



UNIVERSITY OF  
BIRMINGHAM

# DRIVING INNOVATION AND IMPACT

Discover our world-leading capabilities and expertise.





In a giant experiment in a Staffordshire woodland, we are pumping CO<sub>2</sub> around trees to simulate the atmosphere we're predicted to have in 2050.



# FOREWORD

**High-quality academic research drives the ideas and innovations our societies need to move forward in the 21st century.**

We can only tackle challenges such as climate change, economic growth and cleaner air by working in partnership with government, businesses, industry and communities. As a world-leading university, our role is to develop the skills of the future and work with partners to harness frontier research and development.

Across our campus, stretching into the city beyond, the University of Birmingham has built a suite of innovation sites and strategic assets which are helping us to develop and test novel technologies in our areas of technical excellence including, energy, engineering, and life sciences, and our extensive cultural artefacts and collections, across religion, history and the arts, are helping bind us more closely to our communities.

Physical research facilities, collections and assets are the hardware of innovation. The software is the expertise, networks and communities we are building and engaging through partnerships with business, government, research institutions and the region. This brochure profiles our innovation assets and what these capabilities are allowing us and our partners to achieve together.

**Professor Adam Tickell**  
Vice-Chancellor and Principal  
of the University of Birmingham

# POWERING TOMORROW'S ENERGY

World-leading expertise combined with pioneering new approaches.

The University of Birmingham offers world-leading expertise across the spectrum of energy research through the work of several interlocking initiatives, spearheaded by the Birmingham Energy Institute, which through its nationally-recognised centres of excellence, is developing and applying the technological innovation, original thinking and new ways of working required to create sustainable energy solutions and support the regional, national and global transition to a zero carbon energy system.

## TYSELEY ENERGY PARK

Tyseley Energy Park is a site owned by Webster and Horsfall, in which the University of Birmingham has invested £3m, to develop new sustainable technologies, including ways of generating clean energy. TEP offers an environment for academics and industrial partners to build and demonstrate energy prototypes, accessing the viability of alternative pathways and transitioning to a green economy.

*“By working together we have a great opportunity to create clean energy technologies and infrastructure. The University of Birmingham is one of the top Universities in the UK and by working in collaboration with the both the public and private sector as well as a world-class academic institution, TEP will drive forward change and attract major investment into this region.”*

**David Horsfall**  
Director of Tyseley Energy Park

## Our capabilities



Energy storage



Energy startups



Decarbonising heat



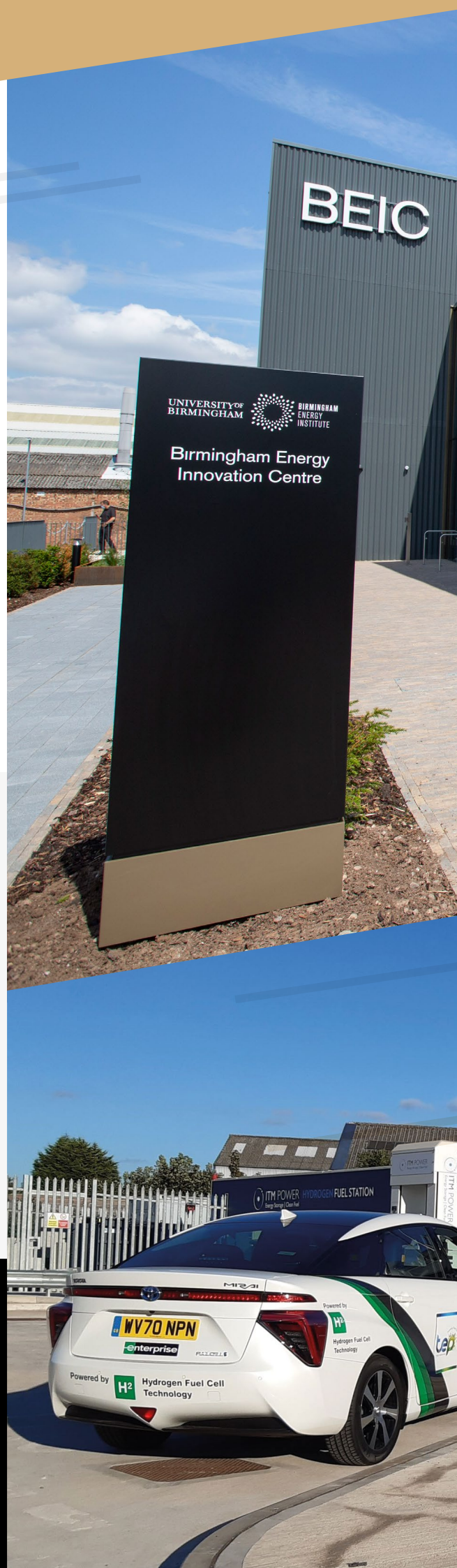
Cooling



Low carbon transportation



Nuclear power





## BIRMINGHAM ENERGY INNOVATION CENTRE

Situated on the TEP site, the Birmingham Energy Innovation Centre (BEIC) was an £8.5m construction project as part of an overall programme of more than £20m to deliver a range of energy innovation activities at TEP.

The BEIC supports innovation in waste, energy, and low carbon vehicle systems across the West Midlands. It will focus on hydrogen and fuel cells, energy storage, magnet and battery recycling and waste to fuels and energy.



## TYSELEY REFUELLING HUB

TEP is home to the UK's first Low and Zero Carbon refuelling station including the largest green hydrogen refuelling station in the UK.

