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Quarterly Journal—issue 8

NEWS COMMENT and ANALYSIS on SPINOUTS from UK HEIs

Spinouts in context

In the 2013 Annual Report for the Spinouts UK project, launched at the PraxisUnico conference in Nottingham recently, we remarked upon the continuing decline in the number of spinout companies being created by universities across the UK.

One reason for this, remarked by a number of observers, is a trend towards quality rather than quantity. Start up companies are very vulnerable, and to give them a fighting chance of success it is crucial that they are well prepared, with a comprehensive understanding of the market opportunity and how to exploit it, and a team in place able to achieve this. In the case of university spinouts, this commercial knowledge needs to supplement the additional work required to develop a product or service from the underlying research. This preparation is demanding and costly, and it is surely right that resources should be focused on these fundamentals prior to company incorporation, rather than creating companies which will be weeded out by the process of commercial competition.

Particularly in the current economic climate, with exits so few and far between (none to report in this Quarterly Journal, alas), it is easy to sympathise with universities that see little financial return for the effort involved. However, spinouts are just one part of the commercialisation process, itself just one part of a university's role, and seen in a wider context universities have a considerable influence on the economic wellbeing of the society

in which they work. If this is seen to include the cultivation of entrepreneurial attitudes, we can view the education of young scientists and technologists as a key step in the creation of new businesses as start-ups; as remarked in the Annual Report, MIT produces many more start-up companies than spinouts, and sees its role as one of encouraging entrepreneurship generally, rather than focusing exclusively on spinouts.

There are difficulties with strict definitions of the spinout and start-up categories, and we have come across several companies recently which clearly owe their existence to university research, but do not come within the definitions used by this survey and by HEFCE. Spinouts are easier to track and follow, and our Quarterly Journals will continue to record successful milestones, including investments by third parties and exits by trade sale or IPO, while our Annual Reports will aim to track and report on the growth of spinouts in employee numbers and turnover, while acknowledging the contribution of universities across a broader spectrum.

Jonathan Harris, Editor

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New spinouts and start-ups

The following companies (some more recent than others) are new to the Spinouts UK online database. Some of these companies have secured seed investment, and are separately listed on the table of recent investments on page 7.

company	university	sector	incorporated	web
Cambridge Epigenetix	Cambridge	drug discovery & diagnostics	26-Mar-12	www.cegx.co.uk
colwiz	Oxford	software B2B & e-business	01-Aug-12	www.colwiz.com
Biogelx	Strathclyde	drug discovery & diagnostics	17-Aug-12	www.biogelx.com
Perspectum Diagnostics	Oxford	medical imaging	18-Sep-12	
Esplorio	Oxford	software B2C	19-Nov-12	www.esplorio.com
KEIT	STFC	instrumentation & sensors	18-Dec-12	
XO1	Cambridge	drug discovery & diagnostics	28-Feb-13	
PH Therapeutics	Sheffield	drug discovery & diagnostics	06-Mar-13	http://phtherapeutics.com/

CEGX brings new approach to sequencing

Cambridge EpiGenetix (CEGX) is a biosciences company that participates in the rapidly growing market for tools and techniques that improve the ability to understand the epigenome and genome function.

CEGX owns patented intellectual property regarding detection of nucleotide modification, and its initial focus is on providing the reagents and processes necessary to permit DNA sequencing platforms to detect the 5-hydroxymethyl variant of the C base (5hmC) in a reliable, precise and repeatable manner.

The recently discovered 5hmC variant is of potentially broad significance and the company owns the US and EU patents to the method for its detection.

CEGX's TrueMethyl™ oxidative bisulfite sequencing (oxBS-Seq) is a novel technology that pioneers quantitative, single-base resolution sequencing of the modified bases hydroxymethyl cytosine (5-hmC) and methylcytosine (5-mC).

The oxBS technology, co-invented by Professor Shankar Balasubramanian who previously co-invented the Solexa / Illumina sequencing-by-synthesis platform, uses a selective chemical oxidation that accurately distinguishes between 5-mC and 5-hmC.

This approach can be used with a variety of common platforms including next generation sequencing systems, methylation arrays, and targeted assays. Chemical oxidation gives very high conversion efficiencies and minimises sequence context effects, yielding high quality and unparalleled results.

colwiz secures strategic partnership with the American Chemical Society

colwiz (collective wisdom), a spinout from the University of Oxford's Isis Software Incubator (ISI), is a research management, collaboration and productivity software company.

www.spinoutsuk.co.uk

In March colwiz announced a development partnership and a strategic investment from the American Chemical Society, the world's largest scientific society. Under the terms of the partnership, colwiz will provide the underlying technology and platform for ACS ChemWrox and ACS ActiveView PDF.

The Isis Software Incubator (ISI) supports nascent software ventures in the development of products or services and assists them to trade without external investment. The ISI has been supporting such ventures since late 2010 and launched an on-site incubation facility at Summertown, Oxford in mid 2011.

