SPINOUTS
FROM RESEARCH TO MARKET

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*in association with* PraxisUnico. Impact through innovation

Quarterly Journal

NEWS COMMENT and ANALYSIS on **SPINOUTS** from **UK HEIs**

# PraxisUnico Spinouts UK Annual Report 2012

This year's Annual Report will be launched at the PraxisUnico conference in Southampton on 14 June (see p5 for more details of this event).

The Report analyses the data in the online listing of spinouts and start-ups from all UK universities since 2000 to give quantitave figures on the size and composition of this sector, and to discuss movements and trends over the past year against the 10-year background.

The first Annual Report, published in May last year, elicited considerable interest, and this, together with the increased awareness of the project due in large part to the support of the project partners listed on the back of this Journal, has encouraged many stakeholders - universities and spinouts alike - to help us compile more complete and accurate data.

Copies of the Annual Report will be provided to all subscribers to Spinouts UK, and to all TTO members of PraxisUnico. Others wishing to see the publication should contact *research@ycf.co.uk*

## Bridging the "Valley of Death": improving the commercialisation of research

Many of our readers will have been involved in making submissions to the House of Commons Select Committee which is holding an enquiry under this title. For those who are unaware of this, the written submissions (from almost 90 sources, including universities, investors, entrepreneurs, and many others engaged in this sector), and the transcripts of verbal evidence give a broad and knowledgeable overview of the sector and the difficulties it faces, and are well worth reading. It is to be hoped that the Select Committee can make a worthwhile summary of the discussions, and recommend measures to clear some of the hurdles faced by universities when looking to commercialise technology R&D.

The Science and Technology Select Committee has its own page on *www.parliament.uk*

Jonathan Harris, Editor
The PraxisUnico Spinouts UK Survey

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# Recent investment deals

## Seren Photonics enters global exploitation agreements

Sheffield spinout Seren Photonics (*www.serenphotonics.co.uk*) has raised £1.8m to accelerate commercialisation of its LED technology. The equity funding will enable Seren to transfer its technology to manufacturing partners around the globe. The first of these exploitation agreements was recently announced with an Indian manufacturer.

Seren's new processing technique, developed by Professor Tao Wang, has been shown in tests to greatly increase the efficiency at which a high brightness (HB) LED converts an applied voltage into light and significantly reduces heat generation under normal running conditions. Successful demonstrations of the patent pending technology have resulted in a significant increase of the light output compared with untreated devices, which means that either much brighter LED lamps can be manufactured or that the power consumption of LED lamps can be reduced.

The funding round raised a total of £1.8 million from a number of investors, including I2BF Global Ventures (*www.i2bf.com*) £1.1m, Fusion IP £300k and IP Group £400k.

I2BF Global Ventures, established in 2005 and headquartered in New York, is an international clean technology asset management group, focused on venture capital and public equity activities.

The funding will be used to purchase key capital equipment for HB LED pilot scale development and create a specialist engineering team for the transfer of Seren's processes to its commercial manufacturing partners.

## Diurnal to complete Chronocort Phase I and prepare for Phase 2 trials

Based in Cardiff, Diurnal (*www.diurnal.co.uk*) is developing a new approach to drug delivery that will help patients suffering from reduced levels of the key hormone cortisol (hydrocortisone). *Chronocort*® is a modified release therapy that delivers hydrocortisone in a manner that mimics the body's normal circadian rhythm (the body's natural 24 hour hormone cycle). This therapeutic approach has the potential to help patients suffering from diseases due to cortisol deficiency: congenital adrenal hyperplasia and adrenal insufficiency. Each of these diseases requires life-long treatment and Diurnal's novel approach to drug delivery has the potential to significantly improve patients' lives.

Diurnal has successfully raised £335k in a round led by Fusion IP (which invested £135k leavng its shareholding at 43.1%) and including Finance Wales, to complete the final stage of the Phase I trial for Chronocort®. The funding will also enable the company to prepare for the Phase II trials, which are due to commence during 2012, with an estimated Phase II completion date of mid-2013. Chronocort® has already received two related Orphan Drug designations from the European Medicines Agency, which affords ten years of market exclusivity after the grant of marketing authorisation in Europe.

## Oxford Nanopore raises £31.4m

Oxford Nanopore Technologies (*www.nanoporetech.com*), a spin-out company from the University of Oxford that is developing a disruptive technology for the real-time electronic analysis of single molecules, has raised £31.4 million in new funding via a private placement of ordinary shares, nearly all of which comes from existing investors.

The company previously raised £25 million in April last year, in a round which encompassed institutional and individual investors from the US and UK, including Lansdowne Partners, IP Group, Invesco Perpetual, Redmile Group, Illumina and other undisclosed investors. In the most recent round, IP Group and IP Venture Fund committed £6.7 million and £0.4 million respectively. Oxford Nanopore has now raised a total of £105.4 million since its foundation in 2005.