The hydrogen station can generate over a tonne of hydrogen per day enough to fuel up to 50 buses daily.

The entire station has benefited from £10m investment, including £1.5m from Greater Birmingham and Solihull Local Enterprise Partnership.



# TOWARDS NET ZERO AND A CIRCULAR ECONOMY

## DECARBONISING HEAT – THE FUTURE.

The National Centre for Decarbonisation of Heat (NCDH) is a proposed £70m Centre to help meet the challenge of Britain's commitment to achieving net zero by 2050.

It will enable rapid scaling up of manufacturing, skills and deployment of heat solutions that are necessary to meet carbon reduction targets and will include a Manufacturing Accelerator, a Skills Academy, a Business Incubator and a Building Integration and Living Lab unit. The NCDH will also provide facilities that will be used to test and validate the efficiency and performance of new technologies.

### THE UK'S FIRST RECYCLING PLANT FOR HIGH-PERFORMANCE RARE EARTH MAGNETS

The UKRI has awarded the University of Birmingham £4.3m to establish the UK's first re-manufacturing line for high-performance sintered rare earth magnets for use in electric vehicles, aerospace, renewable energy technologies and low carbon technologies which will be located at TEP.

The project is part of a £28.5m investment from the Driving the Electric Revolution Challenge at UK Research and Innovation (UKRI) to support the creation of a competitive electrification supply chain in the UK.

The plant will be based on the patented HPMS process (Hydrogen

Processing of Magnet Scrap), which uses hydrogen as a processing gas to separate magnets from waste streams as an alloy powder. The plant will be able to recycle material from a variety of magnet-containing waste streams including for example vehicle motors, audio products, and hard disk drives, reducing dependency on virgin mined material. Establishing a robust magnet recycling plant will complete the UK-based supply chain for sintered magnets and enable the UK to develop a circular economy around high performance motors and magnets that would make a significant contribution to the UK's net zero targets on carbon emissions.

### HELPING BUSINESSES IDENTIFY OPPORTUNITIES FOR CLEAN ENERGY INNOVATION

Through the Climate Innovation Platform (funded by HSBC UK) the Birmingham Energy Institute and Energy Systems Catapult are providing businesses tailored packages of support to develop energy innovative products and services needed to achieve net zero. At TEP, 25 businesses across the first two cohorts have gained access to business engagement support through the University of Birmingham's ATETA Programme. This will enable them to utilise research expertise and facilities that will improve their efficiency and help them test new ideas.

# UNIQUE FACILITIES THAT UNDERPIN NUCLEAR FISSION AND FUSION RESEARCH

The UK has big ambitions in nuclear energy, developing next-generation nuclear facilities and fusion power.

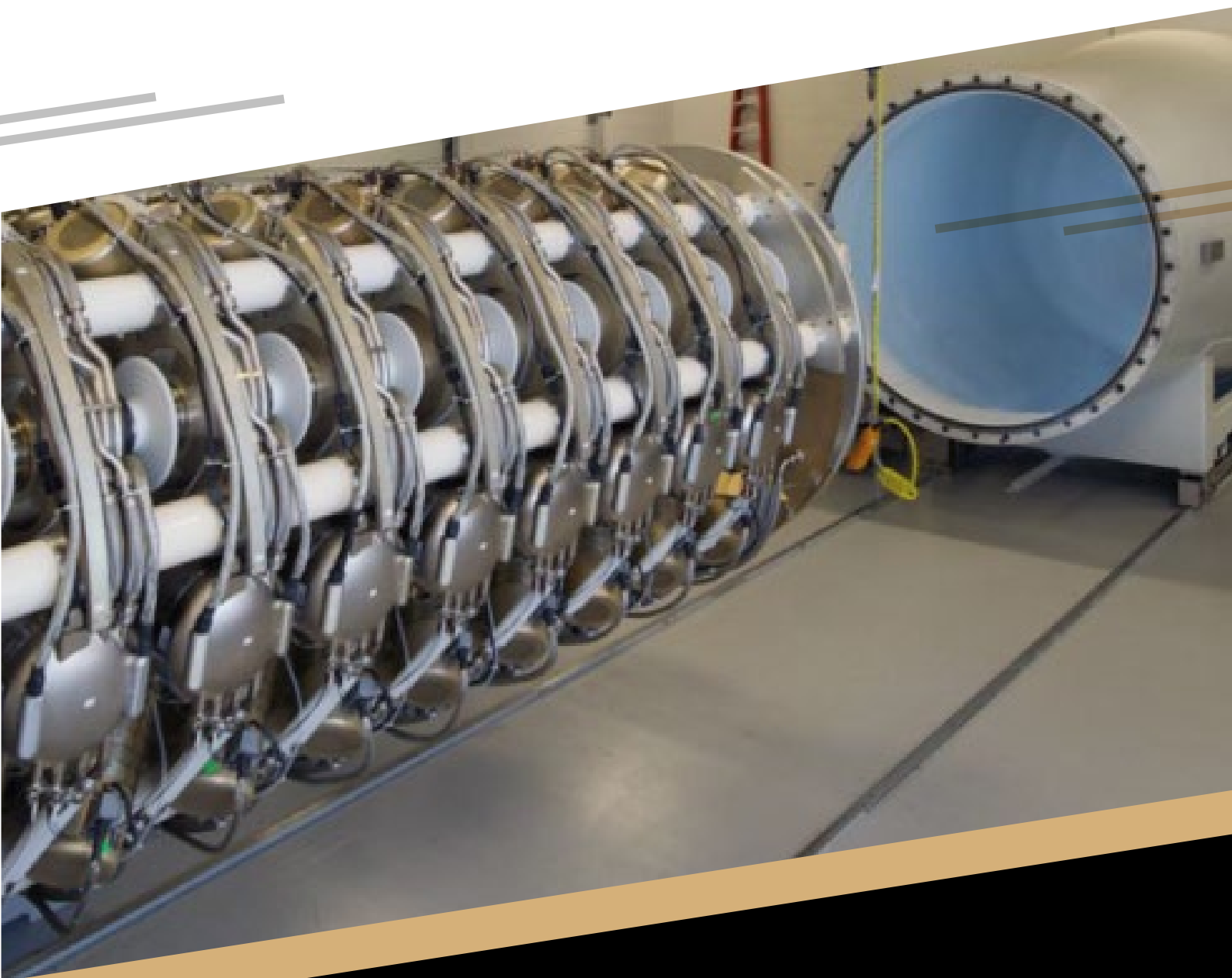
The University of Birmingham is home to internationally unique and critical facilities to make this possible.