Biogelx develops hydrogels for cell cultures

Biogelx, a spinout from the University of Strathclyde, will build on the international reputation of Prof Ulijn and his peptide gel technologies. The first Biogelx products being brought to market are in the field of cell biology/cell culture, where there is a rapidly growing need to store, grow, proliferate and manipulate naturally-derived cells within 3D matrices or nanoscaffolds. Biogelx offers a range of market-ready *in vitro* hydrogels, for applications in cell culture research, toxicology screening and patient-specific therapy development.

These materials offer the opportunity to reduce animal testing and use patient-specific cell-based bench-top systems instead of animals for drug or therapy development.

The company has secured investment from Gabriel Investments, a new angel syndicate based at the Strathclyde University Incubator, aimed specifically at supporting young pre-start and start-up businesses. Investee companies join Gabriel's Accelerator Programme, to ensure that the company stays focused on the benchmarks agreed at the outset of investment, and are nurtured and supported to the next level of investment, ideally within six to nine months. Gabriel's investments are matched by Scottish Enterprise.

Dr David Lightbody, CEO of Biogelx Ltd, said “The launch of the Biogelx business provides a major opportunity to improve the way toxicology testing and drug development is carried out, through the use of patient-specific, cell-based bench-top systems instead of animals. As a result, we have already secured supply arrangements with key customers which we will support from our new laboratory in the recently opened bioscience facility at BioCity, Newhouse.”

Perspectum Diagnostics's scan will detect early liver disease

At present, liver disease can only be accurately determined by an invasive biopsy, as there are no tell-tale symptoms. The new scan developed by Perspectum uses standard MRI technology and costs half as much as a biopsy.

The scan was developed by a team from the Radcliffe Department of Medicine at the University of Oxford and the latest Isis Innovation spin-out, Perspectum Diagnostics. Isis Innovation is the technology transfer company of Oxford University.

Nearly 15 million people in the UK are affected by some form of liver disease. Most suffer from fatty liver disease, which has been linked to obesity, diabetes and alcohol abuse. Liver disease is associated with early death and cancer. The new scan will allow early, pain-free detection, and treatments such as dietary changes, drugs and exercise to be tailored for individual patients. Dr Rajarshi Banerjee, Chief Clinical Scientist for Perspectum Diagnostics, said: “A real breakthrough is that doctors will be able to detect which overweight adults and children have liver disease and how it is progressing. Conservative estimates suggest at least 1.5 million children across the EU are affected.”

Prof Stefan Neubauer, Director of the Oxford Centre for Clinical Magnetic Resonance Research, and a non-executive Director of Perspectum Diagnostics, said “The simple non-invasive procedure may also facilitate pre-emptive scanning of patients in high risk groups and getting effective treatment before the most obvious and worrying symptoms develop. Treating patients in the early stages of liver disease will save lives and our health care system considerable expense.”

Esplorio enables to travellers to share experiences

By simply specifying two dates, users can set up a detailed travelogue of any journey with Esplorio, a start-up from the University of Oxford. Using social media channels, Esplorio automatically populates a timeline with locations, posts, tweets and photos. The result is a comprehensive journey that can either be stored as a keepsake or shared by link, Facebook or Twitter with a single click. Scattered memories of a trip can now be permanently part of the Esplorio Trip Diary.

Esplorio was founded by Tim Fernando, an employee of the University, and Rami Chowdhury, an alumnus, and has emerged from the Isis Software Incubator, part of Isis

Innovation, the Technology Transfer Company of the University of Oxford.

Seasoned travellers for both business and leisure, Tim and Rami found keeping track of all their trips difficult. Tim explained “I realised that I use my smartphone and camera throughout my trip, but the result was scattered all over the place - a few photos on Flickr, GPS tracks on Google Latitude, restaurant finds on Foursquare - sharing all those memories in one go was impossible. We've made it easy and fun. Your friends and family can even keep track of your progress via a shared link that is continuously updated as you update on the move.”

The future for Esplorio is to suggest destinations based on past trips. This will include flight, hotel and car rental deals.

KEIT brings space technology down to earth

KEIT Ltd is a spin out company from the RAL Space division of the Science and Technology Facilities Council (STFC), which grew out of the need for an extremely robust, compact but highly accurate instrument that could withstand the harsh conditions associated with space, whilst accurately measuring multiple gases simultaneously from the atmospheres of planets.

Unlike conventional spectrometers that are bulky and rely on a complex system of moving mirrors, this new generation of spectrometer is compact, lightweight, and because it has no moving parts, it is extremely stable.

The versatility, stability and simplicity of a KEIT spectrometer means that it could sit on any food or pharmaceutical production line to check, for example, the fat content of milk, or the origin and quality of whisky. Environmentally, the spectrometers could play a key role in monitoring gaseous emissions from industrial chimney stacks, enabling industries to adhere to environmental regulations. A KEIT spectrometer could also form the core of an analytical tool for any industrial or academic laboratory-based R&D facility.

The lightweight, compact and robust nature of KEIT spectrometers also makes them ideal for use on Unmanned Aerial Vehicles (UAVs) that are operated autonomously to survey large areas remotely. From a UAV, the spectrometer can image and map the geological characteristics of the ground below, and monitor the composition of the atmospheric gases surrounding it. In agriculture, the KEIT spectrometer can assess the colour variation within a farmer's crop, to assess the health of the crop and enable more targeted and cost-effective use of resources such as pesticides and fertilisers.

