



CARDIFF
UNIVERSITY

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Commercial Development @ Cardiff

Foreword

Commercial Development @ Cardiff is a publication to celebrate some of the recent commercial successes of Cardiff University staff and students.



The University has a significant impact on the economy and society at many levels within the region, Wales and the world. This

publication seeks to highlight some of the ways in which the University and you – the academic staff and students – interact successfully with businesses and external organisations.

Last year the University recorded its best-ever year for winning new research grants – at just under £150 million, and our commitment to translate the outcomes of our research for the benefit of the economy are illustrated throughout this publication. They range from spinout companies and licensing agreements, to supporting student

enterprise and helping students translate their passions and ideas into new businesses, all of which contribute to the economic development of Wales. Analysis of a number of commercial indicators from the 2008-9 Higher Education-Business and Community Interaction Survey shows that Cardiff University's Commercial Development activities accounted for 43% of the total income generated by Welsh Universities in this area. Furthermore, our partnership with Fusion IP enabled £6.2 million to be invested in Cardiff University spinout companies last year.

Innovation and Engagement is now recognised as a core and integrated part of the University. Over the past year key achievements have included an increase in the growth of external alliances, particularly in the area of Knowledge Transfer Partnerships

(KTP), which now stands at 23 active partnerships, ranking Cardiff 5th in the Russell Group of Universities. The work of the University's Innovation and Engagement Committee secured a significant (£1 million) financial commitment from its Strategic Investment Fund to sustain its patent portfolio and the Cardiff Partnership Fund - a Proof of Concept Fund to assist the commercialisation process. This decision by the University underlines its commitment to translate the outcomes of its research and will ensure the availability of proof of concept funding for years to come. We also continued the exploratory work with Cardiff Council to develop a concept plan for the development of a new Innovation Centre within the City.

Looking to the future, one of the priority areas for Innovation and Engagement is Entrepreneurship

* Source: Higher Education-Business Community Interaction Survey 2008/09

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Welsh and English electronic versions of this publication can be found at www.cardiff.ac.uk/cdreview

Education and ensuring that our Graduates are equipped with the skills necessary to succeed, building on the excellent work of the Student Enterprise Team.

New ideas and projects drive collaboration between the Commercial Development team and you. I look forward to building on our success in 2011, as Cardiff University aims to increase its commercialisation activities to support the ongoing economic development of Wales and the wider communities.

We welcome your interest in the exploitation of your research, and encourage you to contact us about anything you think may have a commercial application.

Professor Hywel Thomas
Pro Vice-Chancellor, Engagement & International

Whats on the Cover?

The cover of this year's report features a highly magnified image of a slice of Brazilian agate by Richard Weston, Professor of Architecture. 'I began making high-resolution scans of minerals several years ago, captivated by their beauty and endless variety,' he says, 'and initially I had no thoughts about commercial applications. All that has changed: Richard now produces printed fabrics, ceramic tiles, and digitally woven rugs, and following Liberty's 'Open Design Call' his silk scarves have become stars of the store's famous Scarf Hall – in 2012 their development will feature on a new BBC2 series entitled 'The Next Big Thing'.

Despite his retail successes, architectural applications using silk laminated into glass are closest to Richard's heart. An 'agate façade' has been realised in collaboration with architects Patel Taylor; the foyers of four apartment blocks in the Olympic Village will feature striking, five-metre-high glass panels; and they will loom large in a house and studio he is planning for himself in Sully.

Introduction

Welcome to this second edition of **Commercial Development @ Cardiff**. Cardiff University staff have again excelled in developing projects that combine its traditional scope of academia with commercial enterprise. With the support of our Business Development, Technology Transfer and Student Enterprise teams, these projects have flourished. Here are some of the projects we've been working on.



CARDIFF UNIVERSITY is *OPEN for BUSINESS*

Based in the Research and Commercial Division, the **Business Development team** is well-placed to support business-academia interaction through its Knowledge Transfer and Outreach activities. As a central point of contact for both academics and businesses looking to work together, the team offers support and guidance on university-business collaboration, and facilitates the creation of partnerships and links.

Business Development Highlights

- › **Driving Innovation:** During 2009-10, more than 650 delegates attended Cardiff University Innovation Network business meetings, an average of 90. These evening events were rated by business delegates at 4.1 out of a possible 5.
- › **Diversifying Income Streams:** Against a challenging economic backdrop, Cardiff academics continue to demonstrate the University is amongst the most industry-engaged in the UK. For numbers of fee-earning consultancy and advisory projects with business, Cardiff was in the first quartile in the Russell Group of leading research intensive universities and undertook more than one third of all projects across the 11 universities in Wales (Source: -Higher Education-Business Community Interaction Survey 2008-09).
- › **Strategic Connections:** Recognising the mutual benefits that can be transferred between partners working together toward shared goals, Cardiff continues to develop both existing and new relationships with companies across the UK such as the Ford Engine Plant in Bridgend, SKF (UK) Ltd, an aircraft parts manufacturer based in Clevedon and dePuy (a Johnson and Johnson Company) in Blackpool, which makes orthopaedic products.
- › **Exchanging Knowledge:** With 23 active Knowledge Transfer Partnerships (KTPs), Cardiff is now ranked 5th in the Russell Group.
- › **Up Skilling Wales during the Downturn:** The Saint David's Day Group of universities has been delivering a package of assistance to unemployed graduates across Wales over the last 18 months. Funded by a £1.3million grant initiative from Higher Education Funding Council for Wales (HEFCW), the help has consisted of enhanced careers advice, up to 75% aid with course fees and training in essential employability skills.

Knowledge Transfer Partnerships (KTP)

Overseen by the Technology Strategy Board, **KTP** is Europe's most successful Knowledge Transfer Programme. It aims to strengthen the competitiveness, wealth creation and economic performance of the UK by the enhancement of knowledge transfer and skills and the stimulation of innovation through collaborative projects between business and the knowledge base.

The KTP Office within Business Development works to:

- Promote KTP internally and externally
- Advise on project suitability
- Liaise with KTP Advisers and the Technology Strategy Board
- Help prepare applications and submit forms
- Assist with recruitment of KTP Associates
- Provide support throughout the life of the project

“By facilitating the exchange of knowledge with business, the Network addresses practical and productive ends and in so doing is a driver of innovation in the region.”

Making Connections - Cardiff University Innovation Network

Cardiff's well established **Innovation Network** brings together academics and business professionals in an informal gathering, whether physical or virtual. By facilitating the exchange of knowledge with business, the Network addresses practical and productive ends and in so doing is a driver of innovation in the region.

The Network hosts regular, free evening events that cover a broad range of innovation themes from 'Knowledge Clusters' to 'Collaboration in China'.

In 2010 the Innovation Awards recognised the positive impacts of University research excellence on global steel producer Tata as well as small businesses in the region.

Technology Transfer Team

The **Technology Transfer** team works closely with academic researchers to further develop and commercially exploit the outcomes of their research programmes – a process that doesn't happen overnight. Last year the University's Innovation and Engagement Board received a presentation on behalf of the Russell Group of Universities that concluded that the average time to develop a university concept to commercialisation was nine years.

In this edition we celebrate the 10th anniversary of the University's seed venture fund, the Cardiff Partnership Fund, and demonstrate the key role this Fund has played in support of the University's Technology Transfer activities. We also feature an interview with Professor Chris McGuigan, Welsh School of Pharmacy, which relates to his experiences as Professor of Medicinal Chemistry and as Pro Vice Chancellor (Research). During the year, the Technology Transfer team continued to work closely with the University's commercial partner, Fusion IP, to create two new spinout companies, Asalus Medical Devices Limited, which is developing novel laproscopic devices and Progenteq

Limited, which is developing novel cartilage replacement therapy for the treatment of acute knee injuries. Further new ventures were created, all based on University expertise including, Decipher Impact Limited, a joint venture spinout company from the School of Social Sciences and

researchers at the University of Bristol which aims to drastically cut the rates of teenage smoking across the UK, and Eco-Explore Limited, a Community Interest Company based on the ecological and zoological research expertise in the School of Biosciences.