Oxford Nanopore Technologies is developing technology for direct, electronic detection and analysis of single molecules using nanopores. The modular, scalable GridION technology platform and miniaturised MinION instrument are designed to offer substantial benefits in a variety of applications. The company's lead application is DNA sequencing which combines a nanopore with a processive enzyme for the analysis of DNA. Oxford Nanopore is also developing a protein analysis application that combines target proteins, aptamers and nanopores for direct, electronic analyses of those target proteins.

Oxford Nanopore has collaborations and exclusive licensing deals with leading institutions including the University of Oxford, Harvard and UCSC, and has funding programmes in these laboratories to support the science of nanopore sensing.

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## Surrey NanoSystems secures funding to commercialise semiconductor fabrication technologies

Surrey NanoSystems (*www.surreynanosystems.com*) has raised third round funding of £4.5 million from a consortium led by New Wave Ventures.

The funds will be used to commercialise innovations in materials to support the continued scaling of integrated circuits. These include an advanced dielectric thin film for insulation applications, and a process for growing carbon-based interconnections or 'vias'. Progress in both of these back-end-of-line semiconductor fabrication areas is critical if manufacturers are

to continue silicon's evolution to next-generation geometry sizes, operating speeds and power conservation.

The new funding is being provided by New Wave Ventures in conjunction with Parkwalk Advisors, with further investments from Surrey NanoSystems' existing backers Octopus Ventures, IP Group plc and the University of Surrey.

"The new funding will be used to take our proven technology to the next stage - to demonstrate it at a scale compatible with the lithography and wafer sizes used in today's high volume semiconductor manufacture", said David Wong, CEO of Surrey NanoSystems. "We are cooperating with leading players in the semiconductor industry, and within the next two to three years we expect to be able to offer the technologies in forms suitable for commercial use."

Reducing leakage current is a critical requirement for the continued scaling of semiconductor devices. Surrey NanoSystems has developed a new class of high performance dielectric material for inter-layer or inter-metal insulation, with properties which make it a robust and reliable material for IC fabrication.

Another target application is a replacement material for the vertical connections that link the layers of an integrated circuit, as the copper currently used is becoming more resistive as the geometry sizes of ICs shrink to ever smaller dimensions. Carbon nanotubes (CNTs) can be structured to act as more efficient conductors, but require temperatures of around 700 degrees C - too high for semiconductor processing. Surrey NanoSystems' fabrication system and process allows high density CNT structures to be grown at silicon-friendly processing temperatures of 350 degrees C or less.

## Arvia Technology to develop its nuclear and water business using organics destruction technology

Arvia's existing investor MTI Partners, investing out of its UMIP Premier Fund (UPF), two new investors Sustainable Technology Investors Limited (STIL), and Park Walk Advisors, and a number of smaller existing shareholders have invested £3.8m in an all-equity deal.

Arvia Technology is a University of Manchester spinout that has commercialised its technology to destroy organic substances that are either dissolved or dispersed in water.

The company has made great progress in developing its application to destroy radioactive oils, in collaboration with Magnox at Trawsfynnyd Power Station. Radioactive oils are difficult and often impossible to treat and at present are often simply stored, which is not a sustainable solution.

Arvia Technology is also performing a number of field trials in the municipal, industrial, and swimming pool water markets, with its partners. In these water markets Arvia's technology offers a low energy, chemical free and waste-stream free organics destruction solution.

This investment enables Arvia to grow its business in both of these activities, each representing a substantial commercial opportunity.

MTI's managing partner David Ward commented "Arvia was the first spinout investment from the University of Manchester that MTI invested in from the UPF. The company has been a fantastic role model, using MTI's initial series of investment monies to expand and professionalise its management team and to gain revenue traction by delivering commercial solutions to market.

"A more substantial funding round to support and accelerate growth was the next logical step and we are delighted to welcome the new investors that have joined us in putting together this new investment and share our view of both the substantial progress the company has made and its future potential."

## Phase Vision receives £1.5m investment to fund growth and export

Loughborough University spin out Phase Vision announced in January the closing of a £1.5m funding round led by Qi3 Accelerator and Octopus Investments.

Phase Vision (*www.phasevision.com*) has developed and sells a range of high precision inspection measurement devices which help the aerospace, automotive and nuclear industries to manufacture and test systems more quickly and cheaply and with reduced environmental impact. Its full field white light 3D micro-metrology products bring analysis tools that were once the domain of the metrology lab to the production line, aircraft hangar or shipyard. Results are obtained in seconds, not the hours or days required by other systems. The company will use the funds raised to employ more staff and grow its UK and export sales.

