



## Quarterly Journal - September 2018

NEWS COMMENT and ANALYSIS on SPINOUTS from UK HEIs

### Company creation

Company creation is a key element in the mix of instruments that allow universities to deliver impact from their funding inputs and research outputs.

So says PraxisAuril in relation to its training course on 'Launching a spinout company' (see page 7). This article goes on to explain how company creation can be a benefit to the universities which support this form of technology transfer.

Many universities are now taking a broader view of company creation, to encompass not only spinouts as strictly defined (companies formed to commercialise IP which they own), but also to include start-ups by members of staff, or recent graduates. There is a somewhat fuzzy boundary between these two categories; with limited resources, universities may not be able to protect all the IP generated by its research departments, so a company set up by a member of staff or recent graduate may well be based on research which in other circumstances might have become IP owned by the university. The basic principle behind both categories - spinout, and start-up - is that they emerge from the work being undertaken at the university.

The same is not necessarily true of companies started by students. In many cases, the field of study will have influenced the company's activities, and in most cases the education experienced by the student will have been crucial to the decision to start and build a business.

Many universities are now taking a holistic approach to company creation, encouraging the statement of commercial intent which a start-up represents. Examples include Manchester, whose UMIP Innovation Optimiser is featured on page 4, and Strathclyde, our Spotlight university this quarter, whose Strathclyde Entrepreneurial Network is committed to identifying and supporting innovation across the university.

- Jonathan Harris, Editor

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## New spinouts

The following companies are new to the Spinouts UK database. Further details, including dates of incorporation and websites, are given in the table on p8.

### Digital Care Planning

Digital Care Planning, a spinout from Imperial College London, is adapting different technologies to help people take a more active role in planning and deciding what medical care they receive.

The company has launched with Amber Care Plans ([www.amberplans.com](http://www.amberplans.com)), a simple to use Advance Care Planning website where patients can record their care preferences and share them with their doctors. The company also has plans to release an artificially intelligent chatbot that will help more people create personalised care plans. This new tool will be particularly useful for those with life-limiting conditions or those approaching the end of life.

Digital Care Planning was started by the Helix Centre, an innovation lab co-run by Imperial and the Royal College of Art which applies human-centred design to challenges in healthcare. The company spun out with support from Imperial Innovations, Imperial's technology transfer office.

The service, which covers England and Wales, received funding from SBRI Healthcare to develop and validate its platform. Digital Care Planning is also exploring how voice technology can be used to support end of life planning conversations.

### RFC Power

RFC Power is a spinout from the labs of Professors Nigel Brandon and Anthony Kucernak, both senior academics at Imperial College London. Professor Brandon is Dean of the Faculty of Engineering, and founded the AIM-listed fuel cell specialist, Ceres Power. Professor Kucernak is Professor of Physical Chemistry in the Faculty of Natural Sciences, and has founded spinouts including PCB fuel cell company Bramble Energy, and Sweetgen, a company which generates energy from waste water. RFC Power is led by co-founders Dr Vladimir Yufit and Dr Javier Rubio Garcia, also a founder of Sweetgen.

RFC Power has developed and patented new technologies that mitigate issues linked to the cost and limited availability of the raw materials needed for batteries. RFC Power's technology combines optimised cell architecture and low-cost chemistry in a hybrid gas-liquid redox flow battery, enabling extremely long cycle-life with negligible capacity loss over time.

The company is developing a proprietary flow battery solution that offers a significant cost saving over existing systems. Flow batteries are a form of rechargeable fuel cell ideally suitable for stationary energy storage in a wide range of applications, including grid applications such as load balancing, or off-grid applications such as providing storage for wind- or solar-energy

generation. The technology is the result of more than eight years of research, which was supported by EPSRC.

RFC Power's flow battery uses an electrolyte based on manganese, which is more abundant and available from a larger number of known reserves than other elements commonly used in flow batteries such as lithium and vanadium. This makes the system extremely cost-effective.