Technology Transfer Highlights

- › **Profiting from innovation** Cardiff University generated more than £1.5 million in exploitation revenues from patent licences - an increase of 25% on the previous year.
- › **Inventing new technology** Cardiff University secured 13 new patent applications and 11 new licence agreements bringing the total to 48 technology licences world-wide.
- › **Investing in creativity** The Cardiff Partnership Fund, the University's proof of concept fund, made four new technology based investments last year totalling £79,000.
- › **Attracting support** In November 2009, Fusion IP raised an additional £3.2 million from IP Group Plc. Fusion also entered into a co-investment agreement with IP Group that combines the knowledge and resources of IP Group and Fusion to evaluate and assist new portfolio companies
- › **Creating commerce during the year** Fusion IP invested £1.1 million in six funding rounds in Cardiff portfolio companies, and levered £5.1 million in co-investment from third party investors. This brings Fusion's total investment in Cardiff University spinouts to >£3.1 million with £10 million of co-investment raised alongside.

Developing Enterprising Students

The **Student Enterprise team** at Cardiff University was established in 2007 to help students and recent graduates develop enterprise skills and commercial awareness. Located in the Students' Union, the team offers a central hub of guidance for students to develop these skills, as well as providing support for business start-ups. All students at Cardiff University have access to a series of innovative events and courses run throughout the year. Student Enterprise provides opportunities to mould students into entrepreneurs who can make an organisation - be it their own or someone else's - successful.

Student Enterprise Highlights

Cardiff University hosted the International Entrepreneurship Educators Conference 2010 with over 200 enterprise educators from around the UK and further afield sharing experiences and best practice in Cardiff.

This year through Student Enterprise...

- › Over 60 events for students and graduates result in over 1700 attendances
- › Over 80 students were given guidance by Student Enterprise to develop their business ideas and 46 received mentoring through Welsh Assembly Government's Graduate Start Up Support.
- › 59 new graduate start ups were established
- › Active businesses founded by Cardiff graduates have an estimated combined turnover of £8M

Finally, I'd like to take this opportunity to thank all those academic staff and students that have worked with us in support of the University's Commercial Development activities. We look forward to continuing our working relationship with you, and building new ones in the future.

Dr Nick Bourne

Deputy Director, Commercial Development



We would also like to extend our thanks to Miss Jadine Wringe, Graduate Trainee, Cardiff University for her considerable assistance in producing this publication.

Business Development

Insuring Success

A collaboration which developed and delivered bespoke courses for one of the UK's major multinationals has proved to be so successful that it has now been extended to encompass wider areas of expertise.



Legal & General is one of the UK's leading life companies and has a significant presence in Cardiff, employing close to 1,500 people. The Cardiff office is home to one of L&G's underwriting centres where staff need to be able to interpret and assess medical information. However, as most do not have medical backgrounds, the more challenging or unusual cases were being referred

to external Chief Medical Officers (CMOs), incurring costs and delaying decisions.

Initially, Legal & General wanted to provide their medical underwriting claims and assessment team with a solid platform of medical knowledge to facilitate and improve their risk assessment performance, and the company approached Cardiff University Centre for Lifelong Learning for assistance with this upskilling.

The Business Development teams in the Centre for Lifelong Learning and in Research and Commercial Division (RACD) put an agreement in place underpinning the development and delivery of a tailored modular course "Medical Foundations for Underwriting". The course is run over 25/30 weeks and delivers a series of customised, high quality, lecture-based presentations and workshops, delivered by an experienced team. The course is assessed and

accredited through Cardiff University to a level equivalent to second year undergraduate study.

This ground-breaking course, led by the University's School of Psychology, was the first to be approved by the Assurance Medical Society and has had a significant impact on Legal & General, both at the Cardiff operation and across its other UK bases.

Over 130 Legal & General staff have now attended the modules and the improvements in delegates' knowledge and confidence have far exceeded the company's expectations. As a direct result of the course, Legal & General is seen as the industry leader in this area and the training has been extended to each UK L&G office so staff can acquire medical knowledge and become a 'specialist' in a certain medical area. The courses are recognised to have revolutionised the way in which training is undertaken within company.

“The on-going collaboration between L&G and Cardiff University to develop and deliver accredited courses for underwriting and claims specialists put us head and shoulders above our competition.”

Senior Operations Manager, Claims and Medical, Legal & General

Other notable benefits are a huge decrease in CMO referrals per month, resulting in significant cost savings; quicker decision making, thus improved customer service and increased confidence from reinsurers, allowing more favourable terms to be negotiated. L&G staff are also asking to be involved in the training and have demonstrated improved commitment to their development.

It has also proved to be positive for the University, leading to the development of a Health Claims Management Course and the significant enhancement of a further medical underwriting course for Legal & General.

The collaboration far exceeded expectations. Its success has enjoyed wide recognition, having been used as a good practice case-study in business seminars and winning the 2004 Cardiff University Innovation Prize, awarded in recognition of outstanding innovation. It has also been recognised externally, winning a Regional Training Award for lasting

excellence and success in training and learning, being short-listed for the Personnel Today award for Excellence in Learning and Development and reaching the finals of both the National Training Awards and Training Journal Awards 2010.

It has also featured in the Council for Industry and Higher Education (CIHE) report ‘Employer Demand and Its Influence on Higher Education’ and the CBI/Qinetiq report ‘Excellence in Service Innovation’, both published in 2008.

These courses are ongoing and their success has led to a broadening of scope, with the Legal & General Business Improvement Team receiving bespoke training from Cardiff Business School in ‘Lean Training & Support for Business Improvement’, thereby enhancing Legal & General’s presence in Cardiff.



National Training Awards
Wales Winner 2010



AWARDS 2010
FINALIST

Frameworks for Success

With a growing tendency for organisations to manage much of their procurement through Framework Agreements and Preferred Supplier Lists by means of e-portals, the Business Development team takes a proactive approach to the opportunities which this presents.

The team sets up, manages and monitors Cardiff University's registrations on e-portals and databases. These sites often provide the only notification suppliers receive of potential projects, which can be of substantial value - for example, the Welsh Assembly Government's "Sell2Wales" portal has advertised over £5 billion of notices since inception. By ensuring that the University is registered with relevant databases and that the information submitted is kept current, the Business Development team is well positioned to monitor notices for upcoming projects and to alert academics of upcoming opportunities.

In addition to flagging opportunities for research and consultancy services projects, the Business Development team has developed an initiative to further support academics when

preparing bids - the creation of a web-based micro-site dedicated to the submission process.

This site contains guidelines and answers to the most frequently (and sometimes not so frequently) requested information, including links to supporting documents and other useful sites. It is very much a "live" resource, which aims to be a one-stop-shop, enabling staff to access the information required from one web area.

The Business Development team has supported a number of successful research and consultancy services framework bids, including several interdisciplinary responses, notably to the Department of Work and Pensions; Communities and Local Government; and the Welsh Assembly Government. The benefits of inclusion on such frameworks range from being able to bid for opportunities which are only made available to framework members, to automatic qualification for full Invitation to Tender status where two-stage bids would have previously been required.

Amongst the projects which have emerged from such frameworks are 'E-learning for Health' with the University's School of Medicine for the Department of Work and Pensions; the multi-partner, interdisciplinary Expert

Panel for Local Government Research led and managed by Cardiff Business School for Communities and Local Government; high-power research for the National Grid, which requires all of its suppliers to be pre-approved on the Utilities Vendors Database (UVDB) portal and work by the School of Chemistry on Novel Air Filtration Media for the US Defense Threat Reduction Agency.

