UNIVERSITY OF BIRMINGHAM

think
Business with Birmingham
issue five

Discover the gateway to growth

'When looking for the best location from which to build your business, having dynamic neighbours who can support innovation is a good place to start'. Birmingham Research Park has been the home of many young companies tapping into expertise at the University of Birmingham.

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At the heart of medical research

Established in 1986, and located just two minutes away from the University of Birmingham campus, Birmingham Research Park has been the home of many young companies. Tenants have built successful businesses based upon the University's reputation in biotechnology, computer systems, medical diagnostics and scientific instruments and several of them have gone on to outgrow the site and become significant employers in the region.

By locating at the Research Park, tenants are automatically integrated within a vibrant and diverse network of businesses, researchers and the wider University of Birmingham research community. Current tenants all have at their heart some medical-related activity, ranging from the provision of clinical trials to medical diagnostic equipment and public/military health services. It is, therefore, of huge benefit to them to have the University's College of Medical and Dental Sciences, at the forefront of medical, health and dentistry research, on the door step as well as the new Queen Elizabeth Hospital, one of the largest academic trust-based 'super hospitals' in the world.

Talks are now also underway to fund and build a 25,000 sqft Biomedical Innovation Hub building on the site which will allow even more entrepreneurs access to facilities that they might not otherwise have been able to afford.

Birmingham Research Park Ltd

Learn more
www.birminghamresearchpark.co.uk
contact: brpl@bham.ac.uk

With the support of the Birmingham Research Park team, who can not only provide practical help to get young businesses off the ground, but also provide on-going business support through its network of business contacts and relationships, Birmingham Research Park offers an unrivalled package to boost commercial success.

If you are looking for office accommodation to house your organisation, the Research Park provides secure high quality office space on competitive and flexible terms. Space ranges from small, one man offices up to 5,000 sqft in a single block for larger companies.

'Birmingham Research Park with the University on its doorstep and excellent transport links was my first choice.'

Mike Godkin, CEO
Aspen Healthcare Solutions

'When looking for the best location from which to build your business, having dynamic neighbours who can support innovation is a good place to start.'

James Wilkie
CEO of Birmingham Research Park

Innovative cancer test developed by University spin-out Company ***Serascience***

Specialist cancer diagnostics company, Serascience Ltd, has developed a testing kit for very fast detection of myeloma – a form of cancer of bone marrow plasma cells – diagnosis of which currently requires patients to attend a specialist laboratory with a waiting time of several days for results.

This innovative new product improves patient management through better diagnostic and prognostic assessment of patients with myeloma and other plasma cell disorders. For the first time patients will be offered 'point of care' testing in a matter of minutes that will allow for immediate next steps to be taken based upon the outcome of the result. This more timely intervention will also improve patients' quality of life and provide efficiencies within health services.

Myeloma can develop from a condition that is present in 1 percent of the healthy population, rising to 3 per cent in 60 year-olds and 8 percent in 80 year-olds with 4,000 new cases of myeloma detected in the UK every year.

This new innovation from Serascience Ltd has emerged from a joint venture between the University of Birmingham and Abingdon Health Ltd and enables tests to be done by medical staff in less than ten minutes.

'The new innovation enables testing to be done by medical staff in less than ten minutes.'

Dr Chris Hand
Serascience Ltd

University of Birmingham spin-out companies

Learn more
www.alta.bham.ac.uk
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Pictured here, Professor Mark Drayson from the University of Birmingham and Dr Chris Hand from Serascience Ltd with the new testing kit.

think advanced manufacturing

University wins
Queen's Anniversary Prize

The University of Birmingham's world-leading Centre for Formulation Engineering gained further recognition when it was selected for a Queen's Anniversary Prize for Higher and Further Education.

The Prizes form part of the national honours system and are the most prestigious honour that can be awarded to a UK university or college. The Prizes are given to institutions that make an outstanding contribution to the intellectual, economic, cultural, and social life of the nation.

The University of Birmingham was selected for this major prize in recognition of its pioneering research in micro-structured materials and outstanding track record in collaborative research and training with UK and multinational companies involved in process engineering. Key industrial partners in this work include Cadbury/Kraft, Procter & Gamble, Unilever, and Johnson Matthey.

