

# UKRPIF Building UK Research

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# | Foreword

**Research England** is a public body that shapes healthy, dynamic research and knowledge exchange in universities. It distributes over £2.2bn every year to universities, primarily in England but also in the rest of the UK; it works to understand their strategies, capabilities and capacity; and it supports and challenges universities to create new knowledge, strengthen the economy, and enrich society. Research England is part of UK Research and Innovation alongside the seven research councils and Innovate UK.

 [www.ukri.org/re](http://www.ukri.org/re)  
 @ResEngland

## **UK Research Partnership Investment Fund**

In partnership with the devolved funding bodies, Research England administers the UK Research Partnership Investment Fund (UKRPIF).

UKRPIF is a competitive capital funding scheme designed to support the development of, and promote investment in, large-scale higher education research facilities. It is dedicated to supporting major infrastructure projects from universities with a significant track record of research excellence, and requires double matched co-investment from businesses, charities or philanthropic endowments.

The UK has a proud history of pioneering scientific discovery, revolutionary technological breakthroughs and creativity. Our country has long been a place where the greatest thinkers, inventors and creators can interact, share ideas, and work together to achieve truly great things.

UKRI's mission is to build upon that legacy by working in partnership with universities, research organisations, businesses, charities and government to create the best possible environment for research and innovation to flourish. Within UKRI, Research England's role is to maximise the contribution that each of our university institutions have on that environment.

A very high proportion of UK research is carried out in higher education and our universities and their researchers are among the best in the world. Through world-leading research, they are a major contributor to the economy and society at local, regional, national and global levels.

But they do not do this alone. Due to their scale, diversity and breadth of research activities, universities have innumerable relationships with businesses, charities and other organisations focused on research and innovation. It is these partnerships and collaborations that are key to meeting the objectives of the Industrial Strategy – to deliver growth in key research areas and industrial sectors, drive forward innovation and improve productivity, and raise total R&D investment to 2.4% of GDP by 2027 and raise total R&D investment to the government's target of 2.4% of GDP by 2027.

Through capital investment, the UK Research Partnership Investment Fund (UKRPIF) supports those partnerships and helps meet those objectives.

Established in 2012, the scheme will have provided over £900m of capital funding to 54 state-of-the-art research centres and facilities in universities across the UK by the end of 2021. A unique and fundamental feature of the scheme is the double-match funding that is required from non-public investors - for every £1 awarded through UKRPIF, universities must attract £2 from other sources. To date, UKRPIF projects have secured commitments of over £2 billion of co-investment from industry partners, charitable organisations and philanthropic donors. Half of projects are now operational, creating new space for academics to work alongside clinicians, industrial partners and local SMEs.

I am excited about what we are already achieving through UKRPIF and eager to see how much more we can do together, in partnership, to benefit the UK's economy, society and the environment. This booklet provides a summary of all the projects supported through UKRPIF so far, but I encourage you to find out more about each and every one.

**David Sweeney,**  
Executive Chair, Research England



# Where are the 54?



- 1 AMRC Factory 2050
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- 31 Institute for Advanced Automotive Propulsion Systems
- 32 Institute of Immunity and Transplantation
- 33 Institute of Therapeutic Immunology and Infectious Disease
- 34 International Inequalities Institute
- 35 London Institute for Healthcare Engineering
- 36 The Manufacturing, Engineering, Technology and Earth Observation Research Centre
- 37 Materials Innovation Factory
- 38 Maxwell Centre
- 39 Michael Uren Biomedical Engineering Research Hub
- 40 Molecular Sciences Research Hub and the Translation and Innovation Hub
- 41 Multidisciplinary Characterisation Facility
- 42 National Automotive Innovation Centre
- 43 National Structural Integrity Research Centre
- 44 The Oglesby Cancer Research Building
- 45 Project Oriel
- 46 Research and Innovation Centre for Power Electronics and Machines
- 47 Research and Innovation Hub in Cancer
- 48 Target Discovery Institute
- 49 Translational Neuroscience
- 50 UK Rail Research Innovation Network
- 51 The Wellcome-Wolfson Institute for Experimental Medicine
- 52 York Global Initiative for Safe Autonomy
- 53 Zayed Centre for Research into Rare Disease in Children
- 54 The 5G Innovation Centre



## 1. Advanced Manufacturing Research Centre Factory 2050 University of Sheffield

Factory 2050 is the UK's first fully reconfigurable SMART assembly facility, designed to accelerate innovative manufacturing research into industry. The 7,023m<sup>2</sup> facility is the centrepiece of the University of Sheffield's Advanced Manufacturing Research Centre (AMRC), and is home to the Integrated Manufacturing Group who specialise in the following research themes:

- Robotics, automation and autonomous systems.
- Advanced visualisation.
- In-process inspection and measurement.
- SMART connected factory technology.
- Artificial Intelligence and Analytics.

The UK Research Partnership Investment Fund award was double

match-funded through the AMRC membership group, which includes leading companies working across manufacturing and engineering, including BAE Systems, Rolls Royce and Airbus.

The construction of Factory 2050 has catalysed inward investment within the Advanced Manufacturing Innovation District through strengthened partnerships with new production facilities, including the McLaren Composites Technology Centre and the Boeing Sheffield Factory.

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## 2. Advanced Metal Processing Centre Brunel University London

Located within Brunel's Advanced Light Metals Research Park, the development of the Advanced Metal Processing Centre (AMPC) enabled the University to create an industry-scale facility to complement its capabilities within its Advanced Metal Casting Centre.

Research within the AMPC is carried out by the Brunel Centre for Advanced Solidification Technology (BCAST) which hosts the EPSRC-funded Future Liquid Metal Engineering (LiME) Hub and includes developing ways to make closed loop recyclable aluminium alloys for high integrity and high performance castings for use in, for example, automotive manufacturing. The UK Research Partnership Investment Fund (UKRPIF) award supported the Centre's construction and funded a range of large-scale metal casting and processing machinery within the facility. Private co-investment was provided by, among others, Brunel's long term strategic partners Constellium and Jaguar Land Rover.



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## 3. Advanced Propulsion Research Laboratory University of Warwick

The industry faces unprecedented challenges as the world moves to a low-carbon technology model. Escalating energy costs and legislation imposing strict emissions limits reinforce these challenges. The APRL is the UK's first complete and dedicated facility for the development of future propulsion technology. It will lead research to address these arising needs, transforming the research and innovation landscape, and positioning the UK as a leading innovator in propulsion systems.