Building Partnerships

Cardiff University appreciates the mutual benefits that business and higher education can gain from working together. To this end, we are keen to initiate and develop strong links with business locally and nationally. Some of our partners are identified below:-

- The **TATA (formerly Corus)** partnership, which is managed by a dedicated team within the School of Engineering, continues to deliver training to employees and assistance with solving waste issues at the Port Talbot site. As a result of the partnership additional grant funding has been leveraged into the School;
- The **EADS** partnership will take the form of a joint venture company - Foundation Wales - between

CU, EADS and Welsh Assembly Government (WAG). The formation of the company is expected by the end of the calendar year. This company is being quoted by WAG as an exemplar for such collaborations. Numerous projects are under way across the university both funded directly or facilitated by the partnership;

- In a novel collaboration with the **Office for National Statistics** (ONS), the University has launched a new MSc course in Operational Research and Applied Statistics developed with considerable input from ONS. Following the ONS relocation to Newport numerous joint seminars have been held and links developed with a number of disciplines around student placements and graduate recruitment.
- A Joint Working Arrangement with **Dwr Cymru / Welsh Water** was signed in 2009. Subsequently, a research studentship has been agreed with Cardiff Business School and a scoping group has been established between the School of Biosciences and the School of Earth and Ocean Sciences looking at Cardiff University's interests in the area of water usage and management;



From left to right: Mr Nigel Annett, Managing Director, Dwr Cymru; Prof. Derek Jones, Director Business & Strategic Partnerships, Cardiff University

- **GSK Consumer Healthcare** - the relationship was launched at a meeting in Cardiff hosted by the University's Vice Chancellor Dr David Grant. This included a series of joint discussions over three days, involving around 40 staff from both institutions. Further detailed discussions have taken place aimed at developing projects of mutual interest.

Knowledge Transfer Partnership

What is it?

Knowledge Transfer Partnership (KTP) is a UK-wide programme that dates back to 1976. The scheme encourages academic institutions, like Cardiff University, to collaborate with business, as well as non-profit organisations such as the NHS.

How does it work?

A partnership pairs a knowledge-based partner - a University - with an organisation-based partner. Working as a liaison between the two is a KTP Associate - a recently qualified graduate recruited for the project. The University shares its expertise with the organisation under agreed terms and with common goals.



A good example of a successful project is one of two under way with Ortho Clinical Diagnostics (OCD), a Johnson & Johnson company. The 'Associate' based within the company is **Dr Tess Saltmarsh**:

Qualifications: BSc Hons Medical Biochemistry, PhD Molecular Immunology ("Ca²⁺ Signalling In Live Human Neutrophils), APMP, CMI Diploma Leadership and Management

Current Role: KTP Associate, Ortho Clinical Diagnostics and Cardiff University

Locations: Pencoed and Cardiff

My KTP... I am a KTP Associate with Ortho Clinical Diagnostics (OCD) and Cardiff University's School of Biosciences. I am identifying and controlling the critical-to-quality properties of the key raw material bovine serum albumin (BSA). OCD manufacture medical diagnostic kits for diseases ranging from heart-attacks to cancer to HIV. All these kits contain BSA and it is often the source of variation in the performance of the kits. My role is to understand and reduce the variability caused by BSA.

Highlights of the Project: I headed a cross-functional team across OCD to bring in a new BSA supply from the USA. I have worked on new product developments and been involved in cutting edge investigations. I have been able to hone my biochemistry techniques and learn new skills, such as speed-staining an acrylamide gel in the microwave.

The Best Thing About Being a KTP Associate... is meeting a whole range of new people from different disciplines - the passionate university supervisors, the busy finance director, the committed lab technicians, the stretched fellow-KTP associates, and many more.

From My KTP I Have Learnt... that I need to aim for balance. I need to balance my innate bossiness that gets the job done with my passion for developing people. I need to balance competing stakeholder interests in projects. I need balanced skills and personalities in a team. I



need to balance the balance-sheet. But mostly I learnt to be confident in being myself.

I Will Recommend KTP Because... it is a unique bridge between academic and industrial environments. The support and training opportunities are fantastic. It is a real opportunity to rapidly learn and develop your skills and yourself.

All of this contributes to the positive impact Cardiff University makes in Wales and the world.

Partnerships can bring important benefits to the academic environment, including:

- Income
- Published papers
- Teaching materials, case studies and projects
- New research themes with commercial relevance
- Increasing the commercial awareness of staff
- Higher degree registrations
- Graduate career opportunities
- Intellectual property
- Strategic relationship with company
- Evidence of the impact of research

What is the future of Knowledge Transfer Partnerships at Cardiff University?

A total of 16 KTPs were awarded in 2009-2010 within a number of Schools including Engineering, Dentistry, Computer Science, Biosciences, Psychology, Pharmacy and Business. This takes the total

number to 23 with a further six applications pending. The future aim for KTP is to continue to increase numbers, particularly given the strong focus on Impact within the pending Research Excellence Framework, and the pressure on Higher Education to demonstrate its focus on industry-led research. The team aims to provide strong support to its growing number of KTPs and ensure that projects provide excellent outcomes, build strong relationships and lead to further collaboration.

To learn more about KTP and to view case studies at Cardiff University, visit www.cardiff.ac.uk/ktp, tel: 029 2087 5882 or 029 2087 9032, email: ktp@cardiff.ac.uk.

Building on Knowledge Transfer Partnerships

Ford Motor Company Ltd (Bridgend Engine Plant)

Following discussions early in 2010 the KTP Office in the Research and Commercial Division is successfully developing a strategic partnership with Ford's Bridgend Engine Plant based on a foundation of KTP projects.

The Senior Management team at Ford Bridgend and the KTP Office identified several areas of the business where collaboration with Cardiff University

Schools could result in significant mutual gain. It is anticipated that much of the collaborations' results will be developed and rolled out for the benefit of other Ford sites in the UK and globally.

Working with **Dr Jianhua Shao of the School of Computer Science and Informatics**, the team have commenced a KTP project to develop a new data analysis capability within the company to support comprehensive labour and overhead cost reporting and effective decision making in operation.

Labour and overhead cost analysis is vital to the company. It directly affects its operational effectiveness and global competitiveness. The KTP will intelligently modernise this IT support and develop a new capability for analysing labour and overhead cost data in a more accurate and comprehensive manner, in order that optimum utilisation of labour resources may be realised. This KTP will develop a modern data warehouse/ data mining-based system to support advanced cost analysis and embed the "know-how" within Ford's IT for future development. This new capability will contribute significantly to the company's market competitiveness and its long-term viability.

The School of Engineering's **Dr's Talib Mahdi** and **Devin Sapsford** have been successful in winning funding for a second KTP to develop Ford's capacity in resource efficiency and environmental performance through improvements in waste management and effluent treatment at the Bridgend Engine Plant.

In today's society, environmental credential and resource efficiency of large companies are important not just for a company's profit line, but its international reputation also. This KTP will support Ford's goal of achieving enhanced capacity for resource efficiency and environmental performance. Specifically this project will reduce reagent and water consumption, reduce waste, reduce environmental impacts and deliver an efficient problem-free effluent treatment plant improving shop floor production. The KTP team will give Ford the direct expertise to deal with their environmental impact and resource efficiency issues over an initial two year period. This project will

greatly benefit Bridgend Ford Engine Plant and is expected to add value to other Ford manufacturing sites around the World.

Professor Pham and Dr Anthony Soroka of the School of Engineering are leading a KTP with Ford to apply simulation, intelligent optimisation and 'Fit Manufacturing' methods to engine manufacture, inspection and assembly, in order to investigate the impact of factors on production.

The partnership will provide the Ford Bridgend Engine Plant with the solid data driven information required to improve the output of the machining and assembly lines, thus improving the efficiency of the plant. Such output improvements could be assisted through the application of advanced methodologies for optimising production efficiency offered by the team at Cardiff University. This is very much in line with the company policy of continuous improvement and it will also provide

an effective user friendly engineering tool that can be managed by the Engineering Team at the Plant.

The KTP Office has recently opened discussions with **Dr Alexandre Noyvirt of the School of Engineering** and Ford Bridgend, to apply visual inspection techniques, advanced manufacturing technologies (including micro/nanotechnology derived tools) and supply chain analysis for effective identification and management of engine components. An engine during manufacture will traverse numerous operations along an assembly line for the correct components to be added. At present if the code on a component cannot be scanned then the part is sent back through the supply chain to the manufacturers, costing money and taking time, increasing production effort. Ford Bridgend seeks improved reliability in the creation and reading of engine component markers across its operation.

“The KTP team will give Ford the direct expertise to deal with their environmental impact and resource efficiency issues over an initial two year period.”

Innovation Network



Innovation Network

Innovation is vital to the success of both businesses and universities. Through the Innovation Network, businesses and universities are brought together once a month for informal, free events featuring guest speakers. University and business professionals are given the opportunity to talk, listen and network; creating new ideas, forming relationships, and putting fresh knowledge into practice.