RFC Power has been funded initially with grants from Climate-KIC and the Repsol Foundation, and has recently secured a grant from InnovateUK. It is the first engineering company to launch under Imperial Innovations' Founders Choice programme.

### Cagen

Cagen, founded by Dr Geoff Baldwin, Reader in Biochemistry at Imperial College London, has developed self-assembling protein nanocages which can be used to carry drugs within the body.

These nanocages can protect payloads from premature degradation or excess toxicity until they reach the target site. They can also improve the bioavailability of molecules, enabling access to novel therapeutic approaches. By controlling drug release, protein nanocages could improve the safety and toxicity profiles of compounds that have previously failed development, allowing companies to revisit these candidates.

"Drug discovery and development is a long and arduous process with many potential ways to fail, such as a drug having poor pharmacokinetics, solubility, or poor cell permeability", explained Dr Baldwin. "We can use our protein nanocages to overcome these issues, improving a drug candidate's chances for approval. In addition, the technology allows us to consider targets that were previously thought undruggable."

The underlying research was supported by SynbiCITE, the UK's Innovation and Knowledge Centre (IKC) for Synthetic Biology, with the prime objective of accelerating and promoting the commercial exploitation of synthetic biology research and engineering biology applications.

Cagen has secured seed funding from Imperial Innovations and the UK Innovation & Science Seed Fund (formerly known as The Rainbow Seed Fund). The spinout is working with a large pharmaceutical company to explore how its nanocages can deliver complex payload.

### TestaVec

TestaVec is a spinout company from Brunel University London (BUL), and is developing the first standardised and validated

testing framework and technology to certify safety of gene therapy modalities.

Since 2015 over 1,800 gene therapy (GT) trials were initiated or approved worldwide. A number of licensed products have now entered the market, including Glybera (Uniqure), Kymriah (Novartis) and Strimvelis (GSK).

Treatments for several genetic disorders are available including cancer, but no standardised platform has been available to test safety, which is concerning following the development of leukaemia in several children treated for X-linked immune-deficiency using GT vectors.

TestaVec provides a comprehensive service that tests GT safety and efficacy intended for academic and pharmaceutical use in the clinic. The technology was developed and led by BUL academic Dr Michael Themis in collaboration with UCL, KCL, GeneWerk GmbH, Germany, the National Institute for Biological Standards and Control, and NMI, Germany.

BUL's Business Development, Innovation and Commercialisation Team as part of the BUL Research Support and Development Office (RSDO) have led the formation of TestaVec and are actively involved in the identification, protection, and commercial exploitation of the intellectual property portfolio that underpins the company.

### Porous Liquid Technologies

Professor Stuart James from the School of Chemistry and Chemical Engineering at Queen's University Belfast, a co-founder of this spinout from QUB, explained the technology: "Porous liquids are a new class of liquid materials that contain microscopic cavities or pores, each the size of a single molecule. They contain up to 10,000 times the number of cavities that are found in conventional liquids, and up to around 20% of the liquid is actually empty space – creating new substances with a far greater absorption capacity than the base solvents.

"Thanks to these cavities, porous liquids can absorb large amounts of gas and they can be tuned to selectively absorb one gas over another. The major benefit of porous liquids is that, unlike solids, they can be circulated, meaning that they can be applied in a host of processes. They can be used in continuous flow separations, such as the removal of impurities from natural gas, which currently relies on inefficient and energy-intensive methods."

The product was taken from technology demonstration to commercialisation in less than three years. Originally, the researchers had targeted applications in large scale industrial separations for their new liquid materials but the product is already attracting interest in a number of other applications such as in medical diagnostics and household products.

### Carbon Capture Machine (UK)

CCM, a University of Aberdeen spinout company, has been formed to commercialise carbon capture and conversion

technology that has the potential to reduce global emissions while creating valuable products for everyday use.