The Birmingham Centre for Nuclear Education and Research was launched in 2010 to build on over 50 years of experience. It brings together a multidisciplinary team from across the University to tackle fundamental nuclear industry challenges.

A new unique High Flux Accelerator-Driven Neutron Facility will support the study of neutron interactions with materials for the nuclear sector, ranging from fission to fusion. In particular, this facility will offer a broader programme

relating to the understanding of neutron interactions with materials with applications extending to nuclear medicine and space.

Alongside these cutting edge facilities, the Positron Imaging Centre is home to the University's invention of Positron Emission Particle Tracking (PEPT) and the MC40 Cyclotron Facility; the latest in a series of particle accelerators operated at Birmingham since the 1930s, capable of accelerating hydrogen (protons and deuterons) and helium (helium-3 and helium-4) with high intensities to energies needed to perform nuclear reactions.



# HEALTH INNOVATION

The University of Birmingham's health innovation assets are powering research and development in clinical trials, genomics, health data, and medical technology, incubating start-ups and bringing together academics, charities, industry, and the NHS.

With unrivalled co-located, integrated health and life sciences expertise, our partnership approach helps develop innovations at pace and scale. This puts the needs and priorities of communities and healthcare providers at the heart of our agenda.

## Our capabilities



Regenerative medicine



Clinical trials



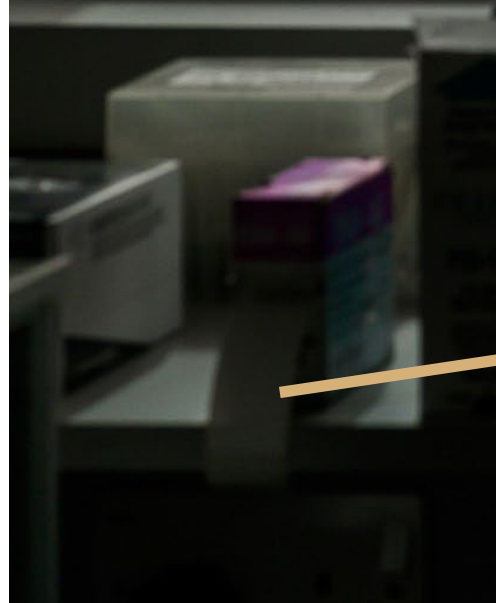
Medical technology



Genomics and data

## FROM MOLECULE TO PATIENT

Birmingham offers an innovation ecosystem capable of taking ideas from conception through to clinical adoption. BioHub Birmingham is a fully-serviced biomedical incubator and accelerator located at Birmingham Research Park, providing laboratory space for research-led organisations. It is designed to grow early-stage biomedical companies from proof of concept through to expansion and companies at the BioHub frequently collaborate with university researchers. Startups may graduate to the Precision Health Technologies Accelerator (PHTA), which is focused on medical technology, digital health, diagnostics, and clinical trials. As they expand and scale up their facilities in the Birmingham Health Innovation Campus, a life sciences park under development with Phase 1 opening in 2022. The Research Park also houses a med-tech incubator for startups working on devices and formulations, and has recently launched a pre-revenue incubation space called Unit 9.







“

Innovation is about providing first class facilities – wet lab, dry lab, and state-of-the-art facilities designed to allow people to collaborate. But it's also about building an ecosystem. My goal is to link companies to the right academics or clinicians. It's all about connectivity which sparks innovation, debate, and creativity.

**Professor Gino Martini**  
Precision Health Technologies  
Accelerator Managing Director



# BIRMINGHAM HEALTH INNOVATION CAMPUS

**Birmingham Health Innovation Campus (BHIC), is set to become a world-leading life sciences campus.**

Due to open in 2023, it will offer high-quality laboratory, office, incubation and innovation facilities for forward-thinking businesses and will be part of an integrated, physically connected critical cluster of patient-centred health excellence. A £225m initiative developed in partnership with Bruntwood SciTech, it builds on the University's excellence in data, genomics, medical technology and clinical trials and once fully developed

will generate about 10,000 jobs and a £500m in gross value added (GVA). BHIC will be the only life sciences park in the region, creating opportunities for transformative collaborations between businesses, the University and NHS partners.

