public through initiatives such as People's Café, which has enabled small-group interactions with over 600 members of the public since 2019. An on-line platform, VOICE, enables patients to identify specific opportunities to engage with our medical research community, and has facilitated 117 opportunities for engagement involving 80 researchers and over 650 members of the public. Through our Biomedical Research Centre, we provide grants to academic clinicians for activities that involve patients in their research.

We develop accessible and inspiring programmes and platforms that empower people in topical science issues. The Great Exhibition Road Festival, a collaboration between 20 cultural and/or academic institutions in South Kensington, attracted over 60,000 visitors in 2019. We run five themed 'Imperial Late' events per year, each involving 40 researchers and attracting about 800 people for an evening of deliberative dialogue events, exhibits and creative activities to explore contemporary issues.

We foster an ethos of working in partnership with community and public groups to tackle shared societal challenges. The Invention Rooms at White City are an integrated maker and innovation space for the College and the community that has enabled us to engage more than 20,000 local people since it opened in 2017.

Transdisciplinary

We work across disciplines, sharing ideas and expertise, to understand and change the world. Our academic strategy, our networks, centres and institutes are all oriented towards lowering barriers to collaboration. 28% of our external grant income is held in more than one department.

Our seven Global Challenge Institutes bring together transdisciplinary communities to tackle significant challenges that the College has identified as its highest strategic priorities. Institutes have a small core of academic and support staff but work primarily by gathering together communities of common interests from across the College, enhancing collaboration around the Global Challenge, and providing expertise (e.g. in strategic communications) to facilitate engagement with policy makers and technology users.

Our 24 Research Centres and 31 Networks of Excellence are 'bottom up' initiatives driven by the desire of our academic community to make connections across the College, these can be thematic or challenge driven. Over 2,000 of our academic and research staff participate in these initiatives. Examples include Structural Biology, Cardiac Engineering and Infrastructure Robotics Ecosystems (Centres) and Malaria, Artificial Intelligence and Air Quality (Networks).

Quantitative

Our expertise in quantitative approaches to research complements qualitative inquiry to inform a holistic approach to discovery and application. Researchers from Mathematics and Computer Science lead our exploration of sophisticated statistical approaches and the rapidly expanding opportunities in data science. With researchers in engineering and the physical and life sciences, we are developing and applying tools which can revolutionise research across a wide range of application areas. For example, our Platform for Research in Simulation Methods is applying mathematical algorithms to complex simulation models in applications areas including aerospace and automotive sectors, renewable energy, medicine and surgery, the environment, and manufacturing.

Our Data Science Institute and AI Network have been instrumental in supporting our academic community as data assimilation, machine learning and artificial intelligence have become increasingly central to almost all of our academic disciplines, from Chemistry to Engineering, Management and Medicine.

Research Culture and Governance

Integrity and inclusivity are critical for excellence in research, and Imperial is committed to embedding a positive research culture throughout the College. The College Research Committee, chaired by the Vice-Provost (Research), is responsible for College-level governance, and is supported by Research Committees in each of the four Faculties. We are signatories to the Universities UK Concordat to support research integrity. We actively promote research integrity and transparency and publish an annual report on any formal investigations of research misconduct. We provide training for researchers on the ethics of scientific research, plagiarism awareness and best practice, including open research.

We became a signatory of DORA the San Francisco Declaration on Research Assessment (DORA) in January 2017. We no longer consider journal impact factors in decisions on the hiring and promotion of academic staff, nor in selecting REF outputs. Imperial's Assistant Provost for Equality, Diversity and Inclusion (Professor Stephen Curry) is the Chair of the global DORA Steering Committee.

We are committed to disseminating our research and scholarship as widely as possible, both to widen access to the outcomes and to help drive reproducibility. We support the principle that 'the results of research that have been publicly funded should be freely accessible in the public domain' and encourage all our academic staff and students to make their research open access (OA). Our Library Director Chris Banks has led the UKSCL Rights Retention initiative to secure the rights of academics to publish their work OA. Subject to publishers' deposit policies, authors are required by the College to upload their author accepted manuscripts into Imperial's OA research repository, Spiral. In total, over 40,000 papers by Imperial academics (84%) have been published in this way during the REF Assessment Period.

