UNIVERSITY OF BIRMINGHAM | ENTERPRISE

17/18

UoB ENTERPRISE

Annual review 2017/18

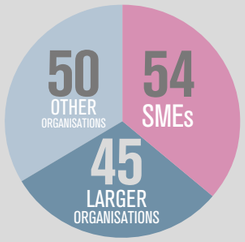
2017–18 IN NUMBERS

106 NEW PATENT APPLICATIONS

477 PATENTS HELD BY THE UNIVERSITY

208 RECORDS OF INVENTION

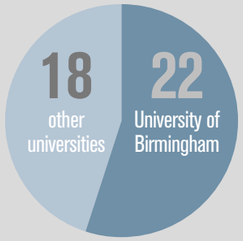
156 LICENCES GRANTED OF THESE...



20,000 VISITORS TO BIRMINGHAM RESEARCH PARK

2,467 TRAINING HOURS DELIVERED BY THE ENTERPRISE TEAM

40 ACADEMICS WENT THROUGH *MEDICI TRAINING*



£184 MILLION VALUE OF TOTAL SPIN-OUT PORTFOLIO

£1.8 MILLION INCOME FROM ACADEMIC CONSULTANCY

£12.5 MILLION THIRD PARTY INVESTMENT IN SPIN-OUTS

£46 MILLION VALUE OF RESEARCH CONTRACTS SUPPORTED

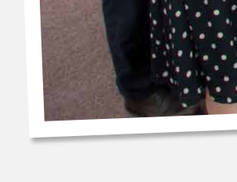
19 RESEARCH GROUPS SUPPORTED THROUGH SPECIALIST INNOVATION FUNDS

BIRMINGHAM RANKED...

4th IN UK UNIVERSITIES FOR INVENTIONS
HEBCIs data from 2016–17

7th IN UK UNIVERSITIES NEW PATENT APPLICATIONS
HEBCIs data from 2016–17

6th MOST INNOVATIVE UNIVERSITY IN THE UK
Reuters Top 100: Europe's Most Innovative Universities



MEET UNIVERSITY OF BIRMINGHAM ENTERPRISE

University of Birmingham Enterprise has had another strong year supporting the 'Birmingham 2026' strategy and delivering benefits to the careers of more academic colleagues than ever.

Turning research ideas into real changes in the world needs long-term passion and commitment, and academics in the University face many demands for their time and attention. Despite this, we continue to attract about 10% more academics to work with us each year. Much of this increase is a result of recommendations from academics who have worked with us in the past, and I'm very proud of everyone in the Enterprise team, and the expert advice and range of benefits they provide.

The teams help academics from all disciplines enhance their reputation, gain new skills and win new types of 'translational' research funding. We now have a full-time media relations professional, and this has meant that in 2017/18, more than 133 million people had the opportunity to see stories about intellectual property. In addition, the entire team is supporting the development of 30 'impact' cases for the upcoming Research Excellence Framework assessment in 2021.

Our financial performance and Intellectual Property (IP) pipeline are strong. The paper value of University shares in spin-out companies is currently valued at more than twice our investment costs and last year these spinouts attracted more than £12 million of third party investment. Nearly half our royalty income in 2017/18 was from deals less than five years old so we're successfully replacing old IP as it expires. Both our Academic Consultancy Service and Birmingham Research Park have had a bumper year, with demand for support, space and incubation services at an all-time high.

Dr James Wilkie, CEO, University of Birmingham Enterprise

"We develop academic ideas into real things that create value for the researcher and the University, from copyright in training materials, software and apps, to inventions and patents."

Dr Jonathan Watkins, Head of IP Services

"We've been running training programmes such as Medici for ten years. These programmes sharpen business awareness, and give academics the skills to increase the impact of their research."

David Coleman, Head of Enterprise Acceleration

"We take care of commercial and financial transactions for academic consultants, and set up operating divisions so academics can easily provide consultancy and test their business ideas without having to set up a company."

Simon Freeman, Head of Academic Consultancy

MAKING A DIFFERENCE

The Enterprise team likes to get involved as early as possible. In 2017/18, we advised on research contracts and strategic agreements worth £46 million, ensuring that ideas created by Birmingham centres of research excellence were captured. We also embedded our staff in larger projects, to identify IP and provide support for academics moving from consultancy to joint projects with industry. These projects deliver innovative new technologies that create change in the world.