## BIRMINGHAM HEALTH PARTNERS

We are a founding member of Birmingham Health Partners, a strategic alliance of NHS, academic and industry organisations, representing a critical cluster of health excellence, rapidly applying scientific and clinical insights into patient benefit.

BHIC will further catalyse productive interactions between clinicians, academics, industry and patients to accelerate the field of personalised, precision medicine.

*"The impact of Birmingham's expertise is felt across the life course, from saving the lives of mothers and babies from the tragedy of postpartum haemorrhage to understanding the effect of ageing on immunity and investigating how we can live longer, healthier lives. The University's partnerships with NHS and industry – facilitated through Birmingham Health Partners (BHP) – are key to these influential research outcomes."*

**Ed Smith**  
Chair, Birmingham Health Partners

# OUR HEALTHCARE ASSETS

Working together to advance new technologies and treatments that enable people to live longer, healthier and happier lives.

## ADVANCED THERAPIES FACILITY

Comprising three units: the Human Biomaterials Resource Centre, a human biorepository, the Cell Therapy Suite, a cleanroom facility that is licensed for production of cell- and tissue-based therapies for human application, and the Microbiome Treatment Centre, set up in 2017 and provides services like faecal microbiota transplant (FMT) and FMT clinical trials for patients with recurrent and refractory Clostridium Difficile infection.

*“The Advanced Therapy Treatment Centres are working across the whole of the Midlands and Wales and have developed capability throughout the whole supply chain to deliver cell therapy R&D and deployment through trials at scale. These centres run about 5% of all global studies, and 50% of UK studies, in advanced therapy treatment.”*

**Dr Steve Taylor**  
Director of Strategy and Operations,  
Birmingham Health Innovation Campus

## CENTRE FOR HUMAN BRAIN HEALTH

Centre for Human Brain Health houses cutting-edge brain imaging facilities and is located on the University's Edgbaston campus to conduct multidisciplinary research for academics (internal and external), students, clinicians, and industry professionals.

*“The Centre works with industry partners on uncovering the fundamental mechanisms of the human brain as well as understanding how brain health contributes to wellbeing. In addition to specialised equipment including MEG, MRI, and various high-tech equipment, it's also looking at novel technologies like quantum for novel insights into patient brain function.”*

**Professor Ole Jensen**  
Co-Director

## NIHR – WELLCOME CLINICAL RESEARCH FACILITY

An integrated Birmingham Health Partner Centre with adult facilities based at the Queen Elizabeth Hospital and paediatric facilities at Birmingham Children's Hospital. Both facilities are dedicated research units for patient participation in research programmes.



An aerial photograph of a vast forest landscape. In the foreground, several tall, silver research towers are visible, standing amidst the trees. The forest extends to the horizon under a cloudy sky. A dark brown banner is at the top left, and a black banner is at the bottom left containing text.

# WORLD LEADING FOREST RESEARCH FACILITIES

**Birmingham Institute of Forest Research (BIFoR)  
was formed in 2014 following a £15m donation  
that was match-funded by the University.**

It aims to provide fundamental science, social science, and cultural research of direct relevance to forested landscapes anywhere in the world. A flagship initiative is the Free-Air Carbon Dioxide Enrichment (FACE) Facility, the only such facility in the northern hemisphere. A mature native forest in Staffordshire, the FACE project involves the exposure of mature oak-dominated woodland to CO<sub>2</sub> levels expected to be the norm by 2050, to understand how forests will function in our climatic future. Initial findings suggest that ancient oak trees will increase the rate at which they take up carbon dioxide as the global atmosphere changes.

# OUR ENVIRONMENT ASSETS

Our world-leading facilities are simulating how forests and plants will change in a high CO<sub>2</sub> future while our sensors and air quality tools, distributed at key sites in the West Midlands, are improving our understanding of an issue affecting nearly three million people in the region.

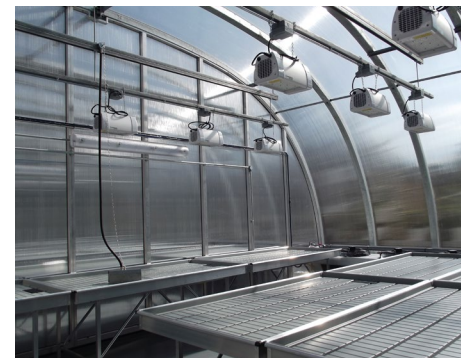
From climate modelling to clean air science, the University of Birmingham is taking academic work into the real world to help policymakers and business leaders make informed decisions now for a better future.



## ENVIRONMENTAL CHANGE OUTDOOR LABORATORY

Environmental Change Outdoor Laboratory (EcoLab) is a high-capacity research platform to understand environmental change, such as climate change and pollution, through experimentation and the application of new environmental technologies.

The facility was developed as part of a £1.2m investment by the University of Birmingham in new initiatives in geographical and environmental science research and teaching. The facility allows manipulation and standardisation of light, heat, physical structures and water chemistry along with an ethernet connection that enables remote access and a modular laboratory to process environmental samples and conduct experiments.



## WOLFSON ADVANCED GLASSHOUSES

The Wolfson Advanced Glasshouses offer state-of-the-art plant growth facilities for accelerating research into a wide range of areas including food security, sustainability, climate change, biotic & abiotic stresses, plant development and evolution. The glasshouses provide precise lighting, temperature and CO<sub>2</sub> control, complementing the outdoor BIFoR FACE experiment as well as connecting colleagues across biology, chemical sciences, ecology, water and atmospheric sciences.