Dr Hugh Mortimer, a research scientist at STFC's RAL Space, and inventor of the technology said “Mass is a real commodity on board satellites, so we wanted to develop an extremely high performance spectrometer which was also particularly stable and compact. We quickly realised that there were some very real non-space application opportunities: from R&D, to food production all the way through to agriculture, just to name a few. It's the unique simplicity and stability of the spectrometer that we've developed here at STFC that makes it so versatile and

powerful. This technology could transform how spectrometers are used, where they can be used and who uses them.”

Longwall Ventures and the Rainbow Seed Fund (which is managed by Midven) have invested in the spinout which will now take its patented technology forward towards full commercialisation. KEIT has also been awarded a place within the European Space Agency’s Business Incubation centre (ESA BIC Harwell). The incubation centre provides the ideal environment for companies to translate space technologies and applications into viable businesses in non-space industries. As a tenant at the ESA BIC, KEIT will benefit from a support package which includes more than £40k towards further technology development; easy access to both STFC and ESA technical expertise, and a dedicated business champion from STFC to help with business planning and guidance.

XO1’s anticoagulant prevents increased bleeding

XO1 Ltd, a spinout company from the University of Cambridge and Addenbrooke’s Hospital, is developing a new anticoagulant drug which has the potential to save millions of lives by preventing heart attacks and strokes without causing bleeding.

This drug candidate is ichorcumab, an antibody which targets thrombin, the enzyme responsible for blood clotting.

Ichorcumab is based on a naturally-occurring antibody found in a patient at Addenbrooke’s in 2008. “This patient arrived in A&E with a head injury, and we rapidly discovered a degree of anticoagulation consistent with severe haemophilia,” said Dr Trevor Baglin, Consultant Haematologist at Addenbrooke’s, part of Cambridge University Hospitals, who treated the patient in question. “We thought it might be fatal. But to our surprise the bleeding stopped quite normally.”

The observation led Dr Baglin and his colleague Professor Jim Huntington at the University’s Cambridge Institute of Medical Research to design a synthetic version of the antibody in the patient’s blood that was responsible for this extraordinary anticoagulation.

Anticoagulants, such as warfarin and the newer generation of drugs that directly target thrombin and another coagulation factor (fXa), are widely used to prevent thrombosis, a major cause of heart attacks and strokes. However, as blood clotting is essential to prevent excessive bleeding, the use of these drugs is limited by the bleeding side-effects that they cause.

“Undoubtedly higher doses of these anticoagulant drugs could prevent the majority of heart attacks and strokes,” Dr Baglin explained. “But we can’t give higher doses because the bleeding

they would cause would itself be fatal. Ichorcumab has the potential to change all that.”

XO1 has raised \$11 million in funding from life sciences investor Index Ventures, which comes from the \$200 million Life Sciences fund which Index launched last year to accelerate new drug discovery. The funding will be used to complete the preclinical development of ichorcumab, and to manufacture substantial quantities of the antibody. The company expects to begin trials in human volunteers within two years, and in the meantime will operate in virtual mode, without offices or labs, using out-sourced drug development expertise from across the globe.

PH Therapeutics tackles arterial wall thickening

PH Therapeutics is a spinout from the University of Sheffield, formed under the exclusive agreement with university commercialisation company Fusion IP (AIM: FIP).

PH Therapeutics is founded on the research of Dr Allan Lawrie from the Department of Cardiovascular Science at the University, and aims to develop biologic treatments for the rare disease Pulmonary Arterial Hypertension (PAH).

PAH is caused by the thickening of the walls in arteries that take blood from the heart to the lungs, making it harder for blood to flow through them resulting in high blood pressure. The increase in pressure puts a strain on the heart that can lead to difficulty in breathing and heart failure. Current therapies only attempt to alleviate the symptoms of this disease through relaxing the vessels. PH Therapeutics is developing therapies that specifically target molecules thought to be responsible for cell wall thickening. This may lead to control and importantly reversal of the disease. PAH affects around 2 in 10,000 people in the European Union and is classed as an orphan disease.

In accordance with its agreement with the University of Sheffield, Fusion will start with a 60% shareholding in PH Therapeutics Ltd.

Dr Lawrie, founder of the business and an MRC Career Development Fellow, commented “Although several treatments exist for treating the symptoms of PAH, these have not been shown to be as effective as hoped for patients suffering from this life-threatening disease. I am delighted that through PH Therapeutics, working in conjunction with the University of Sheffield and Sheffield Pulmonary Vascular Disease Unit, we will begin the journey of developing new and better treatments for patients.”

Recent investments

The following reports cover a selection of the investments listed in the table on p7.

Canbex Therapeutics completes financing round

UCLB spinout company Canbex Therapeutics has completed a £2.1 million fundraising round that will enable it to complete the early development of its lead candidate for the treatment of spasticity in multiple sclerosis. Merck Serono Ventures led the financing for this round.