Dr James Wilkie, CEO, University of Birmingham Enterprise

DRIVING TRANSPORT INNOVATION

The Birmingham Centre for Railway Research and Education has a world-leading reputation, so it's no surprise that many of its 145 researchers undertake consultancy projects with industry.

The Academic Consultancy Service at University of Birmingham Enterprise handles the legal and financial work for these projects, allowing the researchers to concentrate on developing new technology for the rail sector.

One example is a set of software and algorithms owned by the University that identify the most energy-efficient speed for a train and relay a set of commands so the driver can drive in low-energy mode. These were developed further with Ricardo Rail to produce 'DriveSmart' driver training programmes, which have been successfully implemented at Edinburgh trams resulting in energy savings of up to 20%.

DEVELOPING QUANTUM TECHNOLOGIES

Embedding Enterprise staff in the Quantum Technology Hub project resulted in the identification of over 60 potential inventions and several new patents. One of these is for an underground surveying instrument that is currently aiming to realise twice the sensitivity of anything that exists today. This will allow civil engineers to detect smaller and deeper holes in the ground, and so identify sinkholes, mineshafts and buried objects under construction sites. This instrument is being developed in partnership with Teledyne e2v.

55% INCREASE IN ACADEMIC INTERACTIONS IN THE LAST FIVE YEARS

ENHANCING DRUG DISCOVERY

The Enterprise team has individuals with specialist skills and experience who are assigned to drug discovery projects. One of these projects is the partnership with the Guangzhou Institutes of Biomedicine and Health in China, which is working with Birmingham researchers finding new drugs to tackle global epidemics. The drugs are designed, optimized, and tested through an iterative process involving researchers in Birmingham and China. The collaboration has identified several molecules with therapeutic potential and the Enterprise team will create patents for these.

The Enterprise team, along with Evotec, a global drug discovery company, are looking to establish a £10 million fund, to develop new drugs from novel research arising from University research to a point where these can be commercialised. The fund will be operational by 2020.

Dr Jonathan Watkins, Head of IP Services, comments:

"Birmingham's researchers will benefit from a combination of Evotec's strategic investments and drug discovery expertise, providing scale and cost benefits."

MIDLANDS INNOVATION COMMERCIALISATION OF RESEARCH ACCELERATOR

Working with Midlands partners the Enterprise team has also won £5 million from Research England to lead the Midlands Innovation Commercialisation of Research Accelerator (MICRA). By bringing together the intellectual property from eight 'Midlands Innovation' universities (Aston, Birmingham, Cranfield, Keele, Leicester, Loughborough, Nottingham and Warwick) in one place, this project is on target to attract more than £50 million of new investment.

Dr James Wilkie, CEO of University of Birmingham Enterprise

"Midlands Innovation universities deliver more new patents and inventions for every pound of research income than any other leading group of UK universities. By working together we can attract bigger investors and bring these ideas to market faster."

GROWING THE BIRMINGHAM ECONOMY

The Enterprise team plays its part in the University's civic engagement. In the past five years, we have supported 330 entrepreneurs and small businesses. These are trained in our BizzInn business incubator, often in partnership with external organisations. Birmingham's entrepreneurs are put through their paces at annual 'pitching' events that attract investors from throughout the UK. We are also helping to shape the new Exchange building, which will provide a city-centre platform for the University's business expertise, foster investment, and grow the local economy.

DELIVERING CHANGE

The challenge faced by researchers is crystallised in the University's strapline of 'research that matters'. But research only 'matters' if it changes something – whether that is an academic field, the lives of individuals in society, or by delivering economic benefits. University of Birmingham Enterprise helps researchers translate their ideas into products, services and technologies that meet real-world needs. The team has specialists who can assist at every stage in translation – from intellectual property and copyright, to funding, licensing and setting up spin-out companies. Many of the examples below are being considered as impact case studies for the forthcoming or a future REF.

Professor Tim Softley, Pro-Vice-Chancellor for Research and Knowledge Transfer

DEVELOPING DRUGS FOR RARE DISEASES

Dr Alexandra Sinclair is repurposing an existing drug to treat raised brain pressure, a rare condition that is on the rise and causes permanent vision loss in up to a quarter of those affected. Her work involves progressing laboratory science to the point where the drug can be used to help these patients. The Enterprise team ensured the drug received an 'Orphan Drug' designation in both Europe and the US, which guarantees up to ten years free of competition, and opens the door to specialist funding and support. Enterprise is now negotiating with a group of investors who have confirmed their appetite to invest at least £5 million in further research and commercialisation.