Following a successful presentation at London Business Angels, Qi3 Accelerator (a team of active angel investors) offered to work with Phase Vision and existing investors Octopus, Lachesis, and Loughborough University to bring together a syndicate. This broad group includes investors from Qi3 Accelerator, London Business Angels and the LBA EIS Roundtable Syndicate Fund, MDT, Wren Capital, East Midlands Business Angels, Martlet, Cambridge Angels, Cambridge Capital Group, and a co-investment fund. Existing investors, management and staff backed the round.

Phase Vision CEO Ralph Weir said "I'm delighted to have received this support from our existing investors and the business angel community. We have an exciting and innovative product which is now being adopted by major manufacturing companies and I'm keen to see it roll out around the world. Our team has worked had to get Phase Vision to this stage and now we have the resources to go for growth."

*more overleaf*

## OrganOx facilitates better liver transplants

OrganOx (*www.organox.com*), a medical device development company focused on increasing the quality and supply of organs for transplantation, completed in May a series C investment round of just under £1 million. The round, which was substantially over-subscribed, was supported by both existing and new shareholders. Previous investors in OrganOx have included Oxford Technology Management (Oxford Technology Enterprise Capital Fund), Technikos LLP, the University of Oxford Challenge Seed Fund, and the Royal Society Enterprise Fund.

OrganOx was spun-out of the University of Oxford by Isis Innovation in 2008 and secured a Series A financing of £1.5 million in December 2008 followed by a Series B financing of £2.7 million in January 2011.

OrganOx is developing the OrganOx metra™ that will increase the availability of suitable livers by enabling successful transplantation of organs from non-heart-beating donors and reducing the number of discarded livers. The device operates by maintaining the organ in a fully functioning state during transport and storage, by providing blood flow, oxygen, nutrients and temperature within physiological parameters. ”

## £1.75 million investment for Ai2

Award-winning University of Manchester spinout company Ai2 secured in January £1.75 million in a joint investment from managers of the North West Fund for Biomedical, SPARK Impact and MTI Partners, managers of UMIP Premier Fund.

The deal saw MTI invest £950k and SPARK Impact invest £800k.

Ai2 (*www.ai-2.com*) has developed proprietary human protein-like substances which safely and cost-effectively inhibit bacteria, fungi and viruses. The products have the potential to be used to prevent infection on a wide range of commonly used medical devices like urinary catheters and stents as well being utilised in wound dressings and consumer products.

In 2010, the company signed its first major licence deal with a contact lens manufacturer and has since gone on to successful development projects with a range of blue chip companies.

The £25m North West Fund for Biomedical is part of the £185m North West Fund, an evergreen fund provided by the European Investment Bank (EIB) and European Regional Development Fund (ERDF), to supply debt and equity funding to growing small and medium sized enterprises in the North West of England. Ai2 was the twelfth investment for the Fund.

## TheySay develops new approach to sentiment analysis

Understanding sentiment is a proven source of competitive advantage for businesses, government entities, public sector bodies, political organisations, and individuals keen to monitor and measure what is being said about them on the internet.

TheySay (*www.theysayit.com*) has developed a new approach to sentiment analysis, based on computational linguistics research carried out at the University of Oxford.

TheySay's software is likely to appeal to companies across a wide range of sectors including the finance sector; a hedge fund was launched in London last year based on research from the universities of Manchester and Indiana which showed that mood states from various tweets could collectively predict swings in the Dow Jones Industrial Average with near-90% accuracy.

TheySay's approach of employing linguistic intelligence to complement machine learning techniques enables new levels of insight and transparency. The company's core product is *AffectR*, a platform that employs a novel 'knowledge-rich' approach to text analytics. It can extract the sentiment portrayed towards a specified entity in a given passage of text. Where existing alternatives focus on holistic machine learning algorithms that view sentiment expressions and clues in text as statistical tendencies, AffectR takes a deep linguistic approach that allows it to interpret sentiment computationally.

In February the company announced an investment of £500k by IP Group plc, the developer of intellectual property based businesses. This is the first time that IP Group has invested into a company based on research from the Computer Science Department of the University of Oxford, and is also the Group's first investment into a start-up from Isis Innovation Ltd's Isis Software Incubator. IP Group's long-term commercialisation agreement at Oxford covers the University's Department of Chemistry, and the Group also has a strategic stake in Technikos LLP, a specialist technology fund with a long term commercialisation agreement with the University's Institute of Biomedical Engineering (IBME).

The investment in TheySay is subject to certain milestones being met, but assuming the full amount is invested, the IP Group will have a 40% undiluted beneficial interest in the business.

## Incanthera develops 'smart bomb' treatment

Incanthera (*http://incanthera.com*) a spin-out from Bradford University's Institute for Pharmaceutical Sciences, has developed a 'smart bomb' treatment to target solid tumours using a linker molecule which allows highly toxic drugs to target the tumour with virtually no side effects to the rest of the body.

The company has secured an investment of £375k from SPARK Impact, manager of the £25m North West Fund for Biomedical.