Research at the APRL will address key challenges such as energy storage and management, battery systems, power electronics, systems control and integration, and lightweight materials and fuels. It will also look at ways to reduce the cost and improve the performance of electrified powertrains. This work will be carried out with a number of industry partners such as Jaguar Land Rover, ADL, Ariel, Delta Motorsport, Potenza, Trackwise, HORIBA MIRA, and the University of Oxford. This collaborative approach will ensure that new knowledge, ideas and approaches are shared across the transport sector.

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## 4. Advanced Therapies Centre King's College London

King's College London will establish an Advanced Therapies Centre, bringing together expertise, manufacturing capability and experimental medicine research facilities for cell and gene therapy.

These therapies offer enormous promise for severe, intractable diseases, but their development is limited by access to clinical-grade manufacturing infrastructure and early-phase trials capabilities.

The Centre will be open to academic and industry partners across London and the UK, and support the planned Cell and Gene Therapy Catapult large-scale manufacturing facility.

The Centre will create a unique addition to the UK's biomedical research and development capability. It will trigger a substantial investment in the UK by pharmaceutical companies, creating high value jobs, scientific advances, and ground-breaking improvements in healthcare.

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## 5. Aerospace Integration Research Centre Cranfield University

At the AIRC, the aim is to conduct academically ambitious and industrially relevant research that will contribute directly to the growth of the aerospace industry and the wider UK economy. Industry and academia innovate together under one roof performing research to meet ambitious performance, emission control and efficiency targets for future aircraft.

Research covers all aspects of integration in aerospace, such as integrating systems with platform, and platforms into airspace, as well as enablers such as autonomy, artificial intelligence and intelligent automation. Laboratories connect the University's 'land-side' ground-based research with its 'air-side' flight research, providing the capability to take aerospace concepts from theory to flight demonstration and allowing validation of research to technology readiness levels normally addressed by industry. Partners: Airbus and Rolls-Royce.

👤 **Dr Tim Mackley**

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## 6. Alliance Manchester Business School The University of Manchester

Alliance Manchester Business School was awarded £9.7m from the UKRPIF towards the redevelopment of a world-class business and management research centre of excellence for the North.

The new School was officially opened by Lord David Alliance in June 2019 and is already playing a leading role in harnessing pioneering business and management research to further strengthen the North West economy and boost productivity. The building promotes greater interdisciplinary working among colleagues and with business partners, helping to extend links with leading international partners, while facilitating enhanced research-led teaching for business leaders of the future.

This landmark refurbishment of the UK's largest business school will also deliver additional state-of-the-art facilities to the University of Manchester campus, including a Data Visualisation Observatory and a Behavioural Economics and Strategic Management Laboratory.

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## 7. Big Data Institute Li Ka Shing Centre for Health Information and Discovery University of Oxford

The Big Data Institute is located in the Li Ka Shing Centre for Health Information and Discovery at the University of Oxford. It is an interdisciplinary research centre that focuses on the analysis of large, complex data sets for research into the causes, consequences, prevention and treatment of disease. Research is conducted in areas such as genomics, population health, infectious disease surveillance and the development of new analytic methods.

The Big Data Institute is supported by funding from the Medical Research Council, the UK Research Partnership Investment Fund, the National Institute for Health Research Oxford Biomedical Research Centre, and philanthropic donations from the Li Ka Shing and Robertson Foundations.

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## 8. Bristol Digital Futures Institute University of Bristol

The Bristol Digital Futures Institute will transform the way we understand and create digital technologies for economic and social prosperity in future societies. For the first time, the University of Bristol's world leading researchers, from across disciplines, will work with business, local government and community partners to research exactly how technologies might be developed, used and experienced in the future. In new facilities at Temple Quarter Enterprise Campus, teams will combine social and technical research to study a wide range of future scenarios. Including emerging challenges in future cities; protecting ourselves against cyber-attacks on critical infrastructure; and how digital technologies are experienced by different social groups. This knowledge will be shared to create a better digital world, and one that benefits the whole of society.

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## 9. Building a New Biology University of Edinburgh




As part of an estates plan to create a world-leading research cluster for biological sciences, the University of Edinburgh is designing an iconic building to bring together researchers and technologies within an integrated research complex.



'Building a New Biology' is an ambitious plan to grow the research capacity, quality and outputs of the School of Biological Sciences. It will support intellectual discovery and generate health, social and economic benefits.

The first step in this plan is the re-engineering of the 1967 Darwin Building to provide 6,000m<sup>2</sup> of new research laboratories and workspace for 350 researchers and a 3,000m<sup>2</sup> Technology Hub to house state-of-the-art facilities. The new Darwin Building will be the gateway to biology in Edinburgh, a focal point for outreach activities, and a magnet for attracting partners to enable our translational work.

Breakthroughs in science often occur at the interface between disciplines: the laboratories will be entirely flexible to allow easy re-purposing. Social learning spaces will engage the next generation of biologists, preparing them for 21<sup>st</sup> century careers.

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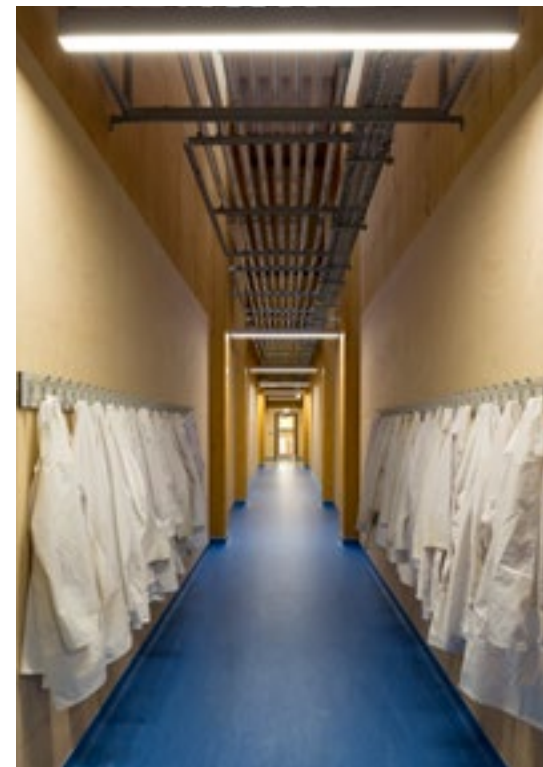
## 10. Cambridge Centre for Crop Science University of Cambridge

The Cambridge Centre for Crop Science (3CS) will use modern plant science to increase the range of productive crops and sustainable cropping systems for use in the UK and in regions of the world where food security is threatened.