The College supports our community in managing their research data and making data accessible. This includes guidance on best practice in data management, advice on compliance with funder requirements, choosing a repository, and how to make data discoverable, as well as providing a College-based repository. A Research Data Management Working Group is charged with continuing to develop the College offering.

We are committed to the principles of the UK Reproducibility Network (UKRN): research transparency, responsible evaluation, and rewards and incentives for open research practice, as described above. We have appointed Dr Alexandra Collins (Centre for Environmental Policy) and Professor Paul French (Vice-Dean for Research for the Faculty of Natural Sciences) as institutional leads for reproducibility in science and are applying to join the UKRN. Dr Collins is a member of the UKRN steering group.

For research which does not fall under the scope of the NHS ethics process, the College has three Ethics Committees for research on human subjects and one for research involving the use of animals (in line with Home Office requirements). The three committees for human research deal respectively with health research; science, engineering and technology research; and educational research. The college has made significant efforts to increase awareness of ethical review processes, and the numbers of applications considered by the College committees more than doubled from 2019 to 2020, to a total of >400.

3. People

We aim to build a supportive, inclusive and highly motivated staff community across our disciplines, functions and activities. We recruit, develop and retain colleagues who make world-class contributions to research and innovation: academics, postdocs and fellows, technicians, research support staff and PhD students.

Staff Recruitment and Progression

Imperial requires all staff involved in recruitment to complete mandatory training online, with further intensive face-to-face training for those heavily involved in recruitment. We provide advice and support to candidates on our disability confident scheme, our work with Stonewall, our Athena SWAN Award, and our commitment to flexible working.

Appointments committees for academic posts include a College Consul – Professors of the College elected by senior academic members of their constituency to represent the academic community within College governance. Active recruitment to academic and research posts ensures that the field of candidates is diverse and of the highest possible quality. Measures include the use of search committees, circulating details of the opportunity widely within academic networks, and maintaining a ‘bank’ of potential recruits.

We offer a total reward package that is equitable, fair and appropriately reflects our standing as a world leading university based in London. We use benchmarking data to review our approach to pay including the annual pay award and the criteria for the review of individual salaries. We aim to pay mid to upper quartile rates of pay for our staff against appropriate external comparators. We review the pay of every member of staff annually, to ensure that remuneration accurately reflects the contribution of each individual to the College, and to address any pay gaps which may have arisen. The College makes pay increases worth c.1% of the total pay bill each year through this exercise.

We provide opportunities for progression to all staff, with regular processes for considering promotion for all grades of academic and research staff. All staff who are eligible for promotion are considered by their manager, whether or not they have self-nominated. This is in accordance with best practice to reduce gender bias in promotions.

Special and Sabbatical Leave, Flexible and Remote Working and Staff with caring responsibilities

The College has a comprehensive policy covering special leave (e.g. compassionate and parental leave and public duties). Sabbatical leave is at the discretion of the department and may be offered for up to three terms, for either academic or personal refreshment. In 2016 the College became a member of Working Families which is the UK’s leading work-life balance organisation. The College has taken part in the Working Families Top Employers Benchmark from 2016 up until the present year and has consistently been placed in the top 30 employers for its family friendly initiatives and has won several Working Families awards in recognition of its support to working staff.

We recognise that flexible working can be of benefit to both employees and the College and plays an important role in recruitment and retention of a diverse and talented workforce.

We offer a range of practical help and support to staff with caring responsibilities. These include generous arrangements for special leave, dedicated nursing rooms, the Early Years Education Centre, an on-site nursery for children between six months and five years, negotiated discounts at other local nurseries and holiday camps for the children of staff and students.

Following the 2019 Staff Survey and feedback from the recent Carers Focus Groups held in February 2020, the College recently became a member of Carers UK to help improve our offer to Carers.