The technology captures CO<sub>2</sub> from large industrial emission sources, and turns it into valuable carbon-negative industry feedstocks and building materials for use in construction projects.

Dr Mohammed Imbabi from the University's School of Engineering, and Emeritus Professor Fred Glasser, Chair in Chemistry, conceived and developed the technology over several years.

Together with Professor Zoe Morrison, formerly of the University of Aberdeen Business School, and others, they form the team competing in the Carbon XPRIZE finals ([carbon.xprize.org](http://carbon.xprize.org)), a major international competition with a prize purse of \$20 million to incentivise the development of breakthrough carbon conversion technologies to reduce global CO<sub>2</sub> emissions.

CCM (UK) is the sole European team to reach the finals of the Carbon XPRIZE, one of ten finalists (from 47 international competitors) who split an equal share of a \$5 million milestone prize. Winners of the competition will be announced in March 2020.

### SatSense

Professors Tim Wright and Andy Hooper from the University of Leeds have spent more than ten years developing algorithms to extract usable and reliable measurements of ground motion from satellite radar images.

They recently launched a new spinout company supported by £750k in seed funding from NPIF - Mercia Equity Finance (part of the Northern Powerhouse Investment Fund), Unipart Rail, and the University of Leeds.

The SatSense technology can precisely measure changes in ground movement down to as little as 1mm per year. These changes can be used to establish the cause of subsidence – for example, tree roots, shallow landslides or pumping of water from the ground.

The investment will allow the company to bring the technology to market and recruit a managing director for the business, as well as to expand the development team.

Noel Travers, managing director of Unipart Rail, said "Satsense presents an exciting investment for Unipart Rail. The resolution and accuracy of Satsense's Software creates new opportunities to better monitor and manage critical infrastructure. Satsense allows cost-effective continuous and real time monitoring of large disparate asset bases, such as rail networks, in way not possible before."

### Humane Technologies

Humane Technologies, a spinout company from the University of Warwick, aims to reduce the financial barriers to starting out in scientific research by offering both professional and would-be researchers the tools to build their own laboratory equipment.

The company is preparing to launch its first two products, MicrobeMeter and Measure-It over the coming weeks.

Founded by two Warwick researchers, Prof Orkun Soyer and Dr Kalesh Sasidharan from the University's School of Life Sciences, Humane Technologies has a vision of expanding access to the tools and technologies which are currently found only within fully-equipped research labs.

Prof Soyer said "What sets us apart from other scientific instrument makers is that we are making the designs for our equipment available to the public, so that people with access to 3D printing and basic electronics can assemble their own devices at minimal cost. For those who want to get started straight away, we will also be selling the completed devices. We believe that this open source approach is a key to democratising science and enabling larger groups of students, qualified scientists and citizens to access the equipment that professional research labs take for granted."

Dr Sasidharan first developed the MicrobeMeter device to overcome a problem that he had whilst working on his own microbiology research projects. He explained: "I was frustrated by the amount of time that I was spending with taking samples for the measurement and waiting for other researchers to finish with the benchtop photometer. To buy another one would cost over £2,500 and we didn't really have the space, so I decided to build my own. I soon realised that I could eliminate the sample-taking altogether and fit the device into a much smaller footprint. By adding a wireless interface I could also automate the measurements and collect my data remotely."

Dr Sasidharan shared his prototype device with other researchers at Warwick and exhibited at two public science engagement events, where he received overwhelmingly positive feedback on the design. He said "Once we started to show other people our devices, they wanted to have their own. We needed to find a way to make it happen, and so Humane Technologies was born."

The company will be launching a crowd-funding campaign in September 2018 for early-adopters of the MicrobeMeter and Measure-It devices.

The academic founders received extensive advice and support from Warwick Ventures in refining their business plan and setting up the company. Humane Technologies makes a record seventh spinout company established in the past year.