Event themes for 2010 ranged from Corporate Social Responsibility, to Leadership and Management, and Knowledge Clusters and Business-University Collaboration. The range of speakers included innovative global companies, the Technology Strategy Board and Cardiff University, with many local case study businesses. Average attendance was 90 per event, with connections made leading to further meetings and collaborative opportunities for Cardiff Business School, Cardiff School of



From left to right: Dr Nick Bourne, Deputy Director, Commercial Development, Cardiff University; Stuart Gall, CEO, MedaPhor; David Baynes, CEO, Fusion IP

Engineering and Cardiff Centre for Lifelong Learning amongst others. In addition, the Innovation Network team supported the business/University interface in a number of academic schools and business sectors.

In June 2010 the Network held its annual Innovation Marketplace event, featuring three keynote speakers

on the subject of Commercialising Intellectual Property Opportunities. This event attracted more than 115 delegates and incorporated presentations, workshops, facilitated one-to-one meetings and an exhibition of University expertise during networking sessions.

Other Innovative Events

In March 2010, **Results Through People: Innovation or Revolution?** looked at the John Lewis model and its continuous innovation. Liz Mihell, MD of John Lewis Cardiff, outlined why the company came to Cardiff and the challenges they faced opening a new store during a recession and explained the importance of the Staff Factor.

Business Benefits of Knowledge Clusters provided an opportunity to learn about the value of knowledge networks and how to build these for effective collaboration. Nina Biddle described how her company - The Gwent Group of Companies - uses a range of tactics to develop non-transactional and supplier relationships. Dr Steve Welch, CEO of the Electronics, Sensors & Photonics Knowledge Transfer Network explained how KTNs provide an effective and powerful way to collaborate online, network and share knowledge. Dr David Coates then gave a wider perspective on the 16 different industry KTNs and demonstrated the Technology Strategy Board 'Connect' database which hosts these.



From left to right: Dr Steve Welch, Electronics, Sensors, Photonics Knowledge Transfer Network; Nina Biddle, The Gwent Group of Companies; Prof Hywel Thomas, Cardiff University (Chair) & Dr David Coates, Technology Strategy Board.

Rewarding Innovation

The Innovation Network brings innovative businesses together as well as connecting academia with industry, and provides recognition for the resulting impacts. In April 2010, the annual Innovation Awards recognised truly creative collaborations with the event sponsorship of Fusion IP, Geldards LLP and Finance Wales.

The winners are as follows:



Innovation Prize Corus Strip Products and Cardiff School of Engineering

The knowledge: The objective was to explore more energy-efficient and materials-efficient technology, both of which contribute to business competitiveness and environmental care. The collaboration resulted in a Centre of Excellence in Energy Optimisation, By-Product and Waste Management for this major international steelmaker. Leading the collaboration **Professor Tony Griffiths, School of Engineering**, said: "This project is an excellent example of how University knowledge and expertise can help a vital part of the Welsh economy and a key employer share knowledge and meet industry challenges." In particular, the project is helping the company address some of the longstanding steel industry problems - especially the unwanted waste product of zinc in the recycling of steel. "It's also an excellent example of how we, in the School of Engineering, can apply our knowledge to industry through skills transfer." An additional element recognised in the Award is the focus



Dr Richard Thompson, Finance Wales; Lianne Deeming, Corus Strip Products; Prof Tony Griffiths, Cardiff School of Engineering; David Baynes, Fusion IP

of the collaboration on skills and training, with 180 staff trained in the first 15 months of the project.

The value: The Centre of Excellence is helping Corus to address a wide range of challenges, including waste and energy reduction, as well as exploiting novel technology to secure the long-term future of steelmaking in Wales. The award also recognised the jointly developed, industrially-focused combustion course, whereby staff at the plant receive in-depth training which has been embedded into everyday operations.

The partnership: This collaboration was between Cardiff School of

Engineering and Corus Strip Products (part of the Tata Steel Group).

The result: Lianne Deeming, Corus' Director of Business Improvement and Business Excellence said: "With the vital contribution of the public sector, including the academic expertise from Cardiff University School of Engineering's Centre of Excellence, we are maintaining a competitive edge here in Wales. "As a result of the collaboration, the EPSRC (Engineering and Physical Sciences Research Council) has funded a major research project to investigate energy use, a ground-breaking piece of industry-focused research in the UK."

Innovation Awards

Q Chip Limited and Cardiff School of Biosciences

The knowledge: Q Chip and the Cardiff School of Biosciences' mutual interest in the use of polymer composites for biological assays led to the development of a ground-breaking method for growing human cells which demonstrate natural cellular behaviour. This collaboration led to the development of 3D micro-lung models for toxicology tests. **Dr Kelly BéruBé, School of Biosciences**, who led the research, said: "This research, working alongside Q Chip, has enabled us to develop a novel method of growing cells to help generate environments that more closely resemble those experienced in the body, so that we can generate conditions that correlate with the results we would expect to see in humans."

The value: This collaboration has helped reconstruct the cells of human lungs for research into respiratory diseases like asthma.

The partnership: This collaboration was between the School of Biosciences and Q Chip, a University spinout company.

The result: The development offers an alternative to the use of animal



Dr Jo Macpherson, Q Chip Ltd; Claire Gibson, PhD student; Ian Smith, Q Chip Ltd; Ceri Delemore, Geldards Law Firm; Dr Kelly BéruBé, Cardiff School of Biosciences.

research. A European Directive that comes into effect in 2013 will ban testing on animals and the marketing of such products and ingredients. For Q Chip, the collaboration has carried over to their ongoing programme of Research and Development. Head of Q Chip's Research and Development, Dr Daniel Palmer said: "As a result of this project, Q Chip is now able to offer bespoke development programmes to suit the specific needs of other client companies."

Get Innovative

To learn more about the **Innovation Network** and how you can become involved - and receive a regular eNewsletter on innovative news and events - visit www.innovation-network.org.uk or follow us on Facebook and LinkedIn.



Technology Transfer

Has your research sparked a business idea? The Technology Transfer team at Cardiff University exists to help academic researchers apply their findings to the commercial world. Whether you need help applying for a patent or licence, or developing a spinout company, the team will guide you through the process.

Guiding ideas to the marketplace

With a wealth of experience, the Technology Transfer team knows how to lead an academic idea to the commercial world. With the support of a Commercial Advisory Panel comes considerable industrial and financial expertise. This knowledge allows the team to counsel academic staff on their specific projects and commercial strategies.

But the support doesn't end there. The team draws on external professionals to provide intellectual property advice. Then, it helps manage the costs involved to secure a patent or licence, as well as market research. The team seeks to work with researchers to bring ideas to the commercial market.

The University wants to see success, too. That's why a fund exists to help staff cover the costs needed to make a new innovation attractive to the marketplace. The Cardiff Partnership Fund (CPF) is a resource that can be used to help prove an idea's value to industry and potential investors.

The incentives

- **Advertise success** A unique technology or business is a good story, and it sheds positive light on the researcher and the University.
- **Grow the research** Commercial successes can help fund further research and development activities.
- **Help society** A commercial success can benefit society and create opportunities for economic growth.
- **Generate income** Cardiff University operates a revenue sharing arrangement with inventors and Schools.

Translational Research

Funding for translational research (also known as follow-on funding) takes an early-stage innovation that has arisen from the University's research base and helps develop it into a new, marketable product.

Why?

Academic research produces many new discoveries and inventions that have commercial potential. But turning those ideas into commercially viable products can be a long and costly process.

How?

Translational research cuts the time and costs that can slow ideas down. It bridges the gap between a new innovation and the marketplace. By researching the answers to questions asked by industry, venture capitalists or public-private partnerships, a new innovation becomes attractive for further development.

Eligibility

Projects must have clearly defined milestones, outcomes and future commercial value.

For most cases, it is a prerequisite that applications are prepared and written in conjunction with the Technology Transfer Office. Application details can be found on the particular funders' websites.



The Severnside Alliance for Translational Research (SARTRE), is a partnership between the Universities of Cardiff and Bristol which aims to accelerate translational research. SARTRE received £2 million from the MRC through their Developmental Pathway Funding Scheme which has been awarded to 14 translational projects, seven of which are led by Cardiff University. SARTRE has also helped develop several key translational projects, and has networked over 1,000 clinical and basic academic scientists to link areas of research excellence and highlight translational opportunities. SARTRE is currently developing a number of strategic partnerships with pharmaceutical companies to create an Open Innovation Partnership framework.