# SUSTAINABLE INFRASTRUCTURE AND MANUFACTURING

Developing new and maintaining existing infrastructure is a critical part of the decarbonisation transition, and an economic enabler.

Finding ways to make our infrastructure, industries and cities cleaner, more sustainable and more inclusive is a central research focus at Birmingham. Our assets to support R&D include a geotechnical simulation facility to improve insights into subsurface tunnelling dynamics and a purpose-built rig to measure aerodynamics of moving model vehicles.

## HYDROFLEX

The UK's first mainline approved hydrogen train

At COP26, we demonstrated the hydrogen fuel technology that powers HydroFLEX.

The technology, developed in partnership with Porterbrook and funded by Innovate UK, the UK's national innovation agency, converts hydrogen into electricity and water, with batteries providing additional traction power to the train. The fuelcells are emission-free and generate clean electricity to propel the train.



## TRANSIENT AERODYNAMIC INVESTIGATION (TRAIN) RIG

A purpose-built facility offering the flexibility to conduct a range of experiments crucial to a detailed understanding of vehicle aerodynamic flows.

At 150m long, this unique facility offers the flexibility to conduct a range of experiments crucial to a detailed understanding of vehicle aerodynamic flows, such as modelling the interaction of passing vehicles and modelling of the relative motion between the moving vehicle and the static ground.

## THE BIRMINGHAM CENTRE FOR RAILWAY RESEARCH AND EDUCATION (BCRRE)

BCRRE is the largest university-based railway research, education and innovation group in Europe with its own full-size train simulator and a range of cutting edge facilities supporting their R&D and innovation projects in partnership with industry. Projects include the development of unique, operational simulations for HS2 and a series of decarbonisation projects that were showcased at COP26. They have developed HydroFLEX, the UK's first mainline-approved hydrogen train, which showcased the technology and was used by Network Rail as a meeting venue and transported VIP delegates throughout the UN Climate Change Conference in Glasgow. Other ongoing projects include developing digital twins, working on digitally-enabled design and evaluation for new-concept track switches and pantographs, and looking at the wheel-rail behaviour around novel joints.

*“50 years is a significant milestone for BCRRE and we're proud of how the Centre has grown, in terms of the research and education we deliver and our links and engagement with the global rail industry, with companies of all shapes and sizes. BCRRE is looking forward to playing an important role in leading innovation and supporting recovery as we start to take stock of post-pandemic priorities for the sector.”*

**Professor Clive Roberts**

Director of the BCRRE and Head of the School of Engineering at the University of Birmingham





# MAPPING WHAT LIES BELOW GROUND LEVEL

The National Buried Infrastructure Facility (NBIF) is host to Birmingham's pioneering quantum sensing technology.

Open since 2021, the 'one of its kind' £21.7m National Buried Infrastructure Facility features a large 25m x 10m x 5m deep soil-filled pit with moveable floor sections, including a 10m x 5m moveable floor section to simulate subsurface ground displacements. It enables researchers and industry partners to test a variety of buried infrastructure systems at, or near to, full-scale to help them understand their physical and operational performance. This includes, for example, pipelines and cables, culverts and tunnels, road foundations and barrier wall systems.

## UK QUANTUM TECHNOLOGY HUB SENSORS AND TIMING

Experts at the University, working with industry partners, are developing quantum gravity gradient sensor instruments that can look below the ground more accurately, and at greater depths, using a pioneering technique that detects variations in microgravity using the principles of quantum physics.

In collaboration with NBIF, a team recently reported a successful trial of the world's first quantum gravity sensor that worked reliably in the real world, detecting subterranean structures outside of tightly-controlled lab conditions. Quantum sensing innovations have implications for reducing costs and delays to construction, rail and road projects; improving prediction of natural phenomena such as volcanic eruptions; the discovery of hidden natural resources and built structures; and understanding archaeological mysteries without damaging excavation.

*"This is an 'Edison moment' in sensing that will transform society, human understanding and economies.*

*"With this breakthrough we have the potential to end reliance on poor records and luck as we explore, build and repair. In addition, an underground map of what is currently invisible is now a significant step closer, ending a situation where we know more about Antarctica than what lies a few feet below our streets."*

**Professor Kai Bongs**

Head of Cold Atom Physics at the University of Birmingham and Principal Investigator of the UK Quantum Technology Hub Sensors and Timing



# HIGH TEMPERATURE RESEARCH CENTRE

The High Temperature Research Centre (HTRC) is a joint collaboration between the University of Birmingham and Rolls-Royce.

The 5,800 sqm Centre is funded through a £40m investment by Rolls-Royce plc, matched by a £20m government grant through the Higher Education Funding Council for England's (HEFCE) UK Research Partnership Investment Fund (UKRPIF). The Centre, based near Coventry, enables production-scale research and experimentation to deliver rapid high-quality product and process innovation and is a unique casting, design, simulation and advanced manufacturing research facility.