"The impact agenda calls academics to think beyond their research and consider what change they can make in the world.

One of the most concrete ways of demonstrating impact is to design new products or services, and University of Birmingham Enterprise is a key port of call for researchers who want to do this. The work the team does to get research out into the world widens horizons and opens doors for academic career development."

Heather Widdows, Deputy Pro-Vice-Chancellor Research (Impact)

DISCOVERING NEW ARTHRITIS TREATMENTS

The Enterprise team is working intensively with Professor Ed Rainger, whose team discovered a process that controls how the body responds to disease, injury or infection. Enterprise has patented ideas for new drugs, set up a spin-out company, and orchestrated funding from Innovate UK, the West Midlands Academic Health Science Network and the University's Enterprising Birmingham Fund. The spin-out company is now located in the BioHub Birmingham® and we are ensuring their work is directed towards discovering new treatments for diseases such as rheumatoid arthritis, which affects over 20 million people worldwide.

KNOCKING CONCUSSION ON THE HEAD

Professor Tony Belli's research resulted in a test for concussion that measures biomarkers present in blood, saliva and urine. The Enterprise team patented the biomarkers, and helped establish a new company to develop the technology, which has attracted multi-million-pound investment from North America, Italy and the UK.

Enterprise then worked with the University's media experts to announce a collaborative study with the Rugby Football Union, which had a global reach and resulted in requests for further collaboration. One of these resulted in a Drake Foundation award to study traumatic brain injuries sustained by footballers playing in the Premier League.

WEATHER-PROOFING UK TRANSPORT

AltaSense is the brainchild of Professor Lee Chapman, who worked with the Enterprise team to define the best route to market for his technological know-how. The environmental monitoring system delivers real-time data to local authorities and train operators allowing for faster, smarter decisions on where to send road-gritting lorries and trains that clear leaves from the line. Trading as an operating division of University of Birmingham Enterprise proved the commercial potential of Lee's idea, securing exponential sales growth over the first three years of trading.

MAKING SMALLER COMPUTERS

Dr Alex Robinson and Professor Jon Preece developed a novel material for making computer micro-chips with features 4,000 times smaller than a human hair. The market for these materials is complex, fast-moving – and based in the US and Asia. The Enterprise team set up a spin-out company so the academics could continue their research in the UK while business teams in the UK and the US steer commercial development. In the last year alone, we helped raise grants and funding, and the company announced the final stages of testing for the technology.

GREENING FREIGHT VEHICLES

Professor Yulong Ding's research group focuses on developing new technologies to convert, conserve and store energy. One of these is an 'intelligently' integrated hybrid vehicle energy system to extend the range of electric vehicles.

The Enterprise team worked with researchers in a six-month market testing exercise, which assessed the appetite from companies based in China, Europe and the USA. The project generated significant interest from commercial transport – buses, taxis and low emission vehicles and we are now working with researchers to ensure the technology is adopted by industry.

OUR BIOMEDICAL INNOVATION HUB

Birmingham Research Park is a thriving community highly connected with surrounding institutions, and is also the base for the University teams that drive collaboration with industry.

The BioHub Birmingham®, at Birmingham Research Park

Birmingham Research Park is home to an £8 million biomedical incubator, the BioHub Birmingham®, which opened its doors in 2015 to provide a landing ground for early-stage companies and University researchers who want to commercialise their work. Since then the BioHub has become a destination of choice for biomedical innovators, and we have just developed a new floor to meet demand for laboratories and office suites.

ABINGDON HEALTH

Abingdon Health was the BioHub's first tenant when research staff moved there in 2015 to develop the innovative 'Seralite-FLC' lateral flow test for blood cancer. The antibodies utilised within the test were developed by Professor Mark Drayson of the University of Birmingham. Seralite is now sold in over 70 countries, and is projected to bring the University £1 million in royalties over the life of the patent. The company still does a large proportion of early stage R&D at the BioHub.

RIGHTANGLED

Abdullah Sabyah and Floriane Rousse-Marquet founded Rightangled to develop a heart health screening service that links patients, heart specialists and genetic screening in a remote, online service. The founders perfected their genetic screening test at the BioHub, and the idea quickly took off. A successful round of funding netted nearly £500,000, with part coming from crowdfunding and part from the West Midlands Academic Health Science Network. 20% of the company's sales come from the US, and Rightangled has now opened an office in Texas.