### Arago Biosciences

Arago Biosciences, a new spinout company from the University of Oxford's Department of Chemistry, has designed a new way of detecting and quantifying molecules. The patent-protected technology allows users to carry out label-free imaging, localisation, and accurate mass determination of single biomolecules in solution. The approach has the potential to revolutionise the characterisation of molecular interactions, making it particularly relevant to the pharmaceutical, biomedical and research sectors. The company closed an investment round of an undisclosed amount with the University of Oxford Innovation Fund IV alongside Oxford Sciences Innovation.

## UMIP Innovation Optimiser celebrates success at the IO Showcase 2018



**Innovation Optimiser, established to complement and support UMIP's IP commercialisation pathway, encourages and inspires campus based innovators to turn their ideas into reality by providing access to value-adding services and a supportive community of practice.**

Over 100 entrepreneurs, colleagues from The University of Manchester and wider support partners gathered at the Showcase in July to hear how the UMIP Innovation Optimiser (IO) has supported and nurtured new businesses coming out of the University.

2018 has seen a further eight IO supported University of Manchester start-ups begin their journey, bringing the total to have graduated through the programme to over 20 since it was launched in December 2015.

IO director Tony Walker revealed that over £265,000 worth of support and awards have been provided by the IO in less than three years while 164 entrepreneurs from across The University of Manchester campus have engaged in the programme.

Speaking after IO Showcase, he added "IO was launched just over two-and-a-half years ago and is proving to be a huge success boosting the Manchester start-up scene.

"It provides a vibrant and supportive environment for individuals or teams with an idea, innovation or venture in which they are empowered to develop and build their business.

“It’s now about IO going from strength to strength and building on the partnerships we have created including with Business Growth Hub, dwf, Manchester Enterprise Centre, TiE Global and many more, and continuing to engage with active entrepreneurs across the campus who we may be able to support through our Ignition, Roadmap, Momentum and Spotlight programmes.”

Companies graduating from the programme include:

**NUDGE INSIGHTS**, a consumer research company, dedicated to providing valuable insights into consumers' responses and behaviours using biometric data analysis.

**SLEEPING LIONS ADVENTURES**, which produces site-specific playscapes for children and their families to enjoy. The temporary destinations it creates are designed by artists and produced by some of the UK’s finest fabricators.

[sleepinglionsadventures.co.uk](http://sleepinglionsadventures.co.uk)

**FLOCK** (Macawly Ltd), a TechHR consultancy which helps organisations increase performance by building engaged cultures.

[yourflock.co.uk](http://yourflock.co.uk)

**THIRD FLOOR SYSTEMS**, which has developed StudentCRT to enable educational institutes to monitor their students' wellbeing. The software is specifically designed to help identify students who may be struggling.

[thirdfloor.ltd](http://thirdfloor.ltd)

**ESOL STEPPING STONES**, a new course from LuCiD (The ESRC International Centre for Language and Communicative Development), developed for non-English speaking low-income mothers and their babies, delivering functional language skills in combination with health and parenting information.

[www.lucid.ac.uk/steppingstones](http://www.lucid.ac.uk/steppingstones)

**BUNDLEE**, a baby clothing rental subscription service.

[bundlee.co.uk](http://bundlee.co.uk)

**URBANCHAIN**, established to work on the use of blockchain technology in different urban service provisions such as energy sector, integrated healthcare services, multimodal transport, VAT claims, and logistics.

For further information, see:

<https://innovationoptimiser.com/>

<https://umip.com/>

## Recent exits

### Autolus Therapeutics

As previewed in our previous Quarterly Journal, Autolus completed its IPO on the NASDAQ exchange on 26 June 2018, raising \$160.4 million (after underwriting discounts but before estimated offering expenses). Autolus, a spinout from University College London in 2014, is a clinical-stage biopharmaceutical company developing programmed T cell therapies for the treatment of cancer. Using a broad suite of proprietary and modular T cell programming technologies, the company is engineering precisely targeted, controlled and highly active T cell therapies that are designed to better recognise cancer cells, break down their defence mechanisms and eliminate these cells. Autolus has a pipeline of product candidates in development for the treatment of haematological malignancies and solid tumours.