Nilesh Kumar, director of Merck Serono Ventures, will join the Canbex board of directors. Merck Serono Ventures is the corporate VC fund of Merck Serono (www.merckserono.com), the division for biopharmaceuticals of Merck KGaA of Darmstadt, Germany. The fund invests in emerging biotechnology companies with the potential to provide breakthrough medical solutions in Merck Serono's focus therapeutic areas: neurodegenerative diseases, oncology, immuno-oncology and immunology. In addition, Merck Serono Ventures invests in companies developing innovative technologies that could enable the discovery and development of new products in its core therapeutic areas.

Canbex was founded by a scientific and clinical team at UCL including Professor David Baker and Professor David Selwood, who were later joined by Professor Gavin Giovannoni, a practicing MS clinician. The company received a Translation Award from the Wellcome Trust in 2011 to support development of VSN16R.

In addition to Merck Serono Ventures, other participants in the financing round included UCLB and the Wellcome Trust, through the release of the remaining tranches of funding from the 2011 Translation Award.

Past investors in Canbex include Fast Forward, the commercial drug development arm of the US National Multiple Sclerosis Society, the Bloomsbury Bio-Seed Fund and the venture capital fund Esperante SA.

CO2-to-polymers company Eonic Technologies raises funds for expansion

Eonic Technologies develops new catalytic processes for manufacturing polymers using waste carbon dioxide (CO₂) as a feedstock.

Many industrial processes emit large quantities of carbon dioxide, including power generation, manufacturing and fermentation, and in the future, many of these industries are likely to be obliged to pursue carbon capture and sequestration or to buy carbon credits. Using part of the captured CO₂ to make valuable polymer materials can off-set the costs incurred.

Eonic Technologies was founded in 2011 to commercialise the research of Professor Charlotte Williams and her group at

Imperial College London. Eonic is led by chairman David Morgan, formerly an executive director at Johnson Matthey.

The use of CO₂ to replace conventional petrochemical-based feedstocks enables a significant cost reduction for certain polymer manufacturers, as well as generating an environmental benefit through the use of CO₂ captured from waste streams. The resulting polycarbonates can be used in a variety of applications including the production of polyurethane, a \$20 billion market which includes products such as foams, plastics and polyesters.

Eonic is developing a range of catalysts with an initial focus on polycarbonate products PCHC and PPC. The Eonic polycarbonates replace between 30% and 50% of traditional petrochemical feedstock with low cost CO₂, resulting in 30-40% cost reductions as well as improved product characteristics.

Eonic has raised additional funding from technology commercialisation and investment group Imperial Innovations Group. Funds raised from this investment round will be used to expand the company's laboratory facilities and accelerate research and development with a focus on the further development of catalysts. Eonic will also extend its strategic partnerships with major chemicals companies.

Tangentix's compression technology to speed up digital games

Tangentix offers publishers, gamers and operators of digital distribution systems a more compact product to increase download speeds.

Tangentix started as a spin-out from the University of Bradford in 2009, based on new algorithms to represent 3D objects. Since then, the company has developed a suite of tools and patents to cover different aspects of compressing all of the main components of a video game, including the 3D meshes, textures, sounds and video. The result is that games are typically one third the size of the originals, whilst retaining the same high quality.

In May Tangentix secured £1.4 million in funding, of which £750k was invested by Finance Yorkshire from both its Equity Linked and Seedcorn Funds, with other investors in the round including EV's RisingStars Growth Fund II and ParkWalk Advisors.

Edward French, chief executive of Tangentix, said "The funding marks a major milestone for Tangentix as we work to implement our compression technology in multiple AAA titles, and deploy a new concept for game discovery.

"We believe the growing size of games is a real challenge for publishers and gamers, and so we can now show the world what

we've developed that addresses the problem, whilst also providing a great new way for gamers to discover new games."

Irresistible Materials demonstrates fullerene photo-resists

Irresistible Materials is a University of Birmingham spinout company created to commercialise the fullerene based photo-resist technology for integrated chip manufacture developed by Professor Richard Palmer, Dr Alex Robinson, Professor Jon Preece and colleagues.

Photo-resists are critical materials in the computer chip manufacturing process as they enable the fabrication of ever smaller features for microelectronic devices. Beyond 2016 current photo-resist technologies cannot be used as these features will be too small for existing polymeric photo-resists, hence the need for a new generation of technology. Fullerene based resists are between 10 and 10,000 times smaller than those which are polymer based, and IM's solution, based on a fullerene material developed at the University, has been successfully demonstrated to meet the new requirements. The company has now started engaging with the key industry suppliers to evaluate samples.

In May the company announced £290,000 of further support from its investing shareholder Mercia Fund Management and new business angels from the US and UK.

At the same time the company announced Stuart McIntosh as its new chairman. Stuart, who has 40 years experience of the semiconductor industry, was previously the President of ASML a multi-billion pound company and the one of the world's leading suppliers of lithography tools to the semiconductor industry.

Microsaic Systems completes placing to raise funds for growth

Microsaic Systems plc (AIM: MSYS), a spinout from Imperial College London which floated on the AIM market in April 2011, has raised £4.28 million (before expenses) through a conditional placing to certain existing institutional and other investors in May.

Microsaic is the first and only company to have successfully miniaturised mass spectrometry (MS) through the development of its patented chip-based technologies. These technologies are based on Micro-Electrical-Mechanical Systems (MEMS) developed by the Optical and Semiconductor Devices Group at Imperial College. The company's first product, the Microsaic 3500 MiD®, was launched in January 2011 and is the world's smallest MS system.