It combines the excellence of the University of Cambridge and the National Institute for Agricultural Botany (NIAB) in multidisciplinary research with an agri-food industry user base. The partnership connects the unrivalled diversity of the university with the unique NIAB pipeline thus connecting research to the end-users of innovation in farming and agri-tech, the food industry, and applied research and extension services.

UKRPIF funding will allow 3CS to be housed in a state-of-the-art research laboratory, supplemented by glass house and field station facilities and access to growth and trials land across the United Kingdom. 3CS will be led by a newly-appointed Professor of Crop Science, and will involve researchers from the University of Cambridge, NIAB, other UK and international research institutes, and industrial partners. Collaboration will be a central theme of 3CS: interdisciplinary; national and international; private and public sector.

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## 11. Centre for Cancer Drug Discovery Institute of Cancer Research

The Institute of Cancer Research (ICR) is passionately committed to improving the lives of cancer patients through excellent research. The ICR is the world's most successful academic organisation at discovering new cancer medicines – identifying 20 drug candidates since 2005 alone and is consistently ranked by international league tables as one of the world's most successful higher education institutions for industry collaboration.

Its new Centre for Centre Drug Discovery will enable the world's leading academics in cancer drug discovery to further transform the lives of patients across the world. Housing 280 scientists across four floors of multidisciplinary research space, the Centre will also form a centrepiece of The London Cancer Hub, a globally significant life-science innovation cluster now being developed by the ICR and the London Borough of Sutton.

The building will house research in cancer evolution and drug resistance, and feed advances in knowledge into the ICR's drug discovery programmes. It will facilitate collaboration, stimulate innovation, and drive partnership with industry and the translation of discoveries into the clinic.

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## 12. Centre for Integrative Semiconductor Materials Swansea University

Centre for Integrative Semiconductor Materials (CISM) will be a world-first research and technology development facility dedicated to integrating historically disparate semiconductor platforms and their manufacturing philosophies.

CISM will be developed with industrial partners across the semiconductor supply chain, embedded within a modern, translational university environment delivering research excellence, real technology outcomes, skills, jobs and economic growth. CISM will contain manufacturing-grade clean rooms for TRL-spanning activities, state-of-the-art processing tools for R&D, product development and training, and flexible incubator space to nurture start-ups.

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### 13. Centre for Resilience in Environment, Water and Waste University of Exeter

The Centre for Resilience in Environment, Water and Waste (CREWW) will undertake research into some of the most pressing environmental challenges that impact upon the provision of safe and resilient water and waste services across the UK and overseas. These include ensuring sufficient water to cope with a growing population and climate change, and understanding how catchments respond to flooding and drought, to improve future resilience.

Part-funded by South West Water, CREWW will incorporate specialist laboratory facilities and space to facilitate collaboration between academics and water industry colleagues. Research will be transdisciplinary, drawing

on expertise from across academic disciplines to deliver engineering, nature, economic and behaviour-based solutions that deliver multiple benefits to the environment, society and the economy.

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### 14. Centre for Tissue Repair University of Edinburgh

The Centre for Tissue Repair will discover and deliver new therapies to repair tissue damage caused by disease and injury, building on the University of Edinburgh's world-leading expertise in regenerative medicine to progress vital advances in biological and physical sciences.

It will also develop advanced imaging and sensor technologies that will enable scientists to view and measure tissue regeneration in real-time, giving vital new understanding and early read-outs of the success of these exciting new treatments.

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### 15. Centre of Excellence for Sustainable Chemistry / The GlaxoSmithKline Carbon Neutral Laboratory for Sustainable Chemistry University of Nottingham

The Centre of Excellence for Sustainable Chemistry is developing new chemistries that are both energy and resource efficient; helping meet societal needs for high value products with as small an environmental cost as possible and training the next generation of sustainability aware scientists.

The Centre is housed within the GlaxoSmithKline Carbon Neutral Laboratory (CNL), which is designed to be carbon neutral over its lifetime and act as an exemplar for sustainable laboratory-based research facilities of the future.

UKRPIF funding contributed towards the cost of the CNL facility alongside contributions from industry collaborators, including a cornerstone investment of over £12m from GlaxoSmithKline.

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### 16. Chemistry of Health University of Cambridge

The Chemistry of Health building is a state-of-the-art facility designed to support research into neurodegenerative disorders such as Parkinson's and Alzheimer's diseases.

The 2,600m<sup>2</sup> building includes:

- Business incubation space, including laboratory and desk space, for industrial partners and start-ups to work alongside academic researchers.
- The Centre for Protein Misfolding Disease, dedicated to the study of misfolding proteins in human cells, which are implicated in a range of disorders.

- The Molecular Production and Characterisation Centre, which will provide support and access to state-of-the-art instrumentation for in-house, UK-wide academic and industrial users in chemistry.

The UK Research Partnership Investment Fund (UKRPIF) award supported construction of the centre, which secured co-investment from leading pharma companies including Elan Pharmaceuticals, AstraZeneca and Pfizer, as well as philanthropic donations.

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### 17. Continuous Manufacturing and Advanced Crystallisation University of Strathclyde

UKRPIF enabled the University of Strathclyde to establish and develop the CMAC facilities within the Technology and Innovation Centre, funding the procurement and installation of a comprehensive suite of continuous processing, process analysis, and materials characterisation equipment.

The facilities support pharmaceutical manufacturing research conducted as part of the EPSRC funded CMAC Future Manufacturing Research Hub. It is utilised by more than 130 staff and researchers, including academics, and over 45 PhD students.

CMAC is a multi-institution research hub, alongside the University of Strathclyde, other partners include the Universities of Bath, Cambridge, Leeds and Sheffield, Imperial College London and Loughborough University.

The UKRPIF award leveraged co-investment from a number of large multinational pharmaceutical companies who are strategic industry partners in CMAC including; AstraZeneca, GSK, Novartis, Bayer, Lilly, Roche, Takeda and Pfize, alongside SME's.

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### 18. Digital Aviation Research and Technology Centre Cranfield University

The Digital Aviation Research and Technology Centre (DARTeC) will be built at Cranfield University and will spearhead the UK's research into digital aviation technology.

The Centre will address research challenges facing the aviation industry such as:

- The integration of drones into civilian airspace;
- Increasing the efficiency of airports through technological advances;
- Creating safe, secure, shared airspace through secure data communication infrastructures;
- Increasing the reliability and availability of aircraft through self-sensing, self-aware technologies.