Woodford Patient Capital Trust and Syncona, which together held 67% of the company’s stock before the IPO, saw their own shares jump by 8% and 5% respectively following the event.

### Quethera

Astellas Pharma Inc, based in Tokyo, announced in August its acquisition of Quethera, a gene therapy company that is focused on developing novel treatments for ocular disorders, such as glaucoma.

Through this transaction, Astellas has acquired Quethera’s ocular gene therapy programme, which uses a recombinant

adeno-associated viral vector system (rAAV) to introduce therapeutic genes into target retinal cells for the treatment of glaucoma. The lead pre-clinical candidate of the programme has demonstrated significant improved survival of retinal ganglion cells (RGCs) in preclinical models.

“Quethera’s novel technology approach is focused on exploring potential treatment options for common ophthalmic diseases, such as glaucoma, that can cause blindness and severely affect the quality of life for patients,” said Dr Peter Widdowson, Quethera’s CEO. “This deal enables us to accelerate our evaluation of this investigational technology programme to see if we can slow or prevent disease progression for these patients.”

Quethera was co-founded in 2013 by Dr Peter Widdowson and Professor Keith Martin (Professor and Head of Ophthalmology, Department of Clinical Neurosciences, University of Cambridge). Founding investor UK Innovation and Science Seed Fund backed Quethera with co-investment from Cambridge Enterprise and the Parkwalk-managed University of Cambridge Enterprise Fund III in August 2015 and followed with subsequent investment.

Under the terms of the purchase agreement, Astellas may pay up to £85 million in aggregate consideration (upfront and contingent payments) to Quethera shareholders to acquire the company.

## Bloomsbury AI

Facebook announced in July that it had acquired the team behind UCL spinout Bloomsbury AI, founded in 2015.

The team has built an AI product called Cape, a suite of libraries to manage a question-answering model that answers questions by "reading" documents automatically. It is based on machine reading models trained on massive datasets, and includes several mechanisms to make it easy to use and improve based on user feedback. Cape has now been open-sourced, so that (as the team say) "everyone can benefit from the work we have done".

According to TechCrunch, which was the first to pick up the news, Facebook has paid US\$30 million to acquire the business.

## GraphicsFuzz

GraphicsFuzz, a spinout from the Department of Computing at Imperial College London, has been acquired by Google for an undisclosed sum. The GraphicsFuzz team are joining Google's Android Graphics Team to integrate their specialist graphics driver testing technology within the Android ecosystem.

GraphicsFuzz has pioneered the combination of fuzzing and metamorphic testing to yield a highly automatic method for testing graphics drivers that quickly finds and fixes bugs that could undermine reliability and security before they affect end users.

The GraphicsFuzz technology was developed with funding support from the UK Engineering and Physical Sciences Research Council and the TETRACOM EU project. The team entered and reached the finals in the first edition of Programmable, a combined business and software competition co-organised by Imperial Innovations, the College's technology commercialisation partner, and Imperial Enterprise Lab. The inventors continued to work with Imperial Innovations after the competition to set up the company, and GraphicsFuzz was one of the first companies to found a startup through the College's Founders Choice™ Programme, which offers academics the option to keep a much greater share of founding equity in exchange for a more basic level of support.

## Ziyo

University of Bristol spinout company Ziyo has been bought by global healthcare company Novo Nordisk in a deal, one of the biggest in the University's history, which could be worth around \$800 million.

Ziyo has developed a technology platform which could be a key component in the next generation of insulin, able to react and adapt to glucose levels in the blood, therefore eliminating the risk of hypoglycaemia - dangerously low blood sugar levels - and leading to better metabolic control for people living with the disease.

Ziyo's glucose binding molecules are synthetic molecules that were designed by Professor Anthony Davis, who co-founded Ziyo with his PhD student Harry Destecroix and Tom Smart.