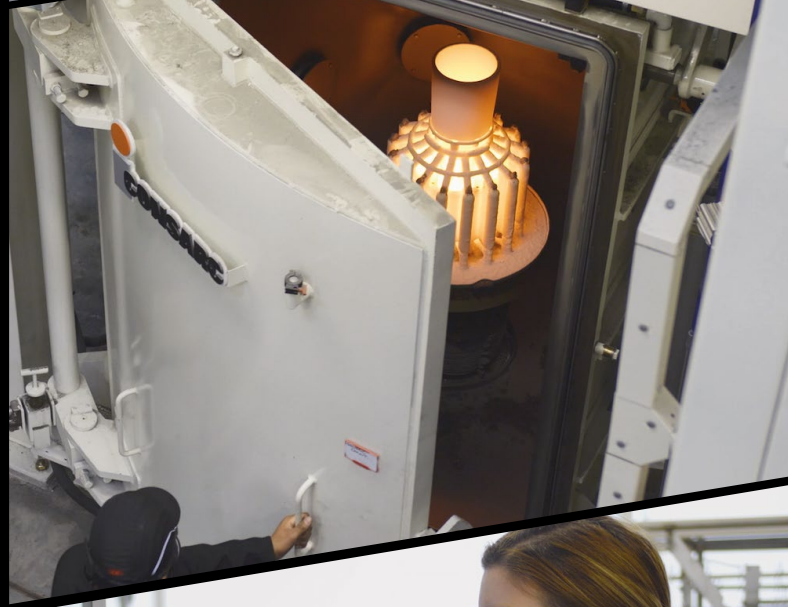


# SUSTAINABLE MANUFACTURING

The Manufacturing Technology Centre (MTC) was established in 2010 by the University of Birmingham, Loughborough University, the University of Nottingham and TWI Ltd as an independent Research & Technology Organisation (RTO) with the objective of bridging the gap between academia and industry.

It represents one of the largest public sector investments in UK manufacturing and is part of the High Value Manufacturing Catapult, supported by Innovate UK.

MTC's rapid growth has seen the expansion of our campus with the construction of three more facilities, including the Advanced Manufacturing Training Centre and the National Centre for Additive Manufacturing and MTC's role has expanded to cover not only R&D but also training, advanced manufacturing management and factory design. We now have over 700 employees working with helping hundreds of companies from SMEs to some of the biggest brands in the world such as Unilever, Rolls-Royce, BAE Systems and Siemens.





# INNOVATION IN THE HEART OF OUR CITY

Opened in 2021 and located in a Grade II listed building in Birmingham's civic heart, Centenary Square, The Exchange is a venue to make research public, facilitate partnerships, provide free and paid short courses and bring together communities.

A digital skills hub and bootcamps, along with executive education programs, are enabling access to higher-skilled jobs and, through partnerships with companies including PwC and HSBC, improving the inclusivity of hiring by companies in the region.

*"The goal of the Exchange is to close the gap between the university campus and the city, both businesses and the community. The Exchange is a bridge that recaptures our civic heritage."*

**Professor Simon Collinson**  
Deputy Pro-Vice-Chancellor for Regional Engagement

# WORKING TOGETHER – DEVELOPING SKILLS

## SUPPORTING NEW ENTREPRENEURS

UoB Elevate is an incubator and business growth programme based at The Exchange and exclusive to innovative University of Birmingham student and graduate start-ups. Our first cohort of 30 businesses began their journey in September 2021 occupying the Graham Turner Entrepreneurship Centre, creating a new start-up ecosystem within the heart of the city.

## BIRMINGHAM LEADERSHIP INSTITUTE

Working together to advance new technologies and treatments that enable people to live longer, healthier and happier lives.

Launched in 2021 with a mission to better understand, through research and practice, the leadership required at all levels to enable progress on complex organisational, social, political, environmental, commercial and economic challenges; educate, train and develop people with the knowledge, skills and capacities to practise this leadership, and to inform public debate and the public understanding of leadership.

## THE FUTURE: A DIGITAL SKILLS DISTRICT

The University of Birmingham is developing a skills hub which will catalyse a step change in the way skills programmes are developed and delivered, and maps onto existing areas of industrial strength and those with high growth potential for the region.

Operating in a 'hub and spoke' model, we will start with developing the core offer for sector-agnostic digital skills, and digital skills for the business, professional services and arts and cultural sectors, based in Centenary Square City.

A series of 'spokes' will then link to the Manufacturing Technology Centre at Ansty Park to support digital skills for advanced manufacturing; the Tyseley Energy Park for digital skills for the green economy; and to the Birmingham Health Innovation Campus (BHIC) for digital skills for healthcare and the life sciences.

# SUPPORTING INCLUSIVE ECONOMIC GROWTH IN THE WEST MIDLANDS AND ACROSS THE UK

Regional economies across the UK currently face significant uncertainty as new business models and technologies continue to transform the conditions of production and the global distribution of economic activity.

## THE WEST MIDLANDS REGIONAL DEVELOPMENT INSTITUTE (WM REDI)

A new research institute with a remit to support inclusive economic growth. This was made possible by an award from the Research England Development (RED) Fund, together with matched funding from the University of Birmingham and regional stakeholders, amounting to over £11.5m.

## CITY REGION ECONOMIC AND DEVELOPMENT INSTITUTE (CITY-REDI)

City-Redi was made possible through an over-£4m generous investment from the university and established in 2015. It delivers policy, strategy and research to support regional economic growth policy and practise through engaged and relevant research.

# COMPUTING INFRASTRUCTURE

The Institute for Interdisciplinary Data Science and AI is a nexus for collaborative research and education at the University of Birmingham.

Working across all five Colleges, the Institute is developing and fostering a culture of continuous interaction to address important challenges in areas including sustainability, equality, health, and data-driven science. We are building on a foundation of excellence in methodology including modelling, statistics, machine learning, linguistics, optimisation, behavioural sciences, and the social, ethical, and legal implications of technology.