Game-changing technologies such as a digital air traffic control tower and next-generation radar technologies on the University's licensed airport will provide an opportunity to create new integrated digital aviation systems that can inform future regulation promising increased efficiency, flexibility and capacity. Funding for DARTeC will be provided from a consortium of leading aerospace and aviation companies including; Thales, SAAB, Aveillant, Boxarr, and the Boeing IVHM Consortium – as well as the UKRPIF and Cranfield University.

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## 19. Discovery Centre for Translational and Interdisciplinary Research Building University of Dundee

The Discovery Centre building is home to the University of Dundee's Wellcome Centre for Anti-Infectives Research and its Drug Discovery Unit, a discovery group working across diseases, translating biology research into novel drug targets and candidate drugs. It also houses one of the world's largest Quantitative Proteomics facilities and the Division of Computational Biology.

The UK Research Partnership Investment Fund (UKRPIF) award, delivered in partnership with the Scottish Funding Council, funded purpose-built laboratories and state-of-the-art equipment, with strong computational, analytical high-throughput biology and chemistry capabilities, within an open-plan four-storey building.

The centre received co-investment support from charitable sources, including over £50m of co-investment and R&D funding from Wellcome, and additional co-investment from the Bill and Melinda Gates Foundation, among other funders.

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## 20. Energy Safety Research Institute Swansea University

The ESRI is a dedicated facility for energy research within Swansea University's College of Engineering, located at the institute's Bay Campus.

Research within the 3,800m<sup>2</sup> centre includes the conversion of excess and wasted energy; reducing the environmental impact of hydrocarbon energy; Carbon Dioxide; and next generation energy distribution.

In addition to the ESRI's key partner and co-investor, BP, the centre has gained a number of industry partners to further develop energy research, including Malaysian utilities company YTL and Oman Oil Company S.A.O.C.

Swansea University is expanding its ESRI facility, with the creation of the ESRI Innovation Hub which, with multiple academic and industry partners, will focus on building high technology readiness level (TRL) demonstrators. The UK Research Partnership Investment Fund (UKRPIF) award was delivered in partnership with the Higher Education Funding Council for Wales.

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## 21. Experimentation facilities in engineering science University of Southampton

The UK Research Partnership Investment Fund (UKRPIF) supported the University of Southampton to deliver three capital projects, as part of the institution's Boldrewood Innovation Campus:

- Construction of a large experimentation building focussed on fluid mechanics (both hydro and aero-dynamics).
- Refurbishment of the institute's RJ Mitchell Wind Tunnel, to support industrially applied research.
- Development of Iridis 4, the next generation of high performance computational and data handling facility.

Through world-leading research and teaching, work undertaken within the Boldrewood Campus targets UK competitiveness in sectors that include: maritime and marine, aerospace, rail, offshore, environmental and structural engineering.

As well as the UKRPIF award, co-investment was provided by the University of Southampton's long term strategic partner Lloyd's Register.

💻 [www.southampton.ac.uk](http://www.southampton.ac.uk)

## 22. The Future Metallurgy Centre Brunel University London

Metallic materials are the backbone of manufacturing and the fuel for economic growth. However, there is a compelling need to reinvigorate the UK metals industry, to rebuild the UK's international leadership in metallurgical science, and to train more skilled metallurgists. To address these challenges, Brunel University London has been setting up the Advanced Light Metals Research Park (ALMRP) on its campus. The £16m UKRPIF funding will be used to purchase the state-of-the-art analytical instruments for characterisation of advanced metallic materials (£9.5m) and to create the FMC building (£6.5m), which will complete the cycle of major planned capital developments for the ALMRP. This project will deliver the infrastructure to support fundamental research in light metals, enhance Brunel University's research capacity, leverage £40m co-investment from the private sector and deliver significant benefits to the UK economy.

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## 23. A Globally Leading Cancer Research Centre The University of Manchester

This world-leading new facility will enable research growth and, most importantly, facilitate a ground breaking approach to how we work together by embedding the research facility within a cancer hospital. Crucially, it will drive a new model of integration of basic discovery, translational and clinical research, drawing on our recognised strengths in biomarker development, early phase clinical trials with novel agents, and real world clinical informatics – with a strong commercialisation drive towards delivering new clinical pathways to benefit patients worldwide.

This is enabled and driven by the wider Greater Manchester (GM) health agenda. Health inequalities and the high incidence of cancer in the GM population create unique opportunities for highly translational research. Importantly, GM's unique devolved health and social care system provides a framework for us to address population health challenges and realise economic benefits using UoM's world-leading expertise in health informatics and new commercial partnerships to activate the transformational use of 'real world, real time' patient data.

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## 24. Graphene Engineering Innovation Centre The University of Manchester

The GEIC is a purpose-built facility focused on the commercialisation of graphene, encompassing pilot production and characterisation facilities, together with application development in structures and composites, energy, membranes, formulations and coatings, and printed electronics.

The centre is the latest development in the University of Manchester's facilities, which together with the National Graphene Institute (NGI) supports the research and commercialisation of graphene, a material which was discovered at the University by physicists Andre Geim and Kostya Novoselov in 2004, earning the pair the 2010 Nobel Prize in physics.

The £60m centre, which opened in December 2018, received £15m from the UK Research Partnership Investment Fund (UKRPIF) and £30m co-investment from global renewables company Masdar. In addition to this, Innovate UK, the Greater Manchester Combined Authority and ERDF contributed £15m funding to the centre.

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🐦 [@UoMGraphene](https://twitter.com/UoMGraphene) 📌 [UoMGraphene](https://www.facebook.com/UoMGraphene)







## 25. Heart and Lung Research Institute

University of Cambridge

The Cambridge Heart and Lung Research Institute (HLRI) is a timely and unique translational research enterprise, combining the world-renowned research expertise of the University of Cambridge with the clinical excellence of Royal Papworth Hospital in cardiothoracic medicine and surgery. Cardiorespiratory diseases comprise the largest disease burden in the developed world. In response, the HLRI will rapidly expand and accelerate commercially relevant and high impact basic and clinical research into treatments by enabling new collaborations with big pharma, leading medical device companies and a vibrant local biotech cluster. Within the first five years, the Institute aims to demonstrate proof-of-concept for at least ten new drugs or diagnostic approaches in cardiorespiratory disease, for accelerated NHS adoption.