Professor Davis said "The glucose responsive insulin we will develop with Novo Nordisk combines a natural molecule (insulin) with an artificial component (Ziyo's glucose binding molecules). This combination of natural and unnatural could be a new approach to biodesign.

"These unique molecules were inspired by nature, and work in much the same way as natural glucose receptors. A group of chemists, called supramolecular chemists, have been working on this problem for many years. Often, they make molecules which behave quite like natural molecules, but usually they don't work quite well enough for real-world applications.

"The success of the Ziyo molecules shows that, with persistence, the problems can be solved and that biological molecules can be matched as well as mimicked."

Certain research activities have been spun out of Ziyo to a new company, Carbometrics, which has entered into a research collaboration with Novo Nordisk to assist with ongoing optimisation of glucose binding molecules for use in glucose responsive insulins. Carbometrics will remain at the Unit DX science incubator in Bristol and remains closely associated with the University.

# Recent investments

This selection of reports from the deals listed on p9 is intended to illustrate the wide range of universities, market sectors, and deal sizes over the past few months

## Blackford Analysis

Blackford has developed a software platform that integrates directly with PACs (picture archiving and communication) systems used by radiologists, to help them quickly access and manage a range of medical image analysis applications.

Blackford, spun out from the University of Edinburgh in 2010 by CEO Ben Panter, offers a single 'purchase-and-integrate-once' platform, which gives radiology departments ready access to a wide portfolio of tools from a range of suppliers. For the effort of purchasing and deploying one product, the department gains access to all the tools it needs, enabling a step-change in the

quality of its service and ultimately allowing it to thrive in a competitive and rapidly changing market.

Blackford Analysis recently raised £1.7 million from existing investors Archangel, TRI Capital, Old College Capital, and the Scottish Investment Bank. The investment will allow the company to expand its management team, refresh the board and broaden sales and marketing activities.

### ROADMap

Cambridge spinout ROADMap closed in April a funding round of \$1.7 million from a number of institutional and private investors including the University of Cambridge Enterprise Fund V (managed by Parkwalk). The investment will help fund the expansion of the business as it takes its wavelength selective switch (WSS) technology to market.

ROADMap, founded on four patents licensed from the Cambridge Centre for Advanced Photonics and Electronics (CAPE) in the area of silicon wavelength switch technology, is developing the next generation of WSS which is universal, flexible, and software up-gradable. These switches are used to create Reconfigurable Optical Add/Drop Multiplexers (ROADMs) which are now a fast expanding part of optical telecom networks, enabling the flexible use of different wavelengths of light that carry traffic through the network.

### Causeway Sensors

Kernel Capital through The Bank of Ireland Kernel Capital Growth Fund (NI) has led a £1.2 million investment in Queens University Belfast (QUB) spinout Causeway Sensors, in syndication with QUBIS and private investors. Further funding was

*... continued on page 10*

## Launching a spinout company

As an international leader in the provision of training for Technology Transfer professionals, who better than PraxisAuril to give guidance on a topic of special interest to this publication?



PraxisAuril is running a course (its New Venture Creation 2) with the title 'Launching a spinout company' from 31 October to 2 November in Loughborough. As this maps closely with the scope of Spinout UK's coverage, we asked PraxisAuril to explain the background and tell us more about the course.

Company creation is a key element in the mix of instruments that allow universities to deliver impact from their funding inputs and research outputs. Forming new companies can be a key enabler for developing new technologies and priming them for the market place. It can facilitate economic benefits including a financial return to inventors and their institutions, whilst creating new jobs and services of benefit to the local economy and beyond.

As all universities and research institutes are well aware, there is increasing expectation that they should be skilled at setting up and actively managing their relationships with new venture companies. One reward for doing this is the potential for developing symbiotic relationships with new venture companies, encouraging them to invest in further university research and to secure rights to develop further IP arising from research.