Key Contacts

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Funding

Translational Research requires funds. Sources outside the University include:

- Academia 4 Business (A4B) – Early Stage Development Fund (ESDF)
- The Wellcome Trust, Translation Awards (various schemes, see Wellcome Trust website for details)
- RCUK Follow-on Fund
 - BBSRC (including Pathfinder)
 - EPSRC (including Knowledge Exchange & Collaboration Fund)
- NERC (including Knowledge Exchange & Pathfinder)
- ESRC
- Developmental Pathway Funding Scheme (DPFS)
- MRC (Contact RACD for further details)
- RCUK Small Business Research Initiative (SBRI)
- Cancer Research Technology Development Fund

The Cardiff Partnership Fund

In 2010, the Cardiff Partnership Fund celebrated its 10th anniversary. The Fund's Chairman, Dr David Owen, looks back on a decade's activity.

The History

The University Challenge Seed Fund was set up in July 1998 as a partnership between the Government, the Wellcome Trust and the Gatsby Foundation, which together provided £40 million. Cardiff was one of only 15 successful university-based consortia across the UK to be awarded a seed venture fund under this initiative. Launched in July 2000, the £4 million Cardiff Partnership Fund was made up of £1.6 million from the Wellcome Trust, £1.4 million from UK Government and £1 million from Cardiff University. The Fund is owned by Cardiff University and managed by the Board of Cardiff Partnership Fund Limited in collaboration with the University's Research and Commercial Division (RACD).

The purpose of the Fund was to help turn scientific discoveries into commercially viable projects, improve university business awareness and bring innovative and competitive

products to the market place (primarily through spinout companies). The funding provided by the Fund is made as an investment, with the expectation that financial returns from the investments made will flow back into the Fund.

The Results

As the summary overleaf demonstrates, starting with a relatively modest amount of funding, the Fund has been able to meet its objectives and has helped turn some of the University's ground-breaking research into commercially viable ventures. Spinout companies supported in the early stages by the Fund have gone on to raise significant sums of investment finance and provide "high-tech" jobs in the Cardiff area. Many of these companies have now become financially independent and have established research collaborations of their own with the University. Some of the Fund's investments have either contributed directly towards the University's research income or helped it lever collaborative alliances with external funders of research. This funding has also helped create new intellectual property and exemplify existing patents.

The Supporters

We are extremely grateful to the many individuals who have contributed to the success of the Cardiff Partnership Fund, particularly those members of academic staff, from eight University Schools that brought ideas forward and worked in collaboration with the Fund and the University's Technology Transfer team to develop their ideas further. The help, advice and enthusiasm of the members of Fund's Advisory Group, most of whom (in accordance with the guidelines of the scheme) were external to the University, has been invaluable in assessing proposals and offering guidance on commercial strategies and raising business awareness within the University. More recently, the benefits of such external advisors to universities have been extolled by Government commissioned reports such as those produced by Lord Sainsbury and Sir James Dyson.

The Future

It's a long-term game - but the future's bright. Although most of the Fund has now been committed, its achievements played a key role in helping the University establish a key partnership, with Fusion IP in January

2007, which is aimed specifically at creating new spinout companies. Going forward, the Fund will use its remaining funds to provide a potential source of proof of concept funding for new opportunities arising from University research.

Innovation and Engagement is now recognised as a core and integrated part of the University's strategy and the University is providing financial support from its Strategic Investment Fund to sustain its patent portfolio and the Cardiff Partnership Fund. In my opinion, this decision by the University, underlines its commitment to translate the outcomes of its research and will ensure the availability of proof of concept funding for years to come.

Dr David Owen CBE – Chairman
Cardiff Partnership Fund



Initial Fund
established:

£4m

Co-investment
raised:

£53m

Value of Fusion
IP Partnership
(2007):

£25m

Value of University
research contracts
awarded:

£5.3m

Proof of Concept
projects supported
(across 8 Academic
Schools):

34

External alliances
facilitated:

35

Investments
completed:

58

New spinout
companies
created:

14

“High-tech” jobs
created in the
Cardiff area:

42

Licensing

Interview with Professor Chris McGuigan, Welsh School of Pharmacy Professor of Medicinal Chemistry and Deputy Pro Vice Chancellor (Research)

Q1. Can you provide a layman's guide to the drug discovery and development process?

Drug discovery is a long and high risk process. The process often consists of identifying a suitable target, then trying to find something that interacts with it, a 'hit', and then developing it into something with drug-like properties, a 'lead'. A clinical candidate then emerges and a clinical programme is planned. With appropriate approval, the first study in man, a Phase 1 study in healthy volunteers, can begin. This is looking for toxicity and side effects. If successful, a Phase 2 trial, in several hundred patients (with disease) is conducted. This looks for effectiveness against the disease. If successful, a Phase 3 'registration' trial is conducted, in 1,000 patients or more. If successful, the company can apply for registration for a new drug. On average the whole process can last 13 years and costs \$1.2 billion.

Q2. Which diseases have you concentrated on in your lab and why?

There are many viruses where the

drugs are inadequate, or there are no drugs. Viruses are good areas to be in, because there is a social need and we know we can get agents to attack them. We've worked on a number of different viruses, like the VZV chickenpox/shingles virus. Then we're working on HIV AIDS, Hepatitis B and C, Flu, cancer and arthritis. We've got an extremely powerful compound we have discovered in Cardiff University against Hep C, and we've developed a method in the lab which we think will improve the activity of anti-cancer drugs.

Q3. Tell us about the VZV story.

About ten years ago we were working on a different project, for a different target, and as part of this project we made a molecule which is known as a negative biological control. We sent these negative controls from Cardiff to Belgium, and they were tested against another virus, the VZV virus. It was designed to be negative but it came back positive – we couldn't understand it. It turned out that the molecule wasn't active, but a small portion of the sample, in transit from

Cardiff to Belgium, had rearranged its molecular form, to form a completely new structure which turned out to be a very powerful inhibitor of VZV, the cause of chickenpox and shingles. We tuned it, and ended up with a lead compound called Cardiff 1743, which is the most powerful molecule ever invented against shingles.

Q4. What happened next and what did this discovery lead to?

We started to work with a spinout company called Fermavir and developed a soluble form called FV100. That's the one that's gone into man. Fermavir became a public company. Their only asset was our compound, and they were valued at \$50 million on the NY stock exchange and progressing the compound. When they ran out of money they got bought out by Inhibitex in Georgia. They funded the Phase 1 trial which showed that it was completely non-toxic, no side effects. Then more recently, over the last 12-18 months, they've funded the Phase 2 trial, in 350 patients.



“ There’s a huge amount that academics can contribute to drive things forward and fill the divide between the lab and industry. ”

Q5. What have been the most recent developments?

In mid December we get the results from Phase 2 of the VZV trial. If Phase 2 and 3 are successful we can then go for registration in 2014. Inhibitex have been so pleased with our work that they’re now doing work with us on Hep C. One of my students has made a compound called INX189 - the world’s most powerful inhibitor of Hep C in this type of drug. That will be in Phase 2 in 2011. Today, Inhibitex is valued at market cap of \$180 million on the basis of these two assets. If FV100 is successful it could transform the therapy for shingles and create substantial sums for Inhibitex and Cardiff.

Q6. Can you summarise your current commercial interactions?

We’ve got the interaction with Inhibitex – our VZV and Hep C drugs. We’ve also developed a method to improve the activity of anti-cancer drugs. We believe that we’ve got a clinical candidate (BIO1031) and

we’re hoping to put this in cancer patients in 2011. It would be my third molecule into man in a collaboration with NuCana BioMed. Frequently people in my career live and die and never get anything into man. So I think having three we’ve been very lucky and very successful. We also have links with other companies, like a Spanish company called Bioiberica for osteoarthritis. There’s a lot of commercial interaction - 90% of my group is funded by commerce.

Q7. Do you think this type of activity is important to the University and why?

It’s morally very important, if we do ground-breaking research, that we try and exploit it. I’m really pleased that we’ve been lucky and devoted enough to get things progressing, and starting to make commercial return and hopefully do social good as well. I think it’s vital for the University. To translate and profit from research is crucial for our success.