👤 **Prof Nick Morrell**

💻 [www.cardiovascular.cam.ac.uk/directory/nmorrell](http://www.cardiovascular.cam.ac.uk/directory/nmorrell)

✉️ **Prof Nick Morrell**

🐦 **@Cambridgecardio**

## 26. High Temperature Research Centre University of Birmingham

The HTRC is a unique casting, design, simulation and manufacturing facility.

Located at Antsy Park, the centre supports underpinning casting-materials research and radical process improvements, including research into tools that will enhance product quality, performance and production efficiency.

The UKRPIF award funded construction of the centre, with £40m double matched co-investment provided by the institute's long-term strategic-partner, Rolls Royce.

👤 **Prof Nicholas Green**

💻 [www.birmingham.ac.uk/research/activity/htrc/index.aspx](http://www.birmingham.ac.uk/research/activity/htrc/index.aspx)

✉️ **n.r.green@bham.ac.uk**

🐦 **@unibirmingham**

## 27. Hub for Neuropsychiatry Imaging Research and Therapeutics King's College London

The Hub brings together 250 clinicians and scientists from disciplines including neuroimaging, neurology, psychiatry, genetics, molecular, cellular biology and drug discovery, in efforts to fast-track new treatments to patients affected by disorders such as Alzheimer's disease, Parkinson's disease, motor neurone disease, depression, schizophrenia, epilepsy and stroke.

The UK Research Partnership Investment Fund (UKRPIF) award enabled the institute to procure and install a range of imaging equipment to support ground-breaking molecular, cellular, animal and human research to advance knowledge of disease mechanisms, reveal new avenues for therapy and test innovative therapeutics.

Since establishment, the Hub now hosts a UK Dementia Research Institute Centre, alongside other research.

👤 **Prof Chris Shaw**

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🐦 **@KingsCollegeLon**



## 28. Imaging Centre of Excellence & Clinical Research Facilities for Stratified Medicine University of Glasgow

With investment from UKRPIF, University of Glasgow has driven the development of over £80m of academic infrastructure at the Queen Elizabeth University Hospital. The developments provide state of the art facilities for academics, NHS and industry to drive implementation of precision medicine through a 'triple helix' model of partnership, translating research to provide patient benefits, NHS savings and economic development. The Imaging Centre of Excellence (ICE) incorporates a CE-marked 7T MRI scanner, an ultra-high resolution scanner, the first of its kind fully integrated within a UK clinical site. ICE also includes 3T MRI and multi-slice CT scanners, and is located adjacent to adult and paediatric Clinical Research Facilities, transforming capacity to deliver leadership internationally in imaging and precision medicine, attract international talent and enable ground breaking medical research in chronic diseases and multimorbidity. An award-winning Clinical Innovation Zone provides space for industry and other organisations to co-locate with academic researchers and NHS staff.

👤 **Dr Carol Clugston**

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## 29. Institute for Compound Semiconductors Cardiff University

Funding from UKRPIF will underpin the Institute for Compound Semiconductors – the first of its kind in the UK. At the heart of an emerging South Wales compound semiconductor cluster, the ICS has been established to provide a cleanroom facility where CS-interested companies and academics can work together to demonstrate the findings of their research and scale it up ready for exploitation by industry.

First established in 2015, the ICS will soon move to a new 1250m<sup>2</sup> cleanroom, part-funded by the UKRPIF. Six times larger than its

existing facility, the new cleanroom and equipment will enable the ICS to process wafers up to 8 in diameter.

👤 **Mr Steve Sutton**

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🐦 **@ICSCU**

## 30. Institute for High Speed Rail and System Integration University of Leeds

The University of Leeds' new Institute for High Speed Rail and System Integration (IHSRSI) will provide the UK with transformational, globally unique, full-scale high-speed rail research capability. We will create the development of World leading 400 km/h infrastructure and vehicle test facilities, and now through the UKRPIF award can link these with unique system integration test facilities. The Research England UKRPIF award of £11m, supported by £27.3m from industry and £26m from the University and the West Yorkshire Combined Authority, will fund the System Integration Innovation Centre. The IHSRSI will enable the full range of high-speed rail systems to be tested, performing hitherto unattainable research. This unique approach will position the University, the Leeds City Region and the UK as a global leader for research excellence in high-speed rail.

👤 **Mr David Lewis**

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🐦 **@UniversityLeeds**





## 31. Institute for Advanced Automotive Propulsion Systems

### University of Bath

The University of Bath Institute for Advanced Automotive Propulsion Systems (IAAPS) will be a global centre of excellence, delivering transformational research and innovation into advanced propulsion systems. It will lead the development of future generations of ultra-low and zero emission vehicles and is scheduled to open in early 2021.

Located at the Bristol and Bath Science Park, IAAPS will attract sector related businesses to the region and generate significant economic growth. IAAPS will stimulate over £67m in additional automotive research investment by 2025, creating an additional turnover of £800m for the UK automotive sector and supporting nearly 1,900 new highly productive jobs.

Specialist facilities will make IAAPS a hub for training and skills development, as well as enlarging a competitive South West automotive cluster by supporting small and medium-sized businesses, and regional start-ups. The development of IAAPS has been led by the University of Bath, working in partnership with global companies and local businesses, the Automotive Council and the Advanced Propulsion Centre.

👤 **Mrs Sarah Sempala-Ntege**  
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## 32. Institute of Immunity and Transplantation

### University College London

The IIT will be a world-class centre of excellence dedicated to the study of the human immune system. It will bring together scientists, clinicians, nurses and patients to discover how defects of the immune system lead to disease and to develop new forms of immunotherapy.

It will combine the clinical excellence of the Royal Free London's hospitals and the research excellence of scientists at UCL bringing together teams of more than 200 experts and more than 10,000 patients.

The IIT has established a world leading Bone Marrow Transplant program for patients with inherited immunodeficiency. It has created Quell, a £35m spinout company with investment from Syncona.

👤 **Dr Andrea Hodgetts**  
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🌐 [www.ucl.ac.uk/immunity-transplantation/about/pears-building](http://www.ucl.ac.uk/immunity-transplantation/about/pears-building) 🐦 [@iit\\_ucl](https://twitter.com/iit_ucl)



## 33. Institute of Therapeutic Immunology and Infectious Disease

### University of Cambridge

CITIID was established to support both fundamental and translational research on human disease, and bring together scientists and clinicians to achieve three related ambitions:

- Drive therapeutic breakthroughs in immune-related diseases.
- Increase the likelihood of discovering new medicines by enhancing interactions between academia and the pharmaceutical sector.
- Explore new strategies to control globally-important pathogens.