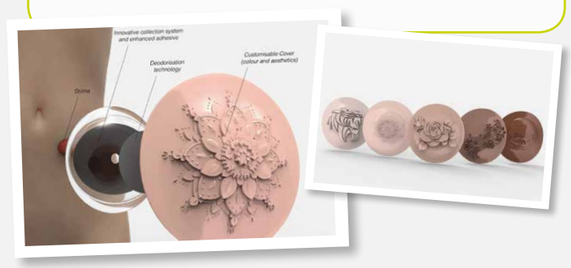
MORE THAN
500
PEOPLE
ARE EMPLOYED BY ENTERPRISES BASED AT BIRMINGHAM RESEARCH PARK

We create a place for innovation where entrepreneurs, researchers and investors spark off each other to create new businesses and social enterprises.

Angie Reynolds, Birmingham Research Park Manager

OSTIQUE

Brunel graduate Stephanie Monty came to Birmingham Research Park to continue developing her business plan for an innovative stoma care product. With her partners at the Medical Device Testing and Evaluation Centre, she successfully won an Innovate UK grant worth £310,000 to continue product development, clinical and patient testing and achieve the regulatory approval that is necessary for commercialisation.



BIRMINGHAM RESEARCH PARK HAS
20,000
VISITORS A YEAR

DIGNIO

Following a meeting with the University of Birmingham Enterprise team, Norwegian digital health company Dignio A/S decided to base its UK operations at Birmingham Research Park. The Enterprise team worked pro-actively to introduce Dignio to other organisations on the University campus including the Centre for Patient Reported Outcomes run by Professor Mel Calvert. This resulted in a successful bid to Innovate UK that resulted in £1.1 million funding to investigate patients' experience of cell and gene therapies.

WEST MIDLANDS REGIONAL GENETICS SERVICE

Birmingham Research Park is also highly attractive to organisations that work closely with the surrounding centres of excellence, and is now home to one of the UK's leading NHS Genomic Laboratory Hubs, the West Midlands Regional Genetics Laboratory. Servicing 11 million people across Wessex and West Midlands, WMRGL provides genomic tests for rare diseases and cancers, performs a critical role in the 100,000 Genomes Project, supports clinical trials and genomics research in the University and collaborates with the diagnostics and pharmaceutical industries.

The Research Park provides high-quality accommodation and has an enviable location, highly accessible by public transport and close to world-leading clinical facilities.

Professor Mike Griffiths, Clinical Director, West Midlands Regional Genetics Laboratories and Scientific Director, Wessex and West Midlands Genomics Laboratory Hub

GROWING NEW BUSINESSES

The Enterprise team has substantial experience of turning business ideas into reality – and we don't just do life sciences. We provide comprehensive support for innovators at all stages of their journey. Many of our services are delivered through the BizzInn business incubator, which provides mentoring and one-to-one assistance in business planning to academic innovators, local entrepreneurs and ambitious, high-growth companies.

FAROOQ KHAN, POLYMATHS CONSULTING

Farooq Khan is a research scientist with a wide range of consulting work in healthcare, engineering, public policy, consumer goods and retail. BizzInn mentoring helped him identify the life sciences sector as the one he would focus on, and he is now building a prototype that will enable drug companies to make earlier and better predictions on which therapies will succeed or fail.

"Mentoring showed me where my work will have the greatest impact, and the community at the Research Park spurred me on."

DR AMRIT CHANDAN, ACELERON ENERGY

Birmingham graduate Amrit Chandan's initial idea was to upcycle used electric car batteries for energy storage in the developing world. The Enterprise team helped him explore additional markets, provided mentoring and identified additional funding streams to support the business. Aceleron has now launched its first product and is running pilot projects in Central America (Barbados) and Africa (Kenya).

"Our enterprise could have remained very local in the UK but the University networks gave us a global reach."

MAX SWINBOURNE, 4T2 SENSORS

When Max Swinbourne came to the BizzInn to learn how to make his business idea attractive to investors, mentors also arranged a residency at the BioHub, which taught him how to build his own laboratory so he could test a prototype. His company has now validated a prototype, attracted international investment, and is licensing their technology to the brewing, food and pharmaceutical industries.

"The BizzInn support and BioHub facilities made available by University of Birmingham Enterprise took us from idea to prototype to launch in a short space of time."