Early Career Researchers

The College has held the HR Excellence in Research Award – which incorporates our commitment to the Researcher Development Concordat – since 2012, renewed most recently in March 2020.

Dedicated support for ECRs is provided via the Postdoc and Fellows Development Centre (PFDC), including: bespoke courses; pop ups; funder showcases; one to one support; mock interviews and online resources. The College has invested and committed to the core funding of the PFDC since 2012. To ensure that ECRs have the opportunity to access the services that are available to them, all ECRs benefit from ten days training and development in their contracts. Over the REF period, >1,900 ECRs have attended one-to-one sessions, >750 have attended mock interviews, and >2,400 have attended training courses.

The College has its own prestigious Fellowship scheme, the Imperial College Research Fellowship (ICRF). ICRFs are four-year fellowships which also include up to £45,000 per year of research expenses. The College awards 20 of these each year, and a significant proportion move on to permanent academic contracts either within the College (18%) or elsewhere (41%). Over the REF period, there have been 158 Imperial College Research Fellows, of whom 84 are submitted to this REF.

Technicians

In May 2017, Imperial pledged to support our technicians by becoming a founder signatory of the Technician Commitment. We offer a broad range of professional development and networking opportunities to all our technicians, and proactively support them to achieve professional registration. Our achievement in this area has been recognised by the award of Science Council Employer Champion.

Research Students

Imperial's Graduate School develops and delivers a programme of professional development training for our c. 4,200 postgraduate research students, complementing their academic studies and providing opportunity to develop skills for a range of careers.

We have awarded over 340 prestigious President's PhD Scholarships over the REF period. These are fully funded for up to 3.5 years, open to all applicants irrespective of nationality and awarded on the basis of academic excellence.

Our International Global Fellows Programme has offered over 250 Imperial College doctoral students the unique and exciting opportunity to visit leading research universities around the world including the Technical University of Munich, Nanyang Technological University, Singapore and the Tokyo Institute of Technology.

Our Industry xChange Programme runs three times a year to provide over 100 research students with an opportunity to gain an understanding of the viewpoints of industrialists. Students engage in various industry relevant activities which help them to better interact with people outside of academia and to transform research into real business innovation.

Equality, Diversity and Inclusion

The College was a founder member of the Athena SWAN Charter in 2005. We hold an institutional Silver level award which we are aiming to renew in 2021. During the REF period, we appointed our first Assistant Provost (EDI) to take senior leadership of these issues, supported by professional staff in the Equality, Diversity & Inclusion Centre.

Our strategic priorities for EDI include integrating equality, diversity and inclusion into all management processes; taking positive action to improve the opportunities and experiences of underrepresented groups, especially women, and Black, Asian and Minority Ethnic, LGBTQ+ and disabled staff and students; reducing the incidence of bullying and harassment; gathering and publishing data to monitor progress; and being open to dialogue and challenge on our work on equality, diversity and inclusion

Examples of our achievements include:

- Implementing our Stonewall action plan resulting in an increase in our Stonewall Workplace Equality Index of over 100 places. We are a Stonewall Diversity Champion
- Celebrating Women@Imperial week including 18 events across our campuses such as a 'Wonder Women Late' event for c.1,000 public visitors
- Holding our fourth annual BME Early Career Researcher Conference in 2020
- Creating a new Conference Policy to underpin the provision of safe and inclusive environments. We require event organisers to publish a Code of Conduct for their events including a strong anti-harassment statement
- The College is a member of the Race Equality Charter and will apply for its first award in 2021
- We are a Disability Confident Leader, the highest level of recognition, achieved in 2019

Our staff networks provide places for staff with protected characteristics to come together, and to provide a conduit for their views and concerns to the EDI team. These include Imperial As One (BAME staff network), Able@Imperial (staff disability network) and Imperial 600 (staff LGBT network). Over 1,000 members of staff are members of these networks.

We offer an extensive array of staff development courses which includes programmes that are specifically targeted at women (Springboard), at Black, Asian and Minority Ethnic staff (IMPACT) and at disabled staff (Calibre).