However, the creation of new ventures is a complex, challenging and immersive experience. The PraxisAuril course gives a framework for knowing *how* to embrace this exciting challenge.

The course is aimed at knowledge transfer professionals who have at least 18 months' technology transfer experience gained in an academic, public sector research or NHS innovation environment. Delegates will learn how to scrutinise and develop opportunities to investment readiness and beyond, and how to define what success in new venture creation looks like from a range of stakeholder perspectives. At a detailed technical level the course will explore basic company valuation and the key terminology in new venture creation, including term sheets and their consequences. Not least, the course will help delegates to develop a pitch to secure investment.

Delegates will have the opportunity to hear from academic, technology transfer practitioners with experience in company formation, lawyers, and venture capital investors. There will also be ample opportunity for networking with other delegates, the course team and other contributors.

The director for the course at the end of October is Iain Thomas, head of life sciences at Cambridge Enterprise, and the co-course director is Stuart Wilkinson, head of the Knowledge Exchange and Impact team at the University of Oxford.

For further information about the course, and to book a place, go to:

[www.praxisauril.org.uk/upcoming-training](http://www.praxisauril.org.uk/upcoming-training)

## Recent spinouts

The following companies are new to the Spinouts UK database since the previous issue of our Quarterly Journal

company	university	sector	incorporated	web
Signal Wizard	Manchester	micro- & opto-electronics	16-Jul-15	www.signalwizardsystems.com
Digital Care Planning	Imperial	healthcare	21-Jul-16	www.digitalcareplanning.com
Atomic Mechanics	Manchester	sensors	17-Feb-17	www.atomic-mechanics.com
Grafine	Manchester		13-Jun-17	
RFC Power	Imperial	renewable energy	27-Jun-17	
Cagen	Imperial	drug discovery & testing	28-Jun-17	
TestaVec	Brunel	drug discovery & testing	30-Jun-17	
Porous Liquid Technologies	QUB	materials	10-Jul-17	www.porousliquidtechnologies.com
Carbon Capture Machine (UK)	Aberdeen	environmental technologies	27-Sep-17	ccmuk.com
Oxhex	Oxford	3D printed honeycomb helmet technology	05-Oct-17	www.oxhex.london
Oxford HighQ	Oxford	quantum-era sensors	09-Oct-17	www.oxfordhighq.com
SatSense	Leeds	environmental technologies	15-Dec-17	
Humane Technologies	Warwick	engineering	11-Jan-18	humanetechnologies.co.uk
Arago Biosciences	Oxford	mass spectrometers	27-Apr-18	www.aragobio.com
Fotenix	Manchester	crop analytics software	04-May-18	fotenix.tech
Data Value Factory	Manchester		26-May-18	
Ice Nine	Manchester		12-Jun-18	
Amprologix	Manchester		19-Jun-18	

## Recent exits

exit date	company	type	incorp	university	value	raised	acquirer/market
26-Jun-18	Autolus Therapeutics	IPO	03-Jul-14	UCL	\$1.16bn	\$150m	NASDAQ:AUTL
03-Jul-18	Bloomsbury AI	trade sale	07-Apr-15	UCL	\$30m		Facebook
06-Aug-18	GraphicsFuzz	trade sale	15-Dec-17	Imperial	n/d		Google
10-Aug-18	Quethera	trade sale	19-Mar-13	Cambridge	£85m		Astellas Pharma Inc
17-Aug-18	Zilyo	trade sale	14-May-14	Bristol	\$800m		Novo Nordisk

# Recent investments

The following list gives a representative sample of investments in spinout companies over the past few months

date	company	university	amount (million)	investors
03-Apr-18	Blackford Analysis	Edinburgh	£1.70	Archangel Investors, TRI Cap, Old College Capital, SIB
06-Apr-18	ROADMap Systems	Cambridge	\$1.70	institutional & private investors incl UCEF V
10-Apr-18	Causeway Sensors	QUB	£1.20