'We are tremendously proud to have been recognised in the Queen's Anniversary Prize for the work we do to connect our internationally-acclaimed academic research with business and industry.'

Vice-Chancellor of the University of Birmingham, Professor David Eastwood

Centre for Formulation Engineering

Learn more
www.birmingham.ac.uk/research/activity/chemical-engineering
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A model railway system

A Knowledge Transfer Partnership (KTP)* between the University of Birmingham and Atkins is developing a multi-train railway simulator (MTS) to provide the capability for advanced simulation work that addresses future sustainability, carbon and legislative issues.

Atkins is a major consultancy company that provides knowledge, application, innovation and expertise to the rail industry across many rail engineering and non-engineering disciplines. The Company needed to develop its own software simulation tools for use in modelling AC/DC railway infrastructure as the existing commercial modelling tools available do not allow access to the source code, and therefore, provide very little control on the solution methods used.

Working with Professor Clive Roberts and Drs Stuart Hillmansen and Paul Weston from the University of Birmingham's Centre for Railway Research and Education the collaboration aims to provide Atkins with the capability to develop the required skills and competencies to develop a MTS and to keep it continually up-to-date. In particular, the KTP project has looked at innovative ways to address the requirements of current electrical safety standards and the need to ensure that new designs take into account carbon critical design. The engineering tool is also being developed with a unique feature which will simulate anticipated operating timetable in a 'real time' manner to assess the performance and behaviour of the operational railway.

*This Partnership received financial support from the Knowledge Transfer Partnerships programme (KTP). KTP is funded by the Technology Strategy Board along with the other government funding organisations.

'The MTS tool being developed with the University of Birmingham will increase Atkins capability and competitiveness in this area and enable us to offer our clients designs to develop and operate the railway infrastructure that minimise carbon emissions.'

Roger White, Professional Head of Electrification and Plant for Atkins Rail Division

Knowledge Transfer Partnerships

Learn more
www.birmingham.ac.uk/ktp
Contact: ktp@contacts.bham.ac.uk

think environment

Watering down the solution

Until now the development of water-based cathode inks for use in Solid Oxide Fuel Cells (SOFCs) has been unsuccessful but work taking place at the Centre for Hydrogen and Fuel Cell Research at the University of Birmingham has made a significant breakthrough.

Driven by the need for environmentally friendly energy generation there is a growing market for innovation in Solid Oxide Fuel Cells (SOFCs) that have a strong industrial focus. SOFCs offer an efficient, fuel flexible, low emission and relatively low cost means of producing electricity. The commercial applications of SOFCs include combined heat and power plants for homes and offices, stationary power generation and smaller mobile units for civil and military use to name but a few.

One of the most popular methods for producing the cathode of the current generation of SOFCs involves the use of organic solvent based inks; using solvents such as acetone or iso-propanol. These inks can provide a number of challenges when used, and scientists at the University of Birmingham have been looking to find a more efficient and environmentally friendly solution.

A new water-based ink has been developed, which is less volatile than the inks currently used in the manufacture of SOFCs. This means the new ink can be stored for longer and also that dip-coating can take place without any surface drying issues. This new water based system could also overcome the problems around handling solvents and potential environmental issues around using solvents. Furthermore, the electrical performance of fuel cells made with this new ink system has outperformed previously-used acetone-based systems in laboratory conditions.

This is just one example of a technology available for license through the University of Birmingham's technology transfer company, Alta Innovations Ltd.

'Development of this technology should lead to easier manufacture of cells because the ink needed can be handled, stored and applied more easily. Using water instead of an organic solvent also lowers the cost and increases availability.'

Katie Howe, who has led the research at the University of Birmingham

Technology and IP

Learn more
www.alta.bham.ac.uk
Contact: info@alta.bham.ac.uk

Where there's muck, there's brass!

Each year we generate approximately 290 million tonnes of waste in the UK, which causes damage to our environment and costs businesses and consumers money.

Seeking to find solutions to this challenge is the National Industrial Symbiosis Programme (NISP), an industry-led business opportunity programme. With a large database of member companies, NISP matches one company's waste with another company's need. From re-using end-of-life train window glass for the manufacturer of kitchen work surfaces to converting pastry waste into energy, NISP marries companies together in the quest for greener waste disposal.