Q8. What have been the main benefits of this activity?

There are so many benefits, on every single level. At undergraduate level, to see someone that’s internationally active is a good thing, and makes it real to them, to see how that research is going. PhDs and PD fellows are steeped completely in this drug discovery and progression scheme. I think we expose them well to it. The University has made several million pounds of income through our activity. £5 million in the last four years has come through Cardiff, purely from this. Clearly there is personal benefit, in terms of the milestones. The only benefit that we haven’t got yet, that we hope we’ll get, is to the public. If the drug is approved it’ll be one of only 15 or so approved each year. It would be a fantastic achievement if we get to that point.

Spinout Companies



The idea: Launched in January 2010, and based on the expertise of **Neil Warren** of the **Wales Institute for Minimal Access Therapy**, Asalus is developing a range of innovative medical devices that will improve the safety and efficiency of laparoscopic surgery.

The value: There are several benefits to conducting laparoscopic surgery and, as a result, the number of procedures conducted using this technique has grown rapidly over recent years. Over two million laparoscopic operations per year are now performed in the USA alone.

The funding: In January 2010, Asalus raised £0.5 million in its launch funding round. Both of Fusion's investment partners, Finance Wales and IP Group, participated in the round.

The result: Asalus has advanced its three new laparoscopic devices through pre-clinical development. Asalus plans to seek further funding by the end of 2010 that will allow it to

complete development of the devices, after which licensing partners will be sought.



The idea: Launched in January 2010, Progenteq is developing a novel cartilage replacement therapy that has the potential to revolutionise the treatment of acute knee injuries. The company is founded on the work of **Professor Charlie Archer's** research group at the **School of Biosciences**, which has successfully isolated a defined population of cells from the articular cartilage which surround the main bones in the knee joint. These cells display stem-cell like properties and can be expanded in the laboratory to produce very large quantities of cartilage.

The value: This cell type could provide an ideal source of material for an 'allogeneic' cartilage replacement therapy (the holy grail of cartilage repair), whereby cells derived from donors can be taken and used to grow a large tissue bank of cartilage that can be stored and is suitable for

insertion into patients with acute knee injuries as and when needed.

The funding: To date, Progenteq has received funding of £0.5 million through a combination of loans from Fusion, Finance Wales and IP Group, together with two TSB (Technology Strategy Board) grants. It also plans to seek further funding by the end of 2011 to enable it to complete 'First in Man' trials.

The result: The Progenteq model promises a more cost-effective cell therapy than current 'autologous' approaches, which require cells to be removed from a patient, expanded and then implanted into the same patient. The successful development of a cartilage cell bank could also pave the way for treatment of degenerative cartilage damage, such as that seen in osteoarthritis.

DECIPHer IMPACT

The idea: DECIPHer Impact is a joint spinout initiative between Cardiff University and the University of Bristol. The company was established as a company limited by guarantee in March 2009 and is managed jointly.

The company is based on intellectual property generated by **Professor Laurence Moore (School of Social Sciences)**, Cardiff University) and Professor Rona Campbell (University of Bristol) during the successful MRC funded (£1.5 million) ASSIST (A Stop Smoking in Schools Trial) Study which took place in 59 schools across Western England and Wales.

The value: The company has generated interest across the UK and, if implemented nationally, could cut the numbers of 14-15 year olds taking up smoking by over 40,000.

The result: The results of the ASSIST Study were published in the Lancet in May 2008. The research programme has already proved a success in preventing young people from starting smoking, and works by identifying and training the most influential students in schools to meet the challenge of preventing the take-up of smoking among their friends and class mates. It has been reviewed and recommended in guidance by the National Institute of Health and Clinical Excellence (NICE).

On the commercial front, since incorporation in March the company has granted Primary Care Trusts (PCTs) a three year sub-licence to deliver the ASSIST training. The whole of Wales is currently rolling out ASSIST

as well as 15 English PCTs which have already acquired licences with a view to implementing ASSIST in schools in September 2010.



The idea: Eco-Explore was incorporated in February 2010 as a Community Interest Company, and is based on the ecological and zoological research expertise of **Drs Robert Thomas of the School of Biosciences, Alex Pollard and Faye Merrix-Jones** (both formerly postgraduate students in the **School of Biosciences**). The company provides guided tours of the wildlife and ecosystems of South Wales.

The value: Eco-Explore provides opportunities for clients (members of the public) to take part in hands-on ecological research.

The funding: The company is supported by a loan from the Cardiff Partnership Fund and a grant from Caerphilly County Council.

The result: Eco-Explore's data collection is directly linked to the University's research programmes and the company affords the opportunity for public engagement by providing opportunities for visitors and local

communities to encounter wildlife and take part in ecological research, raising awareness of local and global environmental issues.



MODERNWATER

The idea: The company was founded to develop technology for use as a broad spectrum, real-time, Continuous Toxicity Monitor (CTMTM), with the proof of concept work having been successfully completed within the University under the supervision of **Professor David Lloyd of the School of Biosciences**.

The value: Cymtox was founded with a K£165 investment from the Cardiff Partnership Fund, and in 2007, the company accepted investment from IP Group and was floated as part of Modern Water plc on AIM, raising £30 million. Modern Water bought the remaining shares in Cymtox from the University in December 2009 and now provides full-time management and ongoing investment. The company has initiated manufacture in conjunction with Belgian company AppliTek S.A., who have acquired a licence for the manufacture, marketing and sales of its Continuous Toxicity Monitor.

The result: Cymtox is now selling products in China and has recently established a Knowledge Transfer Partnership with Cardiff's School of Engineering. During the reporting period UC3 and Cardiff Partnership Fund sold their shares in the company and gained a return on their investment.



MedaPhor Limited is a Cardiff-based ultrasound simulation business, specialising in the development and sale of advanced virtual ultrasound training systems for the healthcare service and based on the expertise of **Mr Nazar Amso of the School of Medicine** and **Professor Nick Avis of the School of Computer Science and Informatics**. In May 2010 the company raised £0.3 million to launch its new ScanTrainer simulator in the UK and sign up overseas distributors.

ScanTrainer bridges the gap between conventional training and the patient, by combining the latest 'real-feel' haptic simulation techniques with curriculum-based interactive learning modules, to provide fast, effective ultrasound training. The systems are designed to provide sophisticated ultrasound learning in a non-clinical environment, solving



MedaPhor – Winners of the Industry Innovation Award at the 2010 MediWales Innovation Awards. From left to right: Dr Stephen Minger, Global Director for Research and Development for Cell Technologies at GE Healthcare, Mr Stuart Gall, CEO Medaphor Ltd, Mr Nazar Amso, Founder and Chairman, MedaPhor Ltd and Chris Price-Jones, Innovation Director, BIC Innovation.

the current resource conflict between the provision of clinical service and the need to train. In addition the ScanTrainer's self directed learning significantly reduces the need for expert direct supervision, making the system highly cost effective.

MedaPhor's first ScanTrainer product, the Transvaginal ScanTrainer, was launched at the British Society for Gynaecological Imaging meeting held at the Royal College of Obstetricians and Gynaecologists in London in April 2010 and four of the training

simulators have already been sold to hospitals in the UK. MedaPhor plans to launch a range of additional ScanTrainer platform systems in the Transabdominal, Transrectal and General Medical markets during the next 12-18 months.

FUSION IP “Turning world class research into business”

What is Fusion IP?

Fusion IP was formed in 2002 to work with universities as a partner to take intellectual property to the marketplace via spinout companies and out-licensing. It's an AIM-listed company on the London Stock Exchange. In 2007, Cardiff University joined Fusion IP in a partnership across all Schools, in which Cardiff University became a major shareholder in Fusion IP. In return Fusion IP raised a Cardiff investment fund of £8.2 million and owns the exclusive rights to establish new spinout companies arising from Cardiff University-owned research. In 2009, Fusion raised £3.2 million from IP Group plc which became a shareholder in Fusion IP and this partnership extends the expertise and resource available to the University to assist in the commercialisation of its research.

What does it do?

When a University researcher discovers something with commercial potential, Fusion IP acts as both an expert in start-up business management and finance; and as an investor. The Fusion IP team, based in Newport Road, works closely with the University's technology transfer office

(RACD) to assess each opportunity and the research with the most spinout company commercial potential is turned into a new start-up company utilising Fusion's investment fund. In addition, Fusion IP has access to additional funds through its co-investment partners Finance Wales and IP Group plc.