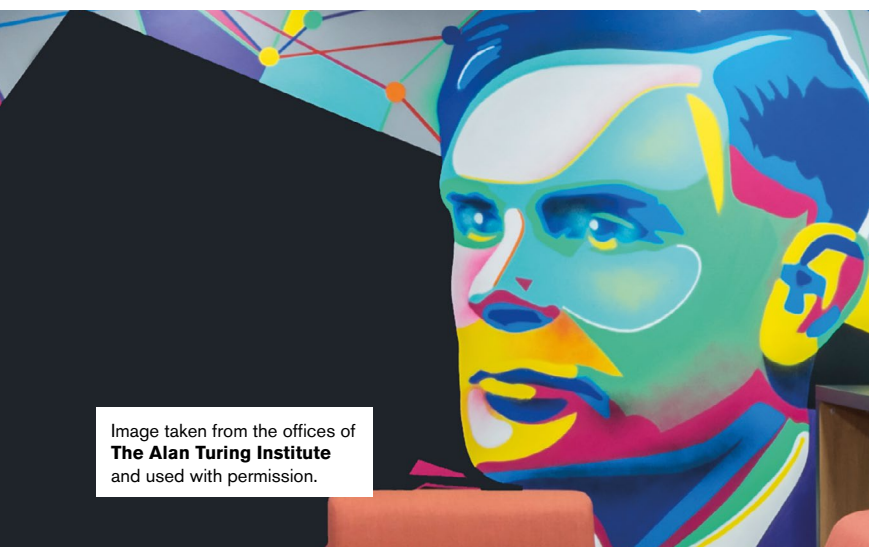
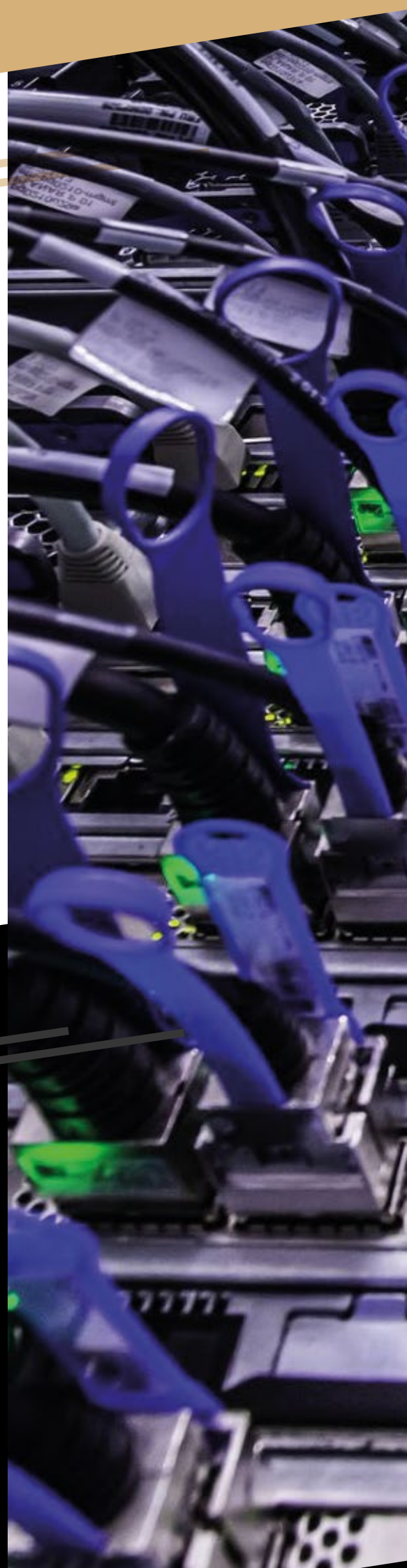


Image taken from the offices of **The Alan Turing Institute** and used with permission.

## THE ALAN TURING INSTITUTE

The University of Birmingham is one of 13 university partners of The Alan Turing Institute, the UK's national institute for data science and AI, a hub for collaboration between universities, business, and public/third sector organisations in eight key challenge areas that will have major impacts for UK science, our economy, and our society.

We contribute to the world leading collaborative research across the Turing's scientific programmes through our Turing Fellows on projects ranging from fundamental theory through to applications in materials science and healthcare. We are collaborating across disciplines and institutions to advance data science and AI technologies.





## BASKERVILLE

Baskerville is a national collaborative high performance computing facility delivered by the University of Birmingham's Advanced Research Computing Team with consortium partners The Rosalind Franklin Institute, The Alan Turing Institute and Diamond Light Source, the UK's national synchrotron.

Funded by the Engineering and Physical Sciences Research Council (EPSRC), part of UK Research and Innovation, the service is available to engineering and physical science researchers from across the UK.

*"Access to accelerated computing is now a major bottleneck in computational research. This facility will serve to accelerate progress in areas such as materials design, drug development and in machine learning research and all of its applications."*

### Professor Iain Styles

Director of the Institute for Interdisciplinary Data Science and Artificial Intelligence

Named after John Baskerville, the enlightenment-era Birmingham industrialist, this facility provides a state-of-the-art platform built around the latest generation of graphics processing unit (GPU)-accelerated computing technology. It is designed to accelerate machine learning algorithms and computer simulations, with wide-ranging applications in computer vision, language processing, molecular modelling, and materials science.

Baskerville IS one of the fastest and most energy efficient computers in the UK. Because it sits physically on the university campus, but is separate from the rest of the university systems, we can grant external users access easily, providing a platform for collaboration between the University and external partners.