MS systems are used to accurately identify the chemicals that make up gaseous, liquid and solid samples. Although fast and sensitive, current MS products are large, heavy, energy intensive and expensive to acquire and operate. Microsaic has successfully integrated the key MS components on to patented chip technologies, resulting in products that are substantially smaller,

lighter, consume less energy and have lower running costs than current instruments.

The net proceeds of the placing will provide Microsaic with the resources to generate volume sales of its miniaturised MS system by establishing the company as an OEM partner to market leaders in scientific instruments, and to develop its own sales channels to customers in niche, growth application areas.

Amalyst to replace platinum in fuel cells

UCLB spin-out company Amalyst has developed platinum-free low-cost, high performance catalysts for fuel cell and electrolyser applications.

The electrode catalysts currently employed in proton exchange membrane (PEM) fuel cells and water electrolyzers are primarily comprised of platinum and platinum-based alloys, with large amounts used to ensure high performance over the lifetime of the product. Platinum is very expensive and consequently the electrode cost has a large contribution to the total cost of the fuel cell. There is global demand for a low cost catalyst that is a 'drop-in' substitute for platinum, which offers both commercial and environmental benefits. The materials developed by Amalyst are high performance but lower cost than platinum, resulting in significant cost savings for the fuel cell and electrolyser industries.

In June Amalyst completed a seed investment round financed by UCLB and Midven, a Midlands based regional venture capital company. The funding will be used to support team expansion including a sales and business development office in the West Midlands, and to accelerate the market introduction of the company's catalyst materials.

Amalyst is the first company to spin out from UCL's Electrochemical Innovation Lab (EIL), a technology accelerator based in UCL's Chemical Engineering department.

Phagenesis to launch in new territories

In 2011, Phagenesis announced a €7 million Series B financing, led by Inventages Venture Capital. This round has now been expanded to \$17 million. The increased resources will be used to launch the Phagenyx treatment for dysphagia, which received its CE Mark in 2012, in new territories and to expand clinical testing in new patient groups.

Dysphagia is the inability to swallow safely, a debilitating condition that affects about half of stroke patients. Dysphagia can lead to the inhalation of solids or liquids followed by pneumonia. Current management of the condition includes tube-feeding patients, which can lead to a significant loss of quality of life.

The Phagenyx treatment involves an electrical stimulus to the oropharynx (a region of the back of the throat) for 10 minutes a day for three consecutive days. Peer-reviewed, randomised clinical trials have shown that this treatment is safe and effective in improving participants' safe swallowing ability.

Recent investments

date	company	university	amount	investors
28-Aug-12	Cambridge Epigenetix	Cambridge	n/d	Syncona Partners, Cambridge Enterprise
01-Nov-12	Cable-Sense	Lancaster, Manchester	£0.8m	MTI Ventures, North West Fund for Energy & Environmental
18-Dec-12	Biogelx	Strathclyde	£0.16m	Gabriel Investments, Scottish Enterprise, SMART award
28-Mar-13	colwiz	Oxford	n/d	American Chemical Society
02-Apr-13	Native Antigen Company	Oxford	n/d	Mercia Growth Fund, existing shareholders
10-Apr-13	Canbex Therapeutics	UCL	£2.1m	Merck Serono Ventures, UCLB, Wellcome Trust (Translation Award)
11-Apr-13	Econic Technologies	Imperial College	£1.75m	Imperial Innovations
07-May-13	Tangentix	Bradford	£1.4m	Finance Yorkshire (Equity Linked and Seedcorn Funds), EV (RisingStars Growth Fund), Parkwalk Advisors Technology Funds.
21-May-13	Irresistible Materials	Birmingham	£0.29m	Mercia Fund Management, US & UK business angels
17-May-13	Ilika plc	Southampton	£0.71m	Charles Stanley (placing)
28-May-13	Microsaic Systems	Imperial College	£4.28m	placing with existing institutional and other investors
01-Jun-13	Amalyst	UCL	n/d	Midven Early Advantage Fund, UCLB
03-Jun-13	Horizon Discovery	Cambridge	£6.9m	U of Cambridge Enterprise Fund (Parkwalk)
05-Jun-13	Phagenesis	Manchester	£17.0m	Inventages Venture Capital, others
14-Jun-13	Retroscreen Virology Group	QMUL	£25.5m	placing with new and existing institutional shareholders
17-Jun-13	XO1	Cambridge	£11m	Index Ventures (Life Sciences Fund)
18-Jun-13	Symetrica	Southampton	n/d	Parkwalk Advisors Technology Funds, NESTA

Daniel Green, CEO of Phagenesis, said “Our investors continue to show confidence in our ability to deliver this new technology to doctors to treat patients who might otherwise face a lifetime of tube feeding.”

Horizon raises further £6.9 million

Horizon Discovery aspires to provide solutions that unlock the promise of the human genome project for the benefit of scientific researchers, patients and society; provide powerful research tools to advance the development of personalized medicines; provide molecular reference standards and support better healthcare outcomes for patients.

Horizon has announced the final closing of its Series C funding round that began in September 2011.