NISP members often need technical research and analysis into their waste material and with over a century of pioneering research in science, technology, engineering and mathematics the College of Engineering and Physical Sciences at the University of Birmingham is well placed to help. Birmingham researchers have been involved in a number of NISP opportunities recently including one that involves finding a secure solution to recycle waste datatapes and another that is looking at how to strip precious metals, such as copper, from acid waste.

NISP

Learn more
www.nisp.org.uk
Contact: businessteam@bham.ac.uk

'Working with the business engagement team and researchers at the University of Birmingham has been invaluable when we have needed to access expertise to investigate the composition of certain waste material. We look forward to continuing this relationship.'

David Pearson, Regional Manager for NISP in the West Midlands

NISP™ IN ENGLAND

think business

Happy shopper?

The Supplies Group (TSG), an internet retailer, acquires all its customers through online marketing, mostly at a financial loss, with the hope of selling other products to them in the future. As the Company did not know, or understand, the profile of the most valuable customers they felt that the return on their investment in customer acquisition and retention was not being maximised

Working with researchers from the University's School of Computer Science, led by Dr Peter Tino, the Company embarked on a KTP project* which developed methods to represent customers based on patterns of historical sales data and to predict their Life Time Value (LTV). Algorithms were developed to identify the most important product families with the potential to indicate customers with high future profitability.

The KTP has had considerable impact with TSG having recruited 3 postgraduates from the University to take forward, and build on, the results of the project, and an expectation that a further 3 posts will be created. Furthermore TSG is predicting a £2.5M pa increase in customer acquisition revenue and a 15% increase in existing customer LTV which will contribute to an additional £2M of potential annual revenue growth. A further two EPSRC* funded projects have also evolved from this project.

*"This project was part of the programme of industrial mathematics shorter KTPs managed by the Knowledge Transfer Network (KTN) for industrial mathematics. The KTN works to exploit mathematics as an engine for innovation. It is supported by the Technology Strategy Board, in its role as the UK's national innovation agency, and the Engineering and Physical Sciences Research Council, in its role as the main UK government agency for funding research and training in engineering and the physical sciences.

Knowledge Transfer Partnerships

Learn more
www.birmingham.ac.uk/ktp
Contact: ktp@contacts.bham.ac.uk

'The project outputs will give TSG a tangible competitive advantage in online customer acquisition efforts. The work will allow us to identify customers of high value and target our marketing budget to maximise acquisition of such customer groups while minimizing exposure to low value customers'.

Noah Gresham, The Supplies Group

University of Birmingham joins the Easy Access IP initiative

The University of Birmingham has recently become the first Midlands University to be part of the Easy Access Innovation Partnership, which promotes new ways of transferring intellectual property (IP) to industry.

Recognising that it has a significant role in supporting economic recovery and stimulating innovation, the University is committed to working with industry to maximise the transfer of knowledge for public benefit.

By joining this initiative the University feels it will be much easier for businesses to access its research. Through its technology transfer agency, Alta Innovations Ltd, some of the University's IP portfolio will be offered for free using simple, standard agreements to make the whole process of IP exploitation much faster. In addition the University anticipates this mechanism will help to encourage new and longer-term relationships with business and to open up new areas for collaboration.

EasyAccessIP

Technology and IP

Learn more
www.alta.bham.ac.uk
Contact: info@alta.bham.ac.uk

'This initiative will enable businesses to adopt our IP very quickly. It's an exciting step forward in our commitment to engage effectively with business and encourage use of the hard-won knowledge from our research for public benefit.'

Professor Adam Tickell, Pro-Vice-Chancellor (Research and Knowledge Transfer) at the University of Birmingham

The heat of the matter...

Glass-making in the West Midlands town of Stourbridge dates back to the 17th Century when glassmakers were attracted to the region for the rich natural resources of coal and fireclay for lining furnaces. Apollo Furnaces are a start-up company in Stourbridge working to develop a new way of melting glass and when they needed help to calculate the temperature of heater elements in their hi-tech, glass-making furnace they contacted the School of Physics and Astronomy at the University of Birmingham for their advice.