The College has a fellowship scheme (The Elsie Widdowson Fellowship) to protect the research time of academic staff returning from maternity/adoption/surrogacy/shared parental leave. The Fellowship pays 50% of the returning academic's salary for up to 12 months. 87 have been awarded during the REF period.

The College is aware of sensitivities concerning its history, and particularly its association with Empire. We have established a History Group to collect evidence and views from our community on aspects that are particularly troublesome (e.g. prizes endowed by or named after individuals associated with the Slave Trade), and to make recommendations. An early action and sign of further intent has been the removal of the College Motto (previously 'Scientific knowledge, the crowning glory and the safeguard of the empire')

The College REF Equality Committee has scrutinised our return, and has concluded that, although there are some discernible inequalities within our REF submission, these reflect known inequalities within our population that we are addressing through the initiatives described above. Moreover, we have made progress since the last REF: 24% of staff submitted in the REF (i.e. all teaching and research staff and those research-only staff judged to be independent) are female (c.f. 20% in 2014).; 16% of staff submitted with known ethnicity are BAME (c.f. 12% in 2014);

and 2.8% of submitted staff have declared a disability (c.f. 1.7% in 2014). 18% of REF submitted staff are early career researchers, and 16.4% are on fixed-term contracts.

We have specifically examined the outcomes of our research independence and output selection processes:

- 12% of staff submitted are independent research-only staff. This represents 10% of the post-PhD research-only population. Women and men were equally likely to be judged to be independent. Disabled staff were slightly (11.0% vs 10.5%) more likely to be considered independent than those that had declared that they were not disabled, white staff were slightly more likely than average (12%) to be considered independent, whilst the least likely to be considered independent were Chinese (3.8%).
- 8% of women vs 11% of men had five papers selected. 49% of women (39% of men) had only one paper selected. Staff with undeclared race and mixed race were less likely (7% each) than white staff (11%) to have five outputs selected, and more likely (47% and 41%) than white staff (40%) to have one output selected. Disabled staff were less likely (4%) to have five outputs selected than non-disabled staff (11%), though staff whose disability status is unknown were more likely (21%) to have five outputs selected. The REF Equality Committee has concluded that these differences are largely a function of age and seniority, with staff in the less diverse 50-59 age bracket most likely to have five outputs selected.

The median gender pay gap for academic staff in 2019 was 8.7% and the mean gap was 16.9%.

The age profile of REF eligible new starters and promoted staff during the REF 2021 period is shown in the table:

	New starters	Promotions
Under 30	26.8%	36.6%
30-39	57.7%	41.1%
40-49	9.1%	16.6%
50-54	1.6%	3.2%
55-59	1.2%	1.6%
60-69	3.0%	0.5%
70 plus	0.5%	0.4%
Total	100.0%	100.0%

The profile of submitted professors and senior staff (HESA contract levels A-F) is as follows: 18% are female; 10% are BAME; and 3% have a declared disability. The age profile of this group is:

30-39	0.96%
40-49	20.52%
50-59	39.53%
60-69	30.17%
70+	8.82%
Grand Total	100.00%

4. Income, infrastructure and facilities

The College's research requires extensive financial and physical resources in order to sustain excellence. The College has the fourth largest research income portfolio of any university in the UK (£368m in 2018-19: 31% UKRI, 18% Industry, 22% Charities and 29% other). During the REF period the College attracted over £2.6bn in research grant and contract income from external sources.

We support staff to generate the research income that they need in order to pursue their research: every department has mechanisms for internal review of research grants, advising on fundamental quality, and on best practice in obtaining funding. Early Career Researchers, and those who have not held a grant for some time, are mentored by a colleague with a track record of attracting funding. Where an application requires an interview, mock interviews are conducted. Departmental research committees play an important role in ensuring that the support offered locally is relevant and appropriate, and our networks, centres and institutes play a role in supporting transdisciplinary applications.