The latest £6.9 million placement brings to a close a cumulative total for the round of £18.2 million, and will enable Horizon to transition from a three-year investment phase (2010-12) to an organic growth phase that it forecasts will deliver sustainable profit from the second half of this year.

The final closing of the round was led by Dr Jonathan Milner, CEO of Abcam plc, with existing investors DFJ Esprit, MVM Life Science, Roche Venture Fund, David Evans, Peter Collins, and Providence Investment Company Ltd also participating.

New investors include Wren Capital, Calculus Capital, the University of Cambridge Enterprise Fund, and members of Horizon's senior management team.

Since its foundation in July 2007 Horizon has undergone rapid growth, reaching 80 FTE employees and a 5 year compound annual growth rate in excess of 100% for revenue in the years 2007-2011. Growth has been achieved primarily through exports, resulting in the award in 2012 of the Queens Award for Enterprise in International Trade. Strong growth is projected to continue with 2013 expected to exceed 70%.

Retroscreen's conditional placing to raise £25.5 million

Retroscreen Virology Group plc (AIM: RVG), the viral challenge and "virometrics" specialist, has raised £25.5 million (before expenses) by way of a placing with both new and existing institutional shareholders at a price of 200 pence per ordinary share, at a discount of 28.6 per cent to the closing mid market price on 13 June 2013, the date immediately prior to the announcement.

The new shares will represent 23.7 per cent Retroscreen's share capital immediately following completion of the placing, which is subject to approval at a general meeting on 2nd July.

The net proceeds, expected to be approximately £25 million, will be used by the company to build, validate and establish the Airways Disease Viral Exacerbation Challenge Model (or AD-VCM) and to build its Discovery Division.

Symetrica's latest funding for security applications

Symetrica offers advanced gamma ray spectroscopy and imaging solutions developed for security applications, medical diagnostics, geophysical applications and for space research and development. Leading products currently focus on homeland security, providing accurate detection and identification of radiological threat materials with hand-held detectors, mobile systems, personnel and cargo portals.

The company works with prime contractors and government agencies to design, develop, test and deploy detection equipment for use by law enforcement personnel, customs officers, the emergency services, military personnel and first responders. Symetrica was formed in 2002 to develop and commercialise technology derived from the Department of Physics and Astronomy at the University of Southampton.

The company recently completed a funding round of an undisclosed amount, led by Parkwalk Advisors with co-investment by NESTA.

Spinout creation

In the 2013 Annual Report for the PraxisUnico Spinouts UK survey, we gave the following ranking of the top ten universities most active in the creation of spinouts for the past three years (2010-2012) - the table includes the rankings for the previous three year period (shown in brackets), given in our 2012 Annual Report.

Spinouts created in past three years (2010-2012)

university	rank	spinouts
Oxford	1 (2)	11
Edinburgh	2= (1)	10
University College London	2=	10
Imperial College London	4 (6)	8
Nottingham	5	7
Aberdeen	6 (7=)	5
Cambridge	7= (9)	4
Glasgow	7=	4
Strathclyde	7= (3=)	4
Heriot Watt	7= (7=)	4

We have been asked to provide the figures over a ten year period, as done in previous annual reports. The rankings for the period 2003-2012 are as follows, again with the ranking for the previous ten year period shown in brackets.

Spinouts created in past ten years (2003-2012)

university	rank	spinouts
Oxford	1 (1)	41
Imperial College London	2 (2)	40
Edinburgh	3 (3)	34
Warwick	4 (5)	25
Cambridge	5= (4)	24
Strathclyde	5= (7)	24
University College London	7=	22
Newcastle	7= (6)	22
Nottingham	9	17
Bristol	10= (8)	16
Sheffield	10= (10)	16

The Impact Awards - winners

THE
**IMPACT
AWARDS**

PraxisUnico's Impact Awards recognise those teams, and individuals, that have produced outstanding impact through successful knowledge transfer.

The Impact Awards are organised by PraxisUnico to recognise and celebrate the success of collaborative working and the process of innovation: the transformation of knowledge and expertise beyond its creation in higher education, charities and public sector research establishments for the wider benefit of society and the economy.

This year's winners were announced at PraxisUnico's Annual Conference in Nottingham on 13 June. The prizes were awarded by Tim Wilson, widely acknowledged as one of the leading thinkers in university/business collaboration, and chair of the judging panel.

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Dr Douglas Robertson, PraxisUnico chairman, rounded off the awards dinner by saying "Another fantastic evening. We have had over 75 entries for the PraxisUnico Impact Awards with the quality I am assured by the judges continuing to rise. We had entries from re-purposed space technology for homeland security to training programmes for frontline staff in healthcare and social care. Whilst we clearly mark the winners we should celebrate all this activity in technology and knowledge transfer. My congratulations go to all who participated and, in particular, the winners. These success stories demonstrate the diversity of activities emerging from university and research laboratories. We must remember that these entries in turn represent just a very small part of the research base's contribution to the economy, much of which goes unnoticed. I look forward to the outcome for the REF which HEFCE believe will generate over 7,000 case studies of research into application across all disciplines."