# CULTURE AT THE UNIVERSITY

**Few universities boast such a wealth of cultural artefacts on their campus. Birmingham is alive with fine art, renowned collections, archives and performance facilities spanning literature, history, arts and religion.**

From African masks to the largest collection of fossils, minerals and rocks in the Midlands, as well as a 450-seat concert hall and an arts and crafts house set in a seven-acre botanic garden, Birmingham's campus offers a rich cultural heritage to be treasured in their own right. These valuable collections, from old masters

paintings to historic physics instruments, also play a crucial role in research and teaching. The collections are here to be savoured and treasured and the huge range – from old masters paintings to historic physics instruments – play a crucial role in research and teaching.

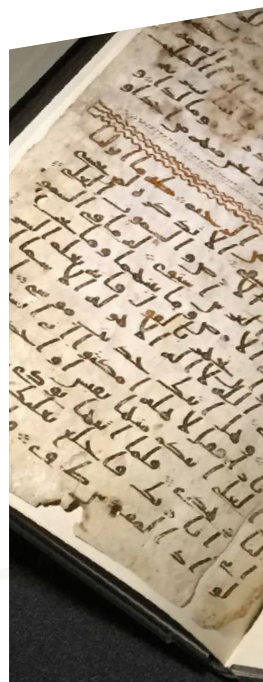
## CADBURY RESEARCH LIBRARY

**The University's main research library contains over 200,000 rare books and over four million manuscripts.**

The Cadbury Research Library is a special collections facility housing our extensive collection of rare books, manuscripts, archives, photographs and associated artefacts, from the University's own historical archives dating back to the 1740s to an estimated three million archives and manuscripts, including one of the earliest surviving fragments of the Qur'an, dated to between 568 and 645AD, which is part of the

Mingana Collection of more than 3,000 Middle Eastern manuscripts in more than 20 languages.

The Cadbury Research Library makes material available to researchers and provides conservation facilities to partners, with the bulk of the collections archivally belonging to external owners, including a Wellcome Trust-funded project to catalogue the archives of the YMCA and the Youth Hostels Association. Birmingham's church missionary society archive, which includes the earliest records of the church in Africa, India, and Australia, is the most well used collection.



# OUR CULTURAL ASSETS

## LAPWORTH MUSEUM OF GEOLOGY

The Lapworth Museum of Geology holds an extensive collection of fossils, minerals and rocks in the Midlands. Dating back to 1880, it is one of the oldest specialist geological museums in the UK and is now open following a £2.7m redevelopment through a transformative Heritage Lottery Fund (HLF) grant of £1.5m and the support of University of Birmingham alumni, along with a number of grant awarding bodies, trusts and foundations. It is named after Charles Lapworth, the first Professor of Geology at Mason College, the forerunner of UoB.

## THE SHAKESPEARE INSTITUTE

The Shakespeare Institute, located in Stratford-upon-Avon, has been a beacon for international Shakespeare scholarship since its foundation in 1951. Its aim is to bring Shakespeare to life through a range of innovative campus-based and online postgraduate degrees.



## THE BARBER INSTITUTE OF FINE ARTS

The Barber Institute of Fine Arts is a Grade I listed collection of galleries boasting an outstanding art collection and concert hall with 'perfect acoustics, comfort, and rest for the eye'. It contains masterpieces by Botticelli, Rubens, Gainsborough, Reynolds, Turner and Rossetti, and Monet, Manet and Van Gogh. The Barber lives the vision of its founder, Lady Barber, who wished to establish a centre 'for the study and encouragement of art and music.'

## WINTERBOURNE HOUSE AND GARDEN

Constructed in 1903 in the Arts and Crafts style, this historic house has gardens that bloom with more than 6,000 plant species attracting a host of insects, including the resident bees, while the house has been transformed with interactive displays and hands-on learning exhibits for all ages.

## RESEARCH AND CULTURAL COLLECTIONS

For more than 140 years at Birmingham our researchers have created and discovered new things, improved people's lives and provided new ways of understanding the world and our place in it. This collection includes thousands of artefacts that showcase examples of research and discovery, created in Birmingham with global reach – affecting the lives of millions of people around the world.

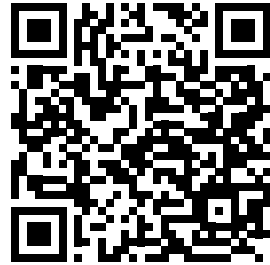


## BIRMINGHAM QUR'AN MANUSCRIPT

One of the earliest surviving fragments of the Qur'an and one of only a handful of early manuscripts of the Qur'an in the world to have been radiocarbon dated.

The Birmingham Qur'an manuscript is part of the Mingana Collection of 3,000 Middle Eastern manuscripts, cared for by the Cadbury Research Library. The Birmingham Qur'an Manuscript contains parts of surahs 18-20 of the Islamic holy book, written on parchment in an early form of Arabic script known as Hijazi.

The wider Middle Eastern manuscript collection is significant along with the Qur'an and has led to extensive community engagement working across different projects, such as exhibitions and workshops. The Birmingham Qur'an has opened up the Middle Eastern collections in new ways and to communities in Birmingham, who may have not otherwise thought that they had a link with the university.



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OUR WORLD-LEADING CAPABILITIES  
AND EXPERTISE.



**UNIVERSITY OF  
BIRMINGHAM**

Edgbaston, Birmingham,  
B15 2TT, United Kingdom  
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