IN THE LAST FIVE YEARS THE BIZZINN HAS HELPED INNOVATORS AND ENTREPRENEURS CREATE

130

NEW COMPANIES

DELIVERING OPPORTUNITIES FOR EARLY-CAREER RESEARCHERS

The Enterprise team delivers training, mentoring and advice for early career researchers who want to develop their ideas, win additional funding, or develop business and entrepreneurial skills.

These services enable researchers to form productive links with industry, or become the academic lead that will help steer a spin-out company or social enterprise to success.

DR AMIR HAJIYAVAND, ADVANCED MANUFACTURING TECHNOLOGY CENTRE

Doctoral researcher Amir Hajiyavand worked within the Medical Robotic Research Group, part of the Advanced Manufacturing Technology Centre, with Dr Mozafar Saadat. His new methods to increase the success rates for IVF were patented by the Enterprise team who also supported him through a structured commercialisation process. This helped him identify the fertility doctors and clinics whose opinion would be key to success, and funded a series of fact-finding meetings with them. Their opinion endorsed the technology, and the research group subsequently won further money from the University's Impact Acceleration funds.

DR MANI ENTEZAMI, BIRMINGHAM CENTRE FOR RAILWAY RESEARCH AND EDUCATION

Dr Mani Entezami works with Dr Edward Stewart at the Birmingham Centre for Railway Research and Education. His role involves developing prototypes for the railway industry. The Enterprise team helped him secure funding for a series of meetings with railway companies in Singapore, the Middle East, China and Germany to discuss a low-cost device that monitors railway tracks to predict faults, estimate ride quality and identify degradation. Enterprise is now helping set up a new spin-out company, MoniRail, to develop the device with Mani as the Chief Technology Officer.

DR KAROLIS VIRZBICKAS, SCHOOL OF CHEMICAL ENGINEERING

Dr Karolis Virzbickas was part of the team that developed new fluorescent compounds while studying for a PhD at the School of Chemical Engineering with Professor Jon Preece and Dr Alex Robinson. The Enterprise team helped him gain funding to research potential markets for these chemicals, and this quickly turned up immediate commercial opportunities in the UV security ink market. Enterprise then secured follow-on funding to set up a spin-out company, ChromaTwist, and Dr Virzbickas has been appointed as the company's academic lead.

"Developing business skills gives academics more choices about how they pursue research.

Much of the work to turn research ideas into tangible products or services is done by industry, and specialist funding is available for researchers who want to go on this journey.

Successful collaboration with industry not only raises academic profile, but also tells the world why research matters."

Professor Tim Softley, Pro-Vice-Chancellor for Research and Knowledge Transfer

University of Birmingham Enterprise helps researchers find a way to turn their research ideas into reality. We work with academics from all disciplines to protect ideas, find the best outlet for them in business or social enterprise, and ensure the smooth running of academic consultancy projects.

We also provide enterprise training, coach academics who apply for specialist funding, and manage innovation spaces where researchers, businesses and investors can spark off each other.

Please contact us if you want more information.

THE BOARD

Chairman: John Powell

CEO: Dr James Wilkie

Directors: Andrew Sleigh, Professor Andy Schofield, Brenda Reynolds, Professor David Adams and Dr David Brown

Company Secretary: Melanie Kaiser

ADDRESS

Birmingham Research Park,
97 Vincent Drive, Birmingham
B15 2SQ, United Kingdom

Email: info@enterprise.bham.ac.uk

Phone: + 44 (0)121 414 9090

Website: www.birmingham.ac.uk/enterprise

Twitter: @UoBAccelerate

KEY CONTACTS

Director, Enterprise and Innovation
Dr James Wilkie: j.h.wilkie@bham.ac.uk

Academic Consultancy Service
Simon Freeman: s.freeman.1@bham.ac.uk

Birmingham Research Park and BioHub Birmingham
Angie Reynolds: a.reynolds.1@bham.ac.uk

BizzInn Business Incubator and Enterprise training
Andrew Cruxton: a.cruxton@bham.ac.uk

Communications
Ruth Ashton: r.c.ashton@bham.ac.uk

Spin-outs
David Coleman: d.coleman@bham.ac.uk

Intellectual Property
Dr Jonathan Watkins: j.watkins.1@bham.ac.uk

Midlands Innovation Commercialisation of Research Accelerator
Simon Jones: s.jones.11@bham.ac.uk

UNIVERSITY OF BIRMINGHAM | Edgbaston, Birmingham, B15 2TT, United Kingdom
www.birmingham.ac.uk

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