Fusion IP doesn't just write researchers a cheque. The team helps write business plans and develop the commercial strategy needed to turn an academic discovery into a commercial success. Fusion IP has two Managers who work alongside Cardiff University technology transfer staff. Andy Cheer leads the physical sciences portfolio and Dr Dominic Griffiths leads the health and life sciences portfolio.

How does it benefit an academic researcher to partner with Fusion IP?

Fusion IP is just that: a partner. Owned by the University, it's dedicated to bringing out the commercial value in academic research, and it has the resources to do it. From the initial planning, to raising the money necessary to start the company, the

Fusion IP team will help turn your world class research into business, in which you will be a key shareholder.

Recognising the need to motivate its inventors, the University has agreed with Fusion IP that academic founders of a spinout company receive 40 percent of the equity in any new business at inception, which aligns the interests of all stakeholders in the process.

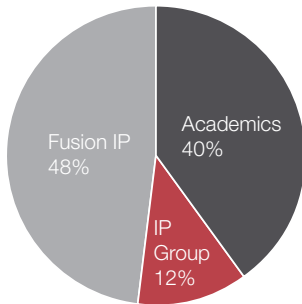
Fusion also has a number of key external relationships that can aid any new spinout company. One of its strongest allies is Finance Wales, the investment arm of the Welsh Assembly Government, which has more than £130 million under its control. To date Finance Wales has invested over £2.4 million in Fusion IP Cardiff's portfolio companies.

How does Fusion IP help Cardiff University and Wales?

The agreement with Fusion IP enhances Cardiff University's strong track record of creating new high-tech companies, which bring jobs and wealth creation to Wales. It is

The Fusion model

- Academics
- IP Group
- Fusion IP



1

- Assign research contract/recruit
- Insert rower and provide management experience
- Provide initial training



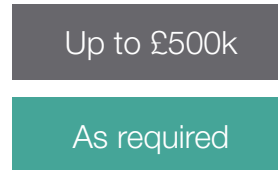
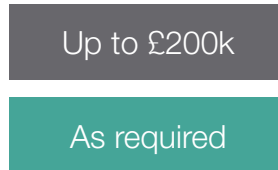
2

- Recruit senior management
- Develop and grow the business
- Raise third party funding



3

- Reduce involvement
- Trade sale or IPO



consistent with the Welsh Assembly Government's strategy of using intellectual property developed in Wales for national economic benefit. To date Fusion IP has enabled over £13 million to be invested in Cardiff University spinout companies.

"The Fusion IP model is an extremely attractive one, making the University a significant shareholder in Fusion IP, providing access to Fusion IP's investment funds and management team, and also incentivising the University's academic researchers through significant shareholdings in the spinout companies.

Vice-Chancellor of Cardiff University,
Dr David Grant

"Cardiff is one of the UK's leading research universities, with high quality research in a range of potentially high value fields including medicine, biological sciences, pharmacology, chemistry, engineering, computer science, energy and environmental sciences. We are delighted with our partnership and the opportunities that it brings for all parties - Fusion, the University and the academics."

"This has been a significant year for Fusion in which its revenue and portfolio returns increased to £4.4m (2009: £0.6m) and it recorded its first profit, excluding subsidiary spinout costs and amortisation, of £2.5m (2009: loss of £1.1m)." CEO of Fusion IP Plc, David Baynes

How did Fusion do last year?

Here are some of the highlights:

- Revenue and portfolio return increased by 733% to £4.4m (2009: £0.6m)
- Profit, excluding subsidiary spinout costs and amortisation of £2.5m (2009: £1.1m loss)
- Reduced loss before taxation to £1.6m (2009: £5.0m loss)
- Cash balances of £4.6m (2009: £5.0m)
- Two new Cardiff companies started and funded in the year (Asalus Medical Instruments and Progenteq)
- £1.1m invested in the Cardiff portfolio companies by Fusion
- £5.1m invested in the Cardiff portfolio companies by third party investors
- 6 funding rounds completed by Cardiff portfolio companies



For further details on Fusion IP please contact either Dr Dominic Griffiths (dominicgriffiths@fusionip.co.uk) or Andy Cheer (andycheer@fusionip.co.uk). Either can be contacted on 029 2049 7097.

Website: <http://www.fusionip.co.uk/OurPartners/CardiffUniversity/>

Understanding Finance Wales

Finance Wales is a leading SME investment company. It invests in small and medium-sized businesses throughout Wales, including innovative early stage businesses with the ambition and potential to become international market leaders. In 2007 Finance Wales and Fusion IP plc entered into a Memorandum of Understanding (MoU) to co-invest in technology-based spinouts with high growth potential. A subsidiary of the Welsh Assembly Government, Finance Wales launched its £150 million fund in 2009 and currently has over £335 million funds under management.

Endorsing Finance Wales' relationship with Fusion IP and Cardiff University, Steve Smith, Finance Wales' Early Stage Investments Director said: "Finance Wales has enjoyed another successful year co-investing with Fusion IP; in fact we've invested £2.7 million in Cardiff spinouts since signing the Memorandum of Understanding. We have an excellent relationship with the Fusion team and Cardiff's Research and Commercial Division which has resulted in investment in a number of very promising technology spinout investments from Cardiff University."

What is UC3?

UC3 is Cardiff University's own Technology Transfer company. UC3 Ltd manages patents and other intellectual property rights and sets up commercial arrangements with industry. The company ensures that student and staff inventors and the University benefit financially when new products or processes that are used commercially through a standard revenue sharing arrangement. UC3 currently manages a portfolio of 200 technology transfer projects, including 74 patent projects, 48 active licence agreements and 7 spinout companies.

"Finance Wales has enjoyed another successful year co-investing with Fusion IP; in fact we've invested £2.7 million in Cardiff spinouts since signing the Memorandum of Understanding. We have an excellent relationship with the Fusion team and Cardiff's Research and Commercial Division which has resulted in investment in a number of very promising technology spinout investments from Cardiff University."

Steve Smith, Finance Wales' Early Stage Investments Director

Fusion IP Spinout Companies



MANTELUM™



Progenteq™
ADVANCED
CARTRIDGE REPAIR



Art of Xen
ADVANCED ANAESTHETICS

iterate

mesuro
advanced RF testing and measurement systems



Student Enterprise

Innovative minds in Cardiff University aren't all found at the front of a lecture theatre or heading up a research lab. Cardiff University's students and graduates demonstrate a wealth of innovation, creativity and entrepreneurial enthusiasm.

The Student Enterprise team supports these students to develop their entrepreneurial skills and abilities to ensure they are well placed to establish and lead dynamic new ventures or transform any organisation they join or manage.

Student Enterprise delivers a wide ranging programme of events, competitions and courses to develop students' enterprise skills and encourage an entrepreneurial mindset.

SPARK Business Idea Competition supports enterprising ideas by Cardiff students with a £1,000 prize to develop their business.

i-Solve brings together interdisciplinary teams of postgraduate students with academic research staff

to identify commercial opportunities for breakthrough technologies being developed in the University.

Business Start Up Support is offered to all students and graduates with a business idea and includes workshops and 1-2-1 guidance and mentoring.

Ignite brings together students from four universities for an intensive week of enterprise skills development and team challenges.

Enterprise Bursaries are supported by Santander Universities and offer £1,000 to help students develop a business idea over the Summer break.

Innovation Challenge gives student teams one week to use their ingenuity and creativity to create 'value' from a mystery object.

Centerprise provides dedicated hot-desking office space and a meeting room for students with a business idea.

And much more...Entrepreneurial Role Models, Inter-University Challenges, Christmas Market, Student-led Enterprise Societies...

David Stone

In 2009, dental student David Stone used his personal experiences to spot a gap in the market and set up his business, UK Loupes. Noting that many dental students developed back problems from leaning over patients, David decided to produce and sell magnification glasses, or loupes, at prices which students could afford.