With experience in both thermal physics and computer modelling, Dr Neil Thomas was keen to take on the challenge of developing a mathematical model that would help the Company to optimise their furnace design. To keep costs down, essential for a small start-up company, and to provide answers quickly Dr Thomas produced a simplified physical model that would help Apollo during the prototype development process.

'This model immediately answered some very important questions for us before we took our product to market and it has the potential to be refined and extended in the future as our Company grows.'.

Lawrence Keen, Apollo Furnaces

Academic consultancy

Learn more
www.alta.bham.ac.uk
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SMEs urged to collaborate with universities on R&D

Small-to-Medium Enterprises (SMEs) in the West Midlands have been urged to work in collaboration with the region's universities in order to reduce their research and development costs.

The message has been delivered to more than 100 manufacturing and engineering businesses this year through events organised by the Science City Research Alliance (SCRA)*. SCRA Director. Professor Chris McConville said

'The SCRA events have provided an excellent opportunity to discuss how government backed initiatives, supported by universities, can offer affordable access to leading edge scientific research to companies across the West Midlands region'.

The events have focused on 'Next Generation Advanced Materials'. The universities' Advanced Materials programme offers access to experts covering a range of issues from materials synthesis, analysis and characterisation through to processing and device fabrication.

Greg Hall, Managing Director of Fusion Innovations was a speaker at one of the events. Fusion Innovations have first hand experience of working in collaboration with the University of Birmingham and Greg told delegates about the firm's success after tapping into funding support as a result of collaborating with the universities. A delegate from one of the events said

'The blend of presentations on opportunities with those reflecting real experiences made it useful to all types of businesses (SME to OEM) that are looking to engage with universities.'

Working across the technology areas of Advanced Materials, Energy Futures and Translational Medicine, the principal aim of SCRA is to engage with business and industry – giving access to the latest research and state-of-the-art equipment in science and technology.

*The Science City Research Alliance (SCRA) is a strategic union between two of the leading research universities in the Midlands, the University of Birmingham and the University of Warwick. The Alliance was formed under the Birmingham Science City initiative and has benefited from a multi-million pound investment by Advantage West Midlands (AWM) and the European Regional Development Fund (ERDF).

Science City Research Alliance (SCRA)

Learn more
www.birminghamsciencecity.co.uk/research-alliance
Contact: r.simpson.1@bham.ac.uk

IQ booster

You can boost your organisation's knowledge and resources by tapping into world-class expertise at the University of Birmingham. We're constantly making exciting breakthroughs – in medicine and engineering, energy and social science – and then making them available to the people who will benefit most.

Here is just a snapshot of some of the technologies currently available from Alta Innovations, the University of Birmingham's technology transfer company.

Technology and IP

Learn more
www.alta.bham.ac.uk
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Title	What is it?
Ruthenium coated nanoparticles for imaging	Noble metal coating of nanoparticles with luminescent complexes for use as life science research tools
Enterically delivered alginates as an anti-colorectal cancer agent	New research results suggest that reducing the concentration of iron in the colon may inhibit the progression of polyps to tumors
Volatile biomarkers of inflammatory bowel disease	Volatile organic compounds from faecal samples may allow differentiation between irritable bowel syndrome and inflammatory bowel diseases such as Crohn's
Recombinant protein production	Biotherapeutic proteins produced in E. coli. can now be directly secreted to the cell culture medium allowing more efficient production
Water-based cathode inks	A new, safer and potentially more efficient water based ink for use in the manufacture of improved solid oxide fuel cells
Encrpyted CPU	Improved security through processing encrypted data without decryption or encryption
Self structuring diet foods	Ingredient for use in diet food which improves satiety by forming a structured gel after ingestion that breaks down in a controlled manner over an extended period of time
Cytotoxicity of monoclonal antibodies	Enhancing cytotoxicity of monoclonal antibodies by peptide conjugation
Platinum recovery from road dust	A method of recovering platinum group metals ,which originate from catalytic converters, found in roadside dust
Scanning probe energy loss spectroscopy (SPELS)	A novel technique that combines the imaging capabilities of scanning tunnelling microscopy with the spectral information provided by electron energy loss spectroscopy in reflection mode

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