Incanthera, which recently relocated to Merseyside, will use the investment to complete several pre-clinical studies adding significant value to its rapidly increasing trial data. The investment will also be used to leverage further investment allowing the company to begin clinical trials by the final quarter of 2012.

Dr Simon Ward, CEO of Incanthera, said: "I am very grateful to SPARK Impact for its faith and belief in not just the company but also the significant work already carried out by the Institute of Cancer Therapeutics."

PraxisUnico.
Impact through innovation

# PraxisUnico Annual Conference: Impact through Innovation

**14-15 June, Grand Harbour Hotel, Southampton**

PraxisUnico is delighted to announce that it will be launching the second Annual Report of the *PraxisUnico Spinouts UK Survey* at its conference in Southampton at 13:15hrs on Thursday, 14 June to conference delegates.

The PraxisUnico Annual Conference is the highlight of the research commercialisation's year. This year the theme is *Impact through innovation* – which is also the new PraxisUnico strapline, reflecting the importance of the role of PraxisUnico members in realising economic and social impact.

Also featuring during the conference activities, at the Gala Dinner, are The Impact Awards, which are organised by PraxisUnico and aim to recognise the impact of intellectual assets from research. The men and women driving some of the most exciting business relationships and entrepreneurial businesses of tomorrow are recognised for their efforts.

## Why you should attend PraxisUnico's Annual Conference

- *Network with 200+ attendees.*
- *Hear keynote speeches from:*
  ***David Delpy**, Chief Executive of the Engineering and Physical Sciences Research Council*
  ***Will Hutton**, Principal of Hertford College, Oxford and Chair of the Big Innovation Centre*
  ***Maggie Philbin**, Co-founder and Director, TeenTech CIC*
  ***Tim Smit KBE**, Chief Executive & Co-founder of the Eden Project.*
- *Listen to thought-provoking talks from peers*
- *Select from parallel sessions (covering: collaborations, essential IP skills, professional development, funding and networking) – due to demand some sessions are now sold out.*

To find out more visit ***www.praxisunico.org.uk/conference/forthcoming-conference.asp***

THE IMPACT AWARDS

## Finalists:

### Business Impact Achieved Award

**Tough Furniture Ltd** and **University of Wolverhampton** from School of Art & Design, University of Wolverhampton

**A cleaner, lower carbon and more efficient energy future** from Intelligent Energy/Loughborough University

**The Simcyp Simulator** from University of Sheffield

### Business Impact Aspiring Award

**The Hall Lock** from Cardiff University

**Intelligent Fingerprinting** from University of East Anglia (UEA)

**Simpleware Ltd: Simulating Reality** from Simpleware Ltd and University of Exeter

### Collaborative Impact

**The "Durham Model" for integrated Business interaction** from Durham University

**Aerogen Solo II Project** from University of Limerick

**Fuel efficient, low carbon cars** from University of Bath and Ford Motor Company

### KT Achiever of the Year award

**Dr Sonja Vujovic** from Edinburgh Research and Innovation

**Dr Denise Cooke** from University of Bath

**Kevin Marks** from Warwick Ventures, The University of Warwick

# Recent exits

## Simcyp acquired by Certara

On 13 March Certara, a US-based provider of drug discovery and development software and scientific consulting services, completed its acquisition of Simcyp, a spinout from the University of Sheffield, for US$32 million.

Simcyp (*www.simcyp.com*) was founded in 2001 by Professor Geoff Tucker, Professor Amin Rostami-Hodjegan and John Evans. It provides a modeling and simulation platform for predicting the fate of drugs in virtual populations, including pediatric populations.

Certara (*www.certara.com*), headquartered in St Louis, MO, USA is dedicated to improving human health through a broad spectrum of software products and services, from molecular discovery through clinical development, with special focus on supporting translational approaches to drug development. Certara was formed by uniting Tripos, which provides scientific software solutions and services to enable researchers to improve the efficiency of molecular discovery, with Pharsight Corporation, provider of software and scientific consulting services to improve productivity and decision-making in preclinical and clinical drug development.

As a Certara portfolio company, Simcyp will continue to provide platforms for the modeling and simulation of pharmacokinetics and pharmacodynamics in virtual human populations and virtual laboratory animals (rat, dog and mouse). The technology allows pharmaceutical researchers to predict in vivo outcomes from routinely generated in vitro data, to fit Simcyp models to observed clinical data, and to assess inter-individual variability through 'real-life' simulations. This informs decision-making in drug development. Simcyp will also continue to provide expert consultancy services, run educational workshops, and support academic and drug regulatory research through the provision of not-for-profit simulator licences.

John Evans, managing director at Simcyp said "We're very pleased to become part of the Certara team. The acquisition by Certara will allow Simcyp to focus on its core competence whilst allowing us to draw on the broader drug development expertise available within the Certara family. Clients from across the spectrum of drug discovery and development will have access to a broader range of products and services, which will be enhanced by combining the attributes of Tripos, Simcyp, and Pharsight science and functionality."

In the financial year ended July 2011, Simcyp made £1.9m post-tax profit.

Fusion IP will receive approximately $6.4m in cash from the sale of its 20% shareholding in Simcyp, of which approximately 14% is being held in escrow for a period, as security for certain warranty and indemnity cover. The majority of the cash will be used to invest in a number of Fusion's existing portfolio companies and for the creation of new portfolio companies from its exclusive university partnerships, in line with its business model.

David Baynes, CEO of Fusion, said "We are delighted to announce our first significant exit from our growing portfolio of companies. Simcyp is a world-class software company and the 200 fold return we have made on our investment amply demonstrates the excellence of our university pipeline agreements and the value that can be extracted from these exclusive relationships."

## Retroscreen Virology admitted to AIM

On 3rd May 2012 Retroscreen Virology Group plc (*www.retroscreen.com*), a spinout from Queen Mary, University of London, was admitted to the AIM market of the London Stock Exchange with a market capitalisation at admission of approximately £32.8 million.

The company raised gross proceeds of £15 million in a placing of 18,750,000 Ordinary Shares at 80 pence per share.

Retroscreen Virology is a contract virology research company, dedicated to creating the next generation of antivirals and vaccines in the field of biomedical research. Its research includes both pre-clinical and clinical projects, and it currently conducts and co-ordinates several clinical trials per year involving student/staff volunteers or patients in general practice, particularly involving influenza or common cold viruses or vaccines.

The Group has grown and developed its Viral Challenge Model (VCM) for evidencing the efficacy of antiviral and viral therapeutics in RSV, flu and cold. As the business develops, it intends to expand into adjacent clinical areas, such as asthma. It also intends to leverage virometrics, harvesting the potential of its research for the discovery and creation of proprietary intellectual property.

The proceeds of the IPO are to be used to invest in infrastructure, facilities and personnel, to allow the Group to pursue its development strategy and as general working capital.

IP Group has a beneficial interest in Retroscreen, representing 22.7% of the enlarged issued share capital, valued at £7.4 million at the placing price, giving an unrealised fair value gain to IP Group of £5.3 million. In addition, the IP Venture Fund managed by the IP Group, has a beneficial interest, representing 9.2% of the enlarged issued share capital. IP Group and IP Venture Fund committed £1.5 million and £0.5 million respectively to the placing.

# Recent spinouts

| company | university | sector | incorp | web |
|---|---|---|---|---|
| FibromEd | Edinburgh | drug discovery & diagnostics, therapeutics | 01-Mar-11 | www.fibromed.co.uk |
| Oxford Multi Spectral | Oxford | instrumentation & sensors | 13-Mar-11 | www.oxfordmultispectral.com |
| Thomson Screening Solutions | City University | healthcare products & services | 06-Jul-11 | thomson-screening-solutions.com |
| GlycoBioChem | Dundee | drug discovery & diagnostics, therapeutics | 30-Aug-11 | www.glycobiochem.com |
| Bryoactives | Heriot Watt | drug discovery & diagnostics, therapeutics | 14-Sep-11 | www.bryoactives.co.uk |
| TheySay | Oxford | software B2B & e-business | 07-Dec-11 | www.theysayanalytics.com |

# Recent exits

| exit date | company | type | incorp | university | value | acquirer |
|---|---|---|---|---|---|---|
| 24-Feb-12 | Simcyp | trade sale | 15-May-01 | Sheffield | $32m | Certara LP |
| 03-May-12 | Retroscreen Virology | IPO | 08-Dec-88 | QMUL | £32.8m | AIM:RVG |

# Recent investments

| date | company | university | amount | investors |
|---|---|---|---|---|
| 03-Jan-12 | Ai2 | Manchester | £1.75m | SPARK Impact (NW Fund for Biomedical), MTI Partners |
| 30-Jan-12 | Phase Vision | Loughborough | £1.5m | Qi3 Accelerator, Octopus Investments, Lachesis. London Business Angels, others |
| 13-Feb-12 | TheySay | Oxford | £500k | IP Group |
| 08-Mar-12 | Seren Photonics | Sheffield | £1.8m | I2BF Global Ventures, Fusion IP, IP Group |
| 12-Mar-12 | Surrey NanoSystems | Surrey | £4.5m | New Wave Ventures, Parkwalk Advisors, Octopus Ventures, IP Group, University of Surrey |
| 15-Mar-12 | Diurnal | Cardiff | £335k | Fusion IP, Finance Wales, others |
| 16-Apr-12 | Arvia Technology | Manchester | £3.8m | MTI Partners (UMIP Premier Fund), Sustainable Technology Investors Limited (STIL), Park Walk Advisors, others |
| 19-Apr-12 | Navetas Energy Management | Oxford | £5m | Sensus |
| 03-May-12 | Oxford Nanopore Technologies | Oxford | £31.4m | IP Group |
| 09-May-12 | OrganOx | Oxford | £1m | Oxford Technology Management (Oxford Technology Enterprise Capital Fund), others |

# Recent spinouts

## FibromEd

FibromEd *(www.fibromed.co.uk)* combines assets and know how from the University of Edinburgh in generating high fidelity human hepatocytes for research.

The founders of the company are Dr David Hay (CSO, director and founder) an international expert in stem cell and liver biology; Professor Mark Bradley (founder) an international expert in combinatorial and high throughput chemical biology; Professor John Iredale (founder) an international authority on human liver fibrosis, inflammation and liver disease management; and Dr Howard Marriage (CEO and founder), with global experience and a track record in company formation, fund raising and business development.

FibromEd has combined its expertise in biology and chemistry with a business model that delivers highly efficient and predictive human liver models. Its solutions will help partners to select better drug molecules, to improve participant selection for clinical trials, and ultimately, improve patient drug treatment selection and recovery.

The FibromEd approach uses human pluripotent stem cells as its model system. The near term gains from this technology are likely to be improved human in vitro models, with extra-corporeal device construction and cell based transplantation to follow in the future. FibromEd is playing a central role in the tools development space, with an initial focus (but not limited to) the generation of predictive and reliable human liver models.

Supported by a number of high profile collaborations, FibromEd has built human bio-banks suitable for cellular reprogramming to pluripotent stem cells, defining stem cell systems for large scale manufacture and improving model physiology using novel matrices and tissue microenvironments.

## Thomson Screening Solutions

TSS *(www.thomson-screening-solutions.com)*, a spinout from City University London, has developed a new software system to help Primary Care Trusts (PCTs) and schools deliver child vision screening.

The company, founded by Professor David Thomson from the School of Health Sciences and supported by the Technology Transfer team in the City Enterprise Office, offers a variety of products and services to improve the quality and cost-efficiency of vision screening. The new solution tackles the problems that arise in the delivery of vision screening in schools nationwide.

Although school guidance for vision screening is provided by the National Screening Committee, the lack of any national coordination or any real attempt to enforce the guidance has resulted in an inequitable system. In some areas screening is done well, but others struggle to keep up with demand, while some 30% of PCTs have failed to implement any form of screening.

Currently, vision screening is carried out by school nurses or health care assistants using card based letter charts. This form of screening is prone to errors caused by variations in lighting, inaccurate viewing distance and the manual recording of results. Furthermore, back-office administration such as producing letters for parents and referral reports is usually done manually which is time-consuming and inefficient. In most cases there is no facility for following up those children who fail the screening and as a result many do not ever receive the spectacles or treatment that they require, while the overall efficacy of the screening programme remains impossible to measure.

Thomson Screening Solutions has created a service based around a software system designed specifically to address these issues, with technology centred around a database maintained on a server.

## Oxford Multi Spectral

This company *(www.oxfordmultispectral.com)*, a spinout from Oxford University in August 2011, has made rapid progress in taking its flatbed A4 multispectral scanner into production.

The scanner was developed in response to a requirement from the Classics Department at the University, which needed a method for reading texts from a large number of almost completely ruined ancient papyri.

Over the past decade a research group led by Dr Dirk Obbink, a lecturer in papyrology and Greek literature, had been successfully applying multispectral imaging (MSI) technique to such degraded manuscripts and managed to recover and transcribe many texts that could not be read by any other scientific means.

In spring 2009 Dr Alexander Kovalchuk, a physicist who was working in Dr Obbink's team, invented an original multispectral imaging device that combined in itself two already well established technologies which had not been used together before – a flat bed image scanner and multispectral imaging.

Isis Innovation recognised the potential of this invention and facilitated application for a patent in autumn 2009. In February 2010 Isis awarded a UCSF grant that allowed Dr Kovalchuk to work full time on developing the optical, electronic and mechanical systems and the overall design of the new multispectral flatbed scanner.

In January 2011 the prototypes were demonstrated to a Mr Liyao Xu, a Chinese investor who recognised the potential of the technology, and funded and practically supported its rapid transition from development to production.

The scanner was launched at an event at the Ashmolean museum on 1st March.

# Clinical Trials and Tribulations

Undertaking clinical trials is a time consuming and costly exercise for businesses as well as being a regulatory minefield. Add to that, the responsibility for arranging appropriate insurance cover and the issue can become more complex.

MFL Science & Technology
INSURANCE BROKERS

## Compensation and Legal Liability

It is often wrongly assumed that asking participants in clinical trials to sign a Consent Form absolves all parties of liability for injury whilst involved in the study. However, it is imperative to recognise how a Clinical Trial policy is structured to fully appreciate that this may not be the case.

Clearly, it is for the greater good that individuals should volunteer for studies in the knowledge that should something go wrong they will be suitably compensated.

To that end, a Clinical Trials policy has two constituent parts: a compensatory aspect where no cause has to be proven (ie no proven negligence on the part of those running the trial), simply that whilst participating in the trial the volunteer has suffered some form of injury. There are compensation guidelines for such instances.

The policy also provides for legal liability. In such circumstances the injured party may not feel that the compensatory aspect is suitable recompense for his or her injuries and may pursue a legal action against those running the study.

The mere fact that someone has signed a Consent Form is no defence in itself. Those running the trial must be able to demonstrate that the process and potential downsides were fully explained to them and that they have exercised a suitable standard of care throughout all facets of the trial.

## 'Run Off' Liability

Care should be taken in relation to the scope of cover afforded by any clinical trial insurance.

Policies are typically arranged on a single or multiple trial basis for an annual policy period irrespective of the duration of the trial. Clinical trial insurance is arranged on a 'claims made' basis which means that the policy in force when a claim is made is the one that would respond to the claim. As a result, it is important to make adequate provision for any potential 'run off' liability once a trial study has concluded. Clearly, what this period should be is often dictated by the nature of the trial ie a trial involving a permanent implantable device is likely to require a longer 'run off' period. This can either be catered for by continuing to renew the policy on an annual basis or paying an additional premium for a set 'extended reporting period'.

## Overseas Trials

Where recruitment of volunteers is difficult given the nature of the particular study it is sometimes necessary to undertake studies in a number of countries. In doing so, businesses are often caught out by the fact that in certain jurisdictions it is a local requirement that an 'admitted' policy (a policy issued in that territory) is put in place to cover the trial work in that country.

What this means in practice is that a business may need to arrange multiple policies with separate limits in different countries to cater for what is in essence the same trial work. This is likely to be dictated by local requirements in terms of policy wording and limits,

In summary, there are some fundamental pitfalls in arranging Clinical Trials Insurance and it is vital that you involve your insurance adviser at an early stage in the process, to establish the requirements and options available.

*MFL Science & Technology is a specialist insurance broker risk management adviser to many of the UK's leading spinout businesses.*

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# Start-ups from the Royal College of Art

Not all HEIs have the sort of technology departments from which spinouts can be created, based on the IP developed in the department. Many however are keen to encourage company formation by means of start-ups by staff or graduates.

This is the approach taken by the Royal College of Art, which has been particularly successful in encouraging interdisciplinary teams, which benefit from the different perspectives of team members. This has resulted in a very wide range of different companies in a variety of markets. All of the start-ups in the selection below have had a strong focus on the design elements of the business, and several of their products have won prestigious awards.

### Artica Technologies *(www.monodraught.com)*

Artica was founded in 2008 by five students whose different educational backgrounds combined to develop the design of an environmentally friendly system for the cooling and ventilation of buildings. The company was accepted on to the Carbon Trust's Entrepreneurs Fast Track, and subsequently acquired in December 2010 by High Wycombe-based Monodraught, a manufacturer and supplier of natural daylight and ventilation systems.

### Orbel Health *(www.orbelhealth.com)*

Orbel is a patented personal alcohol hand gel dispenser designed to be used by healthcare professionals to help prevent the spread of hospital acquired infections such as MRSA. The company won funding from Design London (a collaboration between RCA and Imperial College, now closed) and was accepted into its business incubator.

### Squease *(www.squeasewear.nl)*

Squease is an inflatable pressure vest that is hidden away inside a hooded top. For people with sensory difficulties, who find dealing with change, busy environments or contact with other people to be highly stressful, applying pressure to the upper body may be calming, and can increase body awareness or improve attention and focus.

### SEA Labs *(www.sea-labs.com)*

SEA Interface is a platform technology for building pressure-sensitive touch interfaces, which will allow capture of three-dimensional gesture inputs, while simultaneously providing the user with tactile feedback. The technology is being applied to reconstruct traditional piano keyboards in the first instance, but the company is exploring applications in personal computing, robotics, medical devices, gaming, and vehicular and machine control.

### Kwickscreen *(www.kwickscreen.com)*

KwickScreen is a portable, retractable, room divider which provides isolation or privacy in hospitals when required, and is now sold into over 30 NHS trusts in the UK. The product itself has won a number of awards, and its inventor Michael Korn won the title Shell LiveWIRE Young Entrepreneur of the Year 2011.

# Easy Access Innovation Summit

Key opinion leaders from across the UK innovation system met in London in February to discuss the key issues and challenges of university and industry engagement.

The message from industry (represented by major firms including Unilever, AstraZenca, Rolls Royce, and GlaxoSmithKline) was clear; the UK is one of the best and easiest countries in which to build and transact relationships with universities.

Many universities no longer place disproportionate emphasis on intellectual property as a revenue source, recognising that partnership with industry will deliver the new products and services based on university research and knowledge. Larger companies are favouring deeper and broader relationships with a limited number of universities.