The College operates internal schemes to provide seedcorn funding – for example in relation to GCRF applications, where expertise is also available centrally on working within the framework of Overseas Development Aid, in order to support researchers who have not previously been active in this area.

Academic Masterclasses, run by the Learning and Development Centre and the Enterprise Division, help all academic staff, but particularly Early Career Researchers, to develop the skills that they need to engage with Industry, and introduce them to the range of opportunities for working with Industry and the challenges that each brings. Similar Masterclasses are available to help academics manage research grants, and, for those pursuing broader societal engagement, how to communicate their science using social media.

The College has 87,250 sqm of research laboratory space, equating to 71 sqm per member of teaching and research staff (excluding the Business School). Research facilities are mainly managed at departmental level. Where operationally desirable, we have established College-wide facilities in areas such as microscopy, flow cytometry and clinical trials.

The Imperial College Advanced Hackspace provides facilities for rapid prototyping, electronic and digital manufacturing workshops, metal and wood workshops, a Bio Lab and collaboration, co-working and meeting space. It is a place for staff and students to come together and innovate as a community, supported by Hackspace Fellows who are experienced innovators with expertise in workshop and innovation disciplines. The Hackspace is also used to host events such as Hackathons which can bring together a large group of innovators to make rapid progress on a particular problem. Over 1,400 of Imperial's community have used the Hackspace in the last three years.

The College continues to invest >£4m annually in Research Computing Services, to support the community's diverse computing needs. The service offers High Performance Computing, data management, secure processing of sensitive data, data management, software engineering support, and training in a range of research computing techniques.

Central Biomedical Services provides and operates animal research facilities for the biomedical research community working to 'leading practice' guidelines, recognising that good laboratory animal welfare is an essential component of good laboratory animal technology and science. The multi-campus CBS facilities can accommodate a variety of species at various levels of discipline, including a full barrier unit, containment level 3 suites and quarantine facilities. Each year, approximately 100,000 animals are used in research at Imperial. The College won two national awards in 2019 for excellence from the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs), as well as £2.6m in research funding from NC3Rs over the last decade.

At White City we are developing a research and innovation ecosystem with an emphasis on co-location of academic and commercial research. We operate at scale, with 240,000 sqm of co-location space currently accommodating c.70 commercial tenant-collaborators. We offer space in shared labs and offices in our Incubator, sole-occupation offices and labs in our Innovation and Translation Hub. Our ScaleSpace is an innovative offering to growing businesses, with education, research and business expertise offered by our own Business School and by our partners Blenheim Chalcot, a venture builder. To date, over 100 new jobs have been created and over £85m has been raised by incubator companies. Our offering at White City includes an Experts in Residence Programme for giving incubator tenants access to expert advice and mentoring and a White City Innovators Programme to provide entrepreneurs and startups with workspace and workshops for development. Our activity on campus has been a key driver in bringing the HQs of Novartis and L'Oreal to White City.

Proximity to our campus at the Hammersmith Hospital gives a particular opportunity for translational medical research, and we have already opened buildings for Molecular Sciences and Biomedical Engineering on the campus: an investment of £300m giving 33,000 sqm of new space. These are transdisciplinary, multi-department research hubs. The Molecular Sciences Research Hub, as well as housing the research laboratories of the Department of Chemistry, houses researchers working in synergistic areas from the National Heart and Lung Institute, the Department of Materials, and the Department of Chemical Engineering. The building houses state-of-the-art facilities available to the whole College community, including the Agilent Measurement Suite, an advanced analysis facility which is at once an innovative industry-academic collaboration, a College-wide facility, and a demonstrator site for Agilent. The Sir Michael Uren Hub hosts laboratories from the Departments of Bioengineering, Chemical Engineering, Materials, and the Faculty of Medicine, as well as a purpose-built clinical facility. Relocation of our School of Public Health to the campus will complete this unique translational cluster comprising basic science, engineering, medicine and population health disciplines. Plans for the development of the south side of the White City site include further academic and commercial space, giving scope for significant further growth in our priority areas supporting our ambition to realise a sustainable, smart, healthy and resilient society.