David utilised various Student Enterprise services when starting up the business. “I’ve got a lot to thank Student Enterprise for, because they were the people I went to initially for help”, he explains. Firstly, David won £1,000 first prize in the Spark Business Idea competition, supported by Santander Universities. Student Enterprise also pointed him in the direction of various sources of funding for getting the business up and running. “They highlighted a few awards that had a financial prize at the time”, David explains. “The first real injection of funds came from the Spark prize. Since then we’ve won another £1,000 award from Shell Livewire and been finalists in the HSBC 2010 start up Awards.

UK Loupes is going from strength to strength, and David now has UK Loupes Sales Agents in various dental schools around the UK, offering an affordable solution to students nationwide.

www.ukloupes.co.uk



David Stone (left) at the HSBC Start Up Stars Awards final 2010

Andrew Styles and Andy White

Cardiff Graduates Andrew Styles (Journalism, 2007) and Andy White (Economics, 2007) launched their digital media company, Squidge Media in March 2008. Since then, the business has grown to the point where they have many regular clients, and the workload is now shared with freelancers. “We’ve got a lot better at what we do, and I think the quality of what we produce now is really, really good”, Andrew explains. “We’ve done a lot of sites for high profile names, including Blur and Marti Pellow”.

In 2009, Student Enterprise helped Squidge to secure subsidised office space in Cardiff Business Technology Centre, which Andrew describes as “in a good location and very useful”. At the moment, the Squidge team is working remotely, from London and New York, to “try to make new connections in different parts of the world.” As for the future, Andrew admits that “there are lots of directions we could go. That’s the advantage of working for yourself - if you want to get into something else, you can”.

In their early days Andrew and Andy had a novel way of promoting the business. “One of the best things we did early on was to give away a campervan”, Andrew explains. “We made a PDF campervan in the Squidge style, and posted on our website saying we had a free campervan. You basically clicked through, downloaded it and printed it out, and made this little campervan model. We had about 5,000 hits in a day and got quite a lot of interest from that”.

www.squidgemedia.com





James Taylor

Since graduating with a degree in Psychology from Cardiff University, James Taylor has launched SuperStars - a business which provides high quality specialists for primary schools - offering structured PE, Drama, Music, Art and Design Technology lessons in term time, as well after school and during school holidays.

The business has gone from strength to strength since its inception in 2005 and the award of a £5,000 Entrepreneurship Scholarship funded by the Welsh Assembly, and Superstars now works with around 25,000 children a week.

As well as running the business, James has appeared on BBC's The Last Millionaire, and is the face of the Welsh Assembly's marketing campaign for Graduate Start Up Support. He is also a Dynamo Role Model, and makes regular school visits to share his entrepreneurial experiences.

James still maintains connections with Cardiff University, and has recently become a member of the University's newly formed Employability and Enterprise Advisory Board.

Despite being busier than most, James is still keen to expand his business empire.

"The plan is to take it nationwide so we're currently edging further into England", he explains. "We've also set up a link with Africa where we send specialists to help educate children and people in the communities out there about sexual health and AIDS awareness, through sport and drama."

www.super-stars.org.uk

“James still maintains connections with Cardiff University, and has recently become a member of the University’s newly formed Employability and Enterprise Advisory Board”



Stuart Jolley

Since graduating with a Cardiff University Business degree in 2009, Stuart Jolley has found success with his male grooming products business, Wingman Products Limited.



“The idea came about when I was at Cardiff University”, explains Stuart. “We entered the Spark Business Idea competition through Student Enterprise and came second. After receiving that start-up money and support the business has gone from strength to strength.”

Stuart’s progress has been documented by the BBC for a new competition series ‘The Next Big Thing’. The series is hosted by Dragon’s Den star Theo Paphitis, who Stuart describes as “a nice man - quick to the point”. Through the competition, Stuart has secured an exclusive contract with Boots, which now stocks his range of male deodorising wipes. His product and pitch impressed Boots so much that they also employed him as a Brand Consultant.

Stuart is now looking to the future and plans to expand the business to cover a wider range of male toiletry. Wingman is currently a one man project, though Stuart admits that he would like to build a team. “I am someone who bounces well off other people, so if I could do it all again I would probably would have started a partnership rather than going it alone. It’s the hardest thing, having to deal with all aspects of the business on your own. From the accounts and marketing to presentation work and pitching - you’ve got to manage the lot!”

www.facebook.com/iamwingman

“ After receiving that start-up money and support the business has gone from strength to strength ”

Whereareyounow?

Josie Beckett

Whilst studying Journalism at Cardiff University, Josie Beckett decided to provide an alternative to High Street Fashion by founding the clothing company whereareyounow? Josie Ltd; a company which she describes as “a quirky, young womenswear label produced in the UK, using vintage or hard to find fabrics and trimmings.” Over the last three years it has become a great success.

From making all the products herself and trading on stalls such as Spitalfields, Josie soon moved on to even bigger things, and she now has collections in many stores, including Topshop’s flagship London store.

In February 2010, whereareyounow? appeared at one of the world’s biggest fashion events, London Fashion Week.

Luckily for Josie, start-up funds weren’t an issue. “The first £10 spent on fabrics generated £120 of sales”, she explains. However, a graduate start-up scholarship from the Welsh Assembly was still a great help for Josie, having applied on the recommendation of Student Enterprise. “It was amazing. It allowed me to concentrate all my efforts on getting the label out there rather than worrying how about to afford rent and bills etc”, Josie says.

Josie is currently branching out by selling to stores in Tokyo, as well as creating five consecutive collections for ASOS.com. She has also received a scholarship from the London College of Fashion to help her to develop her own range of prints which will be incorporated into her designs.

www.wherisjosienow.com



“ Josie is currently branching out by selling to stores in Tokyo, as well as creating five consecutive collections for ASOS.com ”

SIFE

SIFE Cardiff is the student-led Cardiff division of the international non-profit organisation Students in Free Enterprise (SIFE). This organisation works with business leaders and higher education institutions to mobilise university students to make a difference in their communities, while developing the skills to become socially responsible business leaders.



In 2010, one of SIFE Cardiff's student run enterprises, Your Uni Fruit & Veg, secured a prestigious Green Gown national award. The awards are an annual event to recognise exceptional initiatives being undertaken by higher and further education institutions across the UK to improve sustainability.

The Your Uni Fruit & Veg Co-op project promotes the consumption of locally sourced, environmentally sustainable and affordable fruit and vegetables. The co-op enables students and staff to order a weekly bag of locally sourced fruit, veg or salad at competitive rates and can be found trading in the Students Union every Tuesday in term time. It has been used as best practice in university and regional literature, features in a social enterprise documentary film and has already been recognised as a high impact and replicable model.

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International Entrepreneurship Educators Conference

In September 2010, educators, students and entrepreneurs descended on Cardiff University to take part in the International Entrepreneurship Educators Conference, the premier national and international conference on enterprise and entrepreneurship education.



Left to right: Natasha Francis, Prof Hywel Thomas, David Stone, Josie Beckett

Sponsored by the Welsh Assembly Government the conference gave Student Enterprise the opportunity to showcase their innovative support programmes at Cardiff University and to raise the profile of entrepreneurship education in Wales.

A number of Cardiff University students and graduates who have started up their own businesses, including Josie Beckett (WhereareyounowJosie Ltd), David Stone (UKLoupes), Abigail Carter (Forensic Resources Ltd), Natasha Francis (N E Occasion) and Jarrad Morris (Uni'd Clothing), were invited to the conference and introduced by Professor Hywel Thomas, Pro Vice Chancellor for Engagement and International in recognition of their achievements in business.

i-Solve

Just how many proteins with powerful diagnostic and therapeutic properties can be engineered, and how quickly?



This was just one of four live University research projects investigated by groups of postgraduate students and research staff as part of i-Solve, a unique EPSRC-funded enterprise initiative to help identify the next commercial ventures based on ground-breaking research taking place across the University today.

Following eight weeks of hard investigation a six-strong team from the Schools of Biosciences, Business and Dentistry walked away with the title of 'Best Overall Project'.

School of Biosciences Elizabeth Fraser, who was part of the winning team, said: "It was very exciting to be given the award for the best overall team and recognition for the hours of work that we all put in. We have learnt about how to work together with others in a team, and about the steps involved in considering new innovations with marketable commodities."

Cardiff's i-Solve is based on the i-Teams programmes at Cambridge University and MIT. This makes Cardiff the first university in the UK after Cambridge University to launch this programme.

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