The institute's key strength is that immune-mediated disease is studied alongside infectious disease. The human immune system has evolved to defend us against the dangerous microorganisms that cause disease; autoimmunity and inflammatory diseases are caused when this defence mechanism malfunctions. Crucially, a dysfunctional immune system uses the same molecular pathways and mechanisms as a healthy immune system uses to fight infection, which means vital insights emerge from tackling infectious disease and autoimmunity together.

👤 **Prof Ken Smith**  
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🐦 [@Cambridge\\_Uni](https://twitter.com/Cambridge_Uni)

## 34. International Inequalities Institute

### London School of Economics and Political Science

The International Inequalities Institute aims to become the world's premier centre for interdisciplinary research on inequalities. It will pool and facilitate research, creating a generation of scholars with the complex social science tools necessary to understand current and future inequalities.

Purpose-built research facilities will:

- Spark new ideas and innovative solutions.
- Involve research users in conception, design and delivery.
- Implement research ideas.

🌐 [www.lse.ac.uk/III](http://www.lse.ac.uk/III)

🐦 [@LSEInequalities](https://twitter.com/LSEInequalities)



## 35. London Institute for Healthcare Engineering

### King's College London

The Institute will physically co-locate internationally-leading academic research with major healthcare technology industry partners, small and medium size enterprises and startups, within the UK's most research-active NHS Hospital Trust.

This will improve patient outcomes and drive economic growth by contributing to the delivery of the UK Government's Industrial Strategy.

This will be achieved through major partnerships with Siemens Healthineers, Medtronic, NVIDIA, IBM, Guy's & St Thomas' NHS Foundation Trust, and King's College London.



The Institute will provide an optimised environment to translate research into health and economic impact by facilitating intensive collaboration between sectors on cutting-edge projects, ranging from novel digital health technologies to life-saving invasive medical devices.

👤 **Prof Sebastien Ourselin**  
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## 36. Manufacturing, Engineering, Technology and Earth Observation Research Centre

### University of Leicester

METEOR is a key part of Space Park Leicester. It will be an internationally unique, world-leading research and innovation centre, co-locating academic and industrial space R&D. METEOR will revolutionise how satellites are conceived, designed, operated and produced, while bringing world-leading approaches to data capture, mining and interpretation. It will:

- Address the research challenges and barriers to adoption of modern industrial processes for satellite production.
- Build a facility of digital systems and IT infrastructure to support the challenges of big data and its processing in space technology and Earth Observation (EO) services.
- Develop a laboratory for novel EO research methods, technologies and applications at high spatial and multispectral resolution.

👤 **Prof Martin Barstow**  
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🐦 [@SpaceParkLeic](https://twitter.com/SpaceParkLeic)





### 37. Materials Innovation Factory University of Liverpool

The Material Innovation Factory (MIF) is an £81m facility dedicated to the research and development of advanced materials.

A collaboration between the University of Liverpool and Unilever, the MIF brings together materials chemistry expertise with the latest computational and robotic equipment to reduce the time it takes to discover new materials which have the potential to address challenges including sustainable energy, clean water and energy storage.

Boasting one of the highest concentrations of automated equipment for materials chemistry in the world, the facility welcomes academic or industrial users on a flexible, open-access basis creating an environment that facilitates interdisciplinary collaborations and innovation.

The MIF has leveraged over £20m in additional funding and is a founding partner of the Sir Henry Royce Institute, a research and innovation partnership spanning the UK.

Dr Jon Mercer

[www.liverpool.ac.uk/materials-innovation-factory/](http://www.liverpool.ac.uk/materials-innovation-factory/)

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@MIF\_UoL

### 38. Maxwell Centre University of Cambridge

The Maxwell Centre is the centrepiece of the University of Cambridge's industrial engagement with the physical sciences and engineering research, developed to meet short and long-term industry objectives.

The Centre facilitates industry involvement in the cutting-edge 'blue skies' discovery research, and is a Cambridge home to a number of industrial and academic partnerships, including:

- The Henry Royce Institute, a national centre for advanced materials research and innovation.
- The Faraday Institution, a £65m Industrial Strategy Challenge Fund initiative into battery research and technology, led by 7 universities working with industry partners.
- The Centre for Digital Built Britain, a partnership with the Department of Business, Energy & Industrial Strategy to deliver a smart digital economy for infrastructure and construction.
- Two Engineering and Physical Sciences Research Council (EPSRC) Centres for Doctoral Training (CDTs).
- The Winton Programme for the Physics of Sustainability.

The UKRPIF award supported construction of the 4,960m<sup>2</sup> building, which includes office and laboratory space dedicated to support collaborative projects with industrial partners. The Centre currently co-locates 52 individuals from 14 companies with researchers from several University departments.

Dr Aga Iwasiewicz-Wabnig

[www.maxwell.cam.ac.uk](http://www.maxwell.cam.ac.uk)

[ai261@cam.ac.uk](mailto:ai261@cam.ac.uk)

@Maxwell\_Centre



### 39. Michael Uren Biomedical Engineering Research Hub Imperial College London

The Hub will house a clinical facility side-by-side with multidisciplinary laboratories and offices. Based in the Michael Uren Biomedical Engineering Research Hub on Imperial's new White City Campus, the facility will house a clinical facility side-by-side with multidisciplinary laboratories and offices for translational research initiatives. It is designed to facilitate the seamless translation of cutting-edge research into real-world clinical solutions.

Mr Tim Venables

[www.imperial.ac.uk/white-city-campus/industry-enterprise/i-hub/](http://www.imperial.ac.uk/white-city-campus/industry-enterprise/i-hub/)

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@imperialcollege



### 40. Molecular Sciences Research Hub and the Translation and Innovation Hub Imperial College London

The MSRH and the I-HUB collectively provide high specification, multidisciplinary research and incubator space for researchers, university spinouts, partner universities, small and medium-sized enterprises and global businesses.

The 48,000m<sup>2</sup> development provides flexible and adaptable working spaces, including 250m<sup>2</sup> of biotech and scientific laboratories with wet lab and office space. The I-HUB is also home to the Imperial White City Incubator, the largest concentration of affordable, flexible laboratory and office space, with specialised commercialisation services, in London.

UKRPIF helped fund construction of the £150m project, which includes £90m of co-investment in technology ventures provided by Voreda Capital.

Imperial College ThinkSpace

[www.imperial.ac.uk/white-city-campus/industry-enterprise/i-hub/](http://www.imperial.ac.uk/white-city-campus/industry-enterprise/i-hub/)

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@imperialcollege

### 41. Multidisciplinary Characterisation Facility The University of Manchester

The Multidisciplinary Characterisation Facility (MCF) represents one of the most extensive and innovative characterisation and imaging facilities in the UK, pushing the boundaries of our ability to follow materials behaviour.