The winners

Collaborative Impact Award

CIRCLE/Flamingo Land
University of York

Flamingos were among the first animals to be housed on the site where Flamingo Land now stands, near Malton, North Yorkshire, and remains in the name of the park, despite its now

containing 129 other species. Alongside this, the park has developed a long-term commitment to supporting flamingo conservation and awareness-raising, and has also contributed to surveys of wild populations and the development of species action plans in East Africa.

All research at Flamingo Land is co-ordinated through CIRCLE (the Centre for the Integration of Research, Conservation and Learning) at the University of York. This scientific and educational collaboration is carrying out research into forestry and biodiversity conservation, together with environmental education for the protection and conservation of forest, its species and habitat.

Commenting on the award, Gordon Gibb, chief executive of Flamingo Land, said "Winning this award shows the value of university research for UK companies. This partnership has led to significant advances in biodiversity conservation and public awareness of the environment on a local, national and international scale."

Business Impact Aspiring Award

School Screener™
City University London

The School of Health Sciences at City University London has a laboratory that focuses on the development of tests for vision screening and the clinical assessment of visual performance, with its Vision Screener for Schools already used in over 500 schools worldwide. The lab has developed software that fully automates the testing of children's vision, hearing and body mass index that has the potential of making savings within the NHS of £25m annually.

Business Impact Achieved Award

SODA-LO®
University of Nottingham

Eminate, a wholly owned subsidiary of The University of Nottingham, has developed SodaLo, a salt reduction ingredient which is licensed to Tate & Lyle. With SodaLo, food manufacturers can reduce salt levels by 25% to over 50% in various applications without affecting the taste.

Susan Huxtable, Director of Technology Transfer at the University, said "I am delighted that Eminate's SodaLo product has won the award for 'Business Impact - Achieved'. The global reach of the licensee, Tate and Lyle, also means that this innova-

tive low-sodium salt should have a significant impact on reducing salt intake around the world, and the incidence of diseases linked to high salt diets.”

Special Recognition

City Enterprise Services

City University London

The City Enterprise Service is a free walk-in centre offering assistance for small businesses and technology start-ups. The service provides advice on a range of business and legal matters. It is run by law students of The City Law School and supervised by local professionals and experienced start-up owners.

Eric Klotz of City Enterprise Services said "The receipt of prestigious awards such as the PraxisUnico Impact Award provides us with a great impetus to expand and develop our project. Our startup legal clinic offers an exciting and innovative addition to any legal curriculum and enhances law students' employability. We look forward to seeing other universities

develop similar legal clinics which can benefit both the startup community and the wider economy."

Flux Stoke on Trent

Staffordshire University

Flux Stoke-on-Trent, a spinout from the Faculty of Arts, Media and Design at Staffordshire University, is founded on contemporary student designs, and through working with local supply chains has resulted in high end and premium fine bone china tableware being sold in 20 countries worldwide through prestige retail outlets.

Head of IP and Commercialisation Dr Stuart Brown said "We are delighted to have won this award, it's a great achievement for Staffordshire University, demonstrating the impact that can be achieved by combining the skills of our students, the expertise of our staff and the enterprise and innovation abundant here at the university."

Flux was also the winner of the popular Poster Competition at the conference.

Investor news

Syncona Partners

A new evergreen investment company Syncona Partners LLP (www.synconapartners.com), was launched in January.

The Wellcome Trust, which announced the initiative as Project Sigma in March 2012, has provided initial capital of £200m.

Syncona states that it will take a long term view towards the creation of sustainable healthcare businesses. Its structure allows it to support partner companies as they grow and succeed. Ultimately, its aim is to hold investments in a small number of significant, profitable businesses that have transformed their healthcare markets.

Syncona will support healthcare products (devices, therapeutics, diagnostics, IT), services and business models. It will invest on a global basis with an amount of capital appropriate for each opportunity: investments will usually range from £1 million – £20 million per company. Syncona will support early and late stage companies, as a majority investor or as part of a syndicate.

A founding team of five executives is in place - Martin Murphy, Iraj Ali, John Bradshaw, Chris Hollowood and James Peach - who bring a range of skills and domain knowledge that will allow Syncona to be a valuable partner for inventors, entrepreneurs, companies and syndicate investors. The team also draws on the resources of its board led by chairman Nigel Keen.

Commenting on the launch of Syncona, chief executive Dr Martin Murphy said "We expect to play our part in building successful businesses based upon innovation within the life science and healthcare industry. We very much look forward to working with entrepreneurs, leading academics and inventors to build success stories in the UK, Europe and beyond."

www.spinoutsuk.co.uk

The only company so far listed on Syncona's website is Cambridge Epigenetix, described in our 'recent spinouts' section on page 2.

Fusion IP

In April, university commercialisation company Fusion IP plc (AIM: FIP) completed a placing which raised £20 million with existing and new institutional shareholders.

Fusion IP has also signed Memorandum of Understanding agreements with two additional universities - the University of Nottingham and Swansea University.

The directors believe that by expanding Fusion's business model to new universities it will increase its access to additional world class IP, and by raising additional funds it will ensure it has the financial strength to invest further in its key portfolio companies and to establish new companies out of its expanded pipeline.