The real shortage of funding to support the journey from research to exploitation remains a stumbling block for the innovation process. Early stage venture capital is all but dead and whilst there are a number of schemes that address very early stage exemplification of ideas there remains a need to address the gap in risk capital to fund for early to mid-stage development. Conversations between business and researchers must be boosted, and more needs to be done to enable researchers and industry people to move between their respective organisations.

The Universities of Glasgow, Bristol, and King's College London, along with the University of New South Wales (Australia), have pioneered a new way of working with industry – Easy Access IP (***www.easyaccessip.org.uk***). Using simple one-page agreements, certain early stage intellectual property is licensed free to companies. The objective? To move new ideas swiftly into the hands of companies who can then afford to take the risk to develop new products and services. Easy Access IP has been adopted by 11 universities in the UK and internationally, with others adopting Easy Access-like approaches.

# A hot-bed of opportunity

FINANCE WALES
CYLLID CYMRU

**Whether its medical devices, diagnostics, pharmaceuticals or healthcare technology, life sciences investments are a significant and growing part of Finance Wales' portfolio. In total they now account for over 60% of the value of the company's early-stage technology investments.**

Dr Melanie Goward, a senior investment executive at Finance Wales considers what makes Wales such a hot-bed of opportunity for high-quality life sciences companies to decide to locate here?

"The life sciences sector in Wales is maturing well. There's also a great deal on offer, including: world-class academic work; facilitated access to the NHS; high-quality facilities and a range of people skills," comments Goward. "Coupled with government financial support as well as the backing of a long-term investor like Finance Wales, you can see why Wales is an increasingly attractive option."

With a growing track record of investing and co-investing in life sciences companies, Finance Wales understands that they often require substantial investment long before they generate revenues. Healthcare is highly regulated, for instance and gaining regulatory approval can be a timely and uncertain process which is rumoured to be getting even tougher.

"We ensure our investment matches typical sector funding cycles and can invest at an early proof-of-concept and pre-revenue stage through to development and product launch.

We're also keen to be a supportive investor providing funding during uncertain trial and approval periods," Goward explains. "We can invest up to £1 million initially and then potentially follow our investments with more significant sums. We also co-invest so that companies have the additional firepower they need."

A tie-up between Finance Wales and Fusion IP has already seen the companies jointly invest £4.2 million in 7 spinouts. Beyond co-investors, Finance Wales' extensive network offers additional benefits ranging from sign-posting the right regulatory advice to strengthening management teams.

"As a supportive long-term investor our goal is to ensure we do our utmost to help the companies we invest in," Goward continues.

Goward is also optimistic about the future, too: "With the recent announcement of a £100 million Welsh Life Science Investment Fund there's a lot going on in Wales to cement the future of its life sciences sector."

*Dr Melanie Goward is a senior investment executive at Finance Wales specialising in early stage life sciences investments. She has worked with technology companies at all growth stages and on the internationally-acclaimed Human Genome Project.*

*She can be contacted on 029 2033 8112 or 07796 991264 or by visiting www.financewales.co.uk/earlystage*

CREO MEDICAL

### CreoMedical

A £3 million funding round that includes a £1.36 million structured equity investment package from Finance Wales will enable Creo Medical to complete product development, preclinical trials and undertake the first-in-man use of its unique CRoMa technology.

adc biotechnology

### ADC Biotechnology

ADC Biotechnology will develop and commercialise its new drug production technology using a £450,000 funding package that includes a £350,000 co-investment from Finance Wales and a private investor syndicate led by Acceleris as well as Welsh Government funding.

# Project partners

We are very grateful to the following organisations for their support

## Lead partner

PraxisUnico. Impact through innovation

PraxisUnico is the UK's leading research commercialisation association. It is a not-for-profit educational organisation set up to support innovation and commercialisation of public sector and charity research for social and economic impact. PraxisUnico encourages innovation and acts as a voice for the research commercialisation profession, facilitating the interaction between the public sector research base, business and government. PraxisUnico provides a forum for best practice exchange, underpinned by first-class training and development programmes. *www.praxisunico.org.uk*

FINANCE WALES CYLLID CYMRU

Finance Wales is one of the UK's largest SME investment companies and provides growth capital to help businesses realise their potential for innovation and growth.
*www.financewales.co.uk/earlystage*

Scottish Enterprise

Helping translate ideas and research into more spin-out and start-up companies, and encouraging Scottish companies to make use of technology and research being developed.
*www.scottish-enterprise.com*

Marks&Clerk Intellectual Property Services

Marks & Clerk is the UK's largest firm of patent and trade mark attorneys and advises companies on their intellectual property across a full range of sectors worldwide.
*www.marks-clerk.com*

UCLB Business

UCLB is the technology transfer office of UCL, one of the UK's leading research-led universities. UCLB is responsible for commercialising innovations arising from the university.
*www.uclb.com*

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