There are broadly three streams of capability within the MCF: the Electron Microscopy Centre, the Henry Moseley X-ray Imaging Facility and the Surface Characterisation Suite. The emphasis of the MCF is applications led, addressing industrial needs by providing the means to study materials under demanding environments as close as possible to those experienced in service.

In 2017, the MCF became part of the University of Manchester's commitment to the Henry Royce Institute, the UK's national institute for advanced materials research, which brings together world-leading academics from across the UK to work closely with industry to ensure commercialisation of fundamental research.

[www.royce.ac.uk/equipment-and-facilities/facilities/multidisciplinary-characterisation-facility/](http://www.royce.ac.uk/equipment-and-facilities/facilities/multidisciplinary-characterisation-facility/)

### 42. National Automotive Innovation Centre University of Warwick

The National Automotive Innovation Centre will drive the future of the automotive industry. A beacon for automotive research it brings together the brightest minds from industry and academia, to develop future vehicles and mobility solutions with wide economic and sustained growth. Its initial 15-year programme will exceed £650m in turnover, and add over £5bn in gross value.

It will inspire future designers, engineers and researchers to innovate through collaborative research projects with manufacturers, suppliers and academia, bringing new approaches to smarter, lighter, greener transport and delivering the skills required to keep the UK globally competitive.

The NAIC is the largest research centre of its kind in Europe, with 33,000m<sup>2</sup> space dedicated to automotive innovation. It will be home to 1,000 staff working across design, engineering and research, as well as future engineers on degree programmes.

The Centre is a partnership between WMG at the University of Warwick, Jaguar Land Rover, Tata Motors European Technical Centre, with funding from these partners and the UKRPIF.

Prof Dave Greenwood

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[warwick.ac.uk/fac/sci/wmg/research/naic](http://warwick.ac.uk/fac/sci/wmg/research/naic)

@wmgwarwick







## 43. National Structural Integrity Research Centre Brunel University London

The NSIRC is a dedicated interdisciplinary research facility which focuses on the long-term challenges associated with the structural integrity of products, plants and infrastructure across the energy, transport, advanced manufacturing and infrastructure sectors.

The UK Research Partnership Investment Fund (UKRPIF) award funded the procurement and installation of experimental, analytical and testing equipment within the facility, including:

- Large chamber electron beam system.
- 3D X-Ray machine.
- High pressure autoclave.
- Bonding furnace.

The NSIRC is managed by the project's core strategic partner and co-funder TWI, alongside co-investors and founders BP and the Lloyd's Register Foundation. As well as lead institution Brunel University London, over 20 universities partner and collaborate with the centre, including institutes in China, Denmark and Malaysia.

👤 **Prof Geoff Rodgers**  
🌐 [www.nsirc.com/about/](http://www.nsirc.com/about/)

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🐦 [@NSIRC](https://twitter.com/NSIRC)

## 44. Manchester Cancer Research Centre/Oglesby Building The University of Manchester

The Oglesby Cancer Research Building supports research into cancer, spanning laboratory research through to clinical trials and patient care. This forms part of the Manchester Cancer Research Centre, a strategic research partnership between the University of Manchester, The Christie and Cancer Research UK. Both charities provided co-investment towards the project, alongside the UK Research Partnership Investment Fund (UKRPIF) award.

The building is home to 150 scientists and 100 academic and support staff, which focus on research into:

- Radiation and radiotherapy.
- Prevention and early detection of cancer.
- Understanding the drivers of cancer.
- Women's cancers.
- Lung cancer.
- Melanoma.
- Haematological oncology.

👤 **Mr Joseph Clarke**  
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🐦 [@MCRCnews](https://twitter.com/MCRCnews)



## 45. Project Oriel University College London

Oriel is a joint venture between UCL, Moorfields Eye Hospital and Moorfields Eye Charity.

Major eye diseases are expected to increase over the next 15 years. It is estimated that 4 million people in the UK will be living with sight loss by 2050. The ageing population globally is adding to this challenge, resulting in a greater and more complex demand for eye services.

Oriel will create a new and transformative, purpose-built centre for advanced eye health to deliver world-leading eye care for patients, the best education for students and research for the benefit of the whole population. It will provide the integration of clinicians, scientists, patients and public to maximise the opportunity to translate discovery science into experimental medicine and through increased access to clinical trials/studies for patients and populations, rapidly improve patient outcomes.

Philanthropy will play a key role in supporting this ambitious project.

🌐 [www.oriel-london.org.uk](http://www.oriel-london.org.uk)  
🐦 [@UCL](https://twitter.com/UCL)

## 46. Research and Innovation Centre for Power Electronics and Machines University of Nottingham

Power Electronics and Electrical Machines are critical technologies to deliver all future scenarios of sustainable land and air transport and energy networks.

Electrification of transport and decarbonisation of energy supplies are key to future society and involve businesses spanning from small local companies to major global engineering companies.

To meet the demands for research and innovation capability and skills capacity, the University of Nottingham Power Electronics, Machines and Control Research Group (PEMC), a global research leader in these technologies, looks forward to the opportunities resulting from this new Research and Innovation Centre for Power Electronics and Machines.

The new Centre will be located on the University's Jubilee Campus as part of the Faculty of Engineering's Research Cluster.

The Centre will support the growing demand for innovation in power electronics and machines across a broad range of applications including transportation electrification and renewable energy. It will support economic growth and will maintain a technology lead in an area of existing UK competitiveness enabling commercial potential to be maximised.

👤 **Prof Pat Wheeler; Dr Ben Coomber**  
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## 47. Research and Innovation Hub in Cancer King's College London

The Research and Innovation Hub is located within the £160m Cancer Centre at Guy's Hospital, which opened in September 2016.

The hub provides open-plan laboratory space to support collaboration between researchers and clinicians and enable translational research into cancer and its causes through analysing patient conditions, developing personalised medicine and introducing new treatments through research-led trials.

The UK Research Partnership Investment Fund (UKRPIF) award supported construction of the new research facilities, including 6 laboratories with specialist research equipment and a cancer biobank for storing patient tissue samples. Double match funding for the project included a £25m investment from the Guy's and St Thomas' Charity.

👤 **Prof Peter Parker**  
🌐 [www.guysandstthomas.nhs.uk/our-services/cancer/about/cancer-centre/building-the-new-cancer-centre.aspx](http://www.guysandstthomas.nhs.uk/our-services/cancer/about/cancer-centre/building-the-new-cancer-centre.aspx)  
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## 48. Target Discovery Institute University of Oxford

The Target Discovery Institute was the first stage in an initiative (comprising the Target Discovery Institute, the Big Data Institute and the BioEscalator Innovation Building) that aims to better link discovery research in Oxford's Medical Sciences Division to translational programs in the biotechnology and pharmaceutical sectors.

Support from the UK Research Partnership Investment Fund was critical in initiating this program (first with co-investment from pharmaceutical partners in the Structural Genomics Consortium, the Ludwig Institute for Cancer Research and the Nuffield Department of Medicine, and subsequently from the Li Ka Shing Foundation).

The initial investment has leveraged £multi-million support, including major initiatives such as Alzheimer's Research UK's £10m award for Dementia Drug Discovery. The Target Discovery Institute contains state-of-the-art facilities for a range of technologies (including mass spectrometry, robotic high-content cell screening and molecular affinity assays, and synthetic chemistry), adjacent to high-quality cell biology laboratories.

🌐 [www.tdi.ox.ac.uk](http://www.tdi.ox.ac.uk)

🐦 [@NDMOxford](https://twitter.com/NDMOxford)





## 49. Translational Neuroscience University College London

This project will realise a dual interdisciplinary translational research hub to harness the world-leading power of UCL Neuroscience to find better ways to diagnose and treat devastating neurological disorders.

The dual hub will retain facilities in Queen Square and create a new building on Grays' Inn Road that will serve as the headquarters and major research centre for the UK Dementia Research Institute (DRI), a new home for many of the UCL Queen Square Institute of Neurology laboratories and a clinical space for UCLH. In total the dual hub will accommodate over 800 people.

The interim location for the UKDRI at UCL has been established and acts as the headquarters for a national institute that draws together over 300 established and early career researchers.

We are developing a new shared Magnetic Resonance Imaging facility that will work across UCL and UCLH.

**Mr David Howard**  
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## 50. UK Rail Research and Innovation Network University of Birmingham (lead institution)

The UK Rail Research and Innovation Network (UKRRIN) is designed to create powerful collaboration between academia and industry, aiming to provide a step-change in innovation in the sector and accelerate new technologies and products from research into market applications globally.

A UKRPIF investment of £28m and £61m of new private industry match-funding investment was used to establish three national collaborative rail Centres of Excellence focused on:

- Digital Systems Integration at the University of Birmingham.
- Rolling Stock Innovation led by the University of Huddersfield.
- Infrastructure Innovation led by the University of Southampton.

The three Centres are joined by a fourth in Testing led by Network Rail. Supported by government and key industry bodies, including the Rail Supply Group (RSG) and Rail Delivery Group (RDG), this multimillion pound initiative is recognised as being critical to the delivery of the rail sector's industrial strategy for growth and long-term success, enabled through world-class science and innovation. The UK Rail Research and Innovation Network (UKRRIN) will future-proof the UK rail industry through innovation and collaboration by creating opportunities that will boost the UK economy and drive productivity.

**UKRRIN Coordinating Hub Team**  
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## 51. The Wellcome-Wolfson Institute for Experimental Medicine The Queen's University of Belfast

The Wellcome-Wolfson Institute for Experimental Medicine has become an international hub of research excellence on biomedicine. Researchers of the Institute have already developed innovative therapeutics to tackle asthma, diabetic retinopathy and AMR infections, improving UK patients' lives. The institute's multidisciplinary approach in investigating the mechanisms of disease has proved to be a fruitful one. As a result, the Institute, home to 330 staff, has increased its funding from research awards by 124% in the last 3 years, while tripling its industrial income.

Additional to the UK Research Partnership Investment Fund, the institute received co-funding from Wellcome Trust, the Wolfson Foundation, Atlantic Philanthropies, the Sir Jules-Thorn Charitable Trust, the Insight Trust for the Visually Impaired and the Queen's University of Belfast Foundation.

**Dr Inmaculada Higuera**  
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## 52. York Global Initiative for Safe Autonomy University of York

The York Global Initiative for Safe Autonomy, housed in a dedicated new research facility at the University of York, will address the challenges faced by the world-wide introduction of robotics and connected autonomous systems (RCAS).

The Initiative builds on York's unique expertise in the assurance of autonomy, advanced communications, and design and verification of RCAS, to facilitate their safe introduction and adoption. It will address the RCAS challenges across three central research pillars; design, assurance, and communications.

UKRPIF funding will enable the construction of a new building to bring together world-leading experts and industrial partners. The building will facilitate research, education and training, innovation, ethics and public engagement through an ecosystem of living laboratories and commercial innovation. Close partnership with regional, national and international partners will support the National Industrial Strategy.

**Dr Ana MacIntosh**  
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## 53. Zayed Centre for Research into Rare Disease in Children University College London

The Zayed Centre for Research will be a world-leading centre of excellence that will enable scientists and clinicians to more accurately diagnose, treat and cure young people with rare diseases.

It combines the expertise of nearly 500 academics and clinical staff from UCL and Great Ormond Street Hospital with an outpatient facility that can accommodate over 200 patients and accompanying family members at any one time.

The strategic positioning of the new centre and its proximity to both the UCL Great Ormond Street Institute of Child Health and Great Ormond Street Hospital is vital for a truly translational and patient-focussed approach to research, building on existing strengths and bringing together teams to embody our bench-to-bedside model.

**Dr Elspeth Latimer**  
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**GOSH** – [www.gosh.org/what-we-do/research/zayed-centre-research-rare-disease-children](http://www.gosh.org/what-we-do/research/zayed-centre-research-rare-disease-children)  
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## 54. The 5G Innovation Centre University of Surrey

The 5G Innovation Centre (5GIC) is the world's first and UK's largest academic 5G communications infrastructure research and innovation centre and home to the world's largest 5G testbed.

5GIC supports collaborative research undertaken by academics and industry, with facilities that include the world's leading open and independent testbed covering 4km<sup>2</sup>, providing indoor and outdoor environments for broadband mobile and the Internet of Things (IoT).

The UK Research Partnership Investment Fund (UKRPIF) award, which funded construction of the Centre, was double-match funded by leading international communications firms such as Vodafone, Telefonica, Huawei, Fujitsu, BBC, BT, EE and Samsung. Since opening, 5GIC has attracted further national and international investors and partners from both the public and private sectors.

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## Notes