The new MOU agreements complement Fusion IP's existing equity-based university agreements by providing the company with access to IP, but without having to make on-going or equity-based payments. The directors believe this structure provides a flexible partnership for both parties, and enables the university to access Fusion IP's management and funds, while Fusion IP gains access to such university's IP without tying up equity or contractual service fees. It also enables Fusion IP to generate more start-up companies per annum and utilise its central overhead more effectively. The new MOU agreements allow for co-investment by IP Group, in line with the existing IP Group co-investment agreement.

Commenting on the placing, David Baynes, CEO of Fusion IP, said “We are very pleased to announce this significant additional investment in the company, in a funding round which includes all our current institutional shareholders, as well as adding a number of new institutions. Combined with our new university agreements, this is clearly a significant advance for Fusion IP.

“Nottingham is one of the UK’s top 10 research-intensive universities, with centres of excellence in aerospace, advanced manufacturing, energy and biomedical imaging. We are also

delighted to be expanding our operation in Wales, with the addition of Swansea University into the portfolio.”

“We remain fully committed to the commercialisation of IP that is generated out of the UK’s leading universities and believe we are now well placed to further increase our pipeline of companies and to maximise the potential returns from our increasingly mature portfolio.”

Later in April the company announced its unaudited Interim Results for the six months ended 31 January 2013, which reported an increase in the carrying value of its investments from £19.8 million to £21.0 million.

Pre-competitive early research in drug discovery

Professor Chas Bountra, Chief Scientist at the Structural Genomics Consortium, University of Oxford, gave a compelling argument for open innovation in drug discovery at the PraxisUnico Annual Conference last month.

Asserting that “Pre-competitive early research is the only way to discover a new treatment which will slow the progression of Alzheimer’s”, Professor Bountra described the approach adopted by the SGC, which seeks to solve the structures of human proteins of medical relevance and place them into the public domain without restriction. Using these structures and the reagents generated as part of the process as well as the chemical probes identified, SGC works with organisations large and small across the world to further the understanding of the biological roles of these proteins. The SGC has adopted an open access policy, under which the SGC and its scientists are committed to making their research outputs (materials and knowledge) available without restriction on use, and without filing for patent protection on any of its research outputs.

The reason for doing this is that drug discovery is a lottery; targets are validated in Phase II clinical trials, not in assays or animal models, and more than 90% of pioneer targets fail these trials. Professor Bountra highlighted the significant amount of repetition in the pharmaceutical industry, with a large number

of pharmaceutical and biotechnology companies chasing the same target, resulting in the needless exposure of patients to harmful agents, which is unethical. Companies take out patents across a vast number of therapeutic areas whilst they apply significant resource to identify the most relevant area.

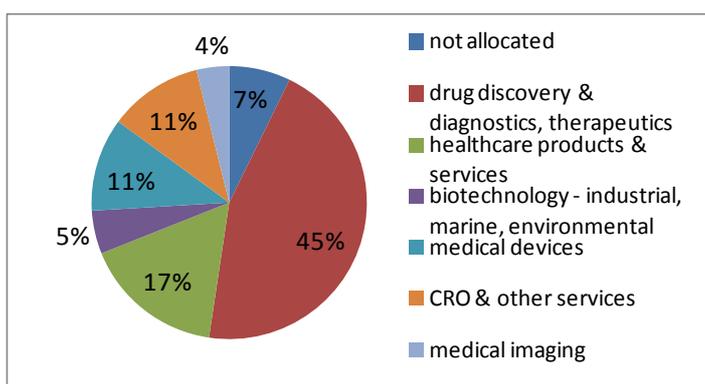
His proposal is that drug candidates should be taken through clinical trials under open innovation principles, then auctioned to commercial partners to take to market. A summary of Professor Bountra’s presentation at the conference is available on the PraxisUnico website:

www.praxisunico.org.uk/uploads/Chas%20Bountra.pdf

Would widespread adoption of this approach result in fewer spinouts by universities? As reported in the 2013 Annual Report of the Spinouts UK survey, in the past ten years 42% of all spinouts have been in the life sciences sector, with an increasing share more recently (48% in 2012). This sector has been relatively more successful than others in achieving successful exits, accounting for 51% of all IPOs and trade sales in the past ten years.

The Spinouts UK breakdown of spinouts in the life sciences sector groups all companies involved in the development of new drugs and treatments together, whether taking drug candidates through clinical trials, or developing technology for making clinical trials more effective, or applying similar microbiological research to diagnostics. This category accounts for almost a half of all life sciences spinouts, as shown in the chart below. If Professor Bountra’s comments on the duplication of effort involved in drug discovery are correct, this could imply that some research projects which currently result in company spinouts might in future be participants in open innovation research consortia.

Life sciences spinouts formed in 2003-2012



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



BBSRC invests in world-class bioscience research and training on behalf of the UK public. Our aim is to further scientific knowledge and to support the successful translation of ideas, knowledge, skills and technology arising from research into practical applications for the benefit of the UK economy and society.

www.bbsrc.ac.uk

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

MFL Science & Technology
INSURANCE BROKERS

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

www.m-fl.co.uk

Nesta

The UK's foremost independent expert on how innovation can solve some of the country's major economic and social challenges.

www.nesta.org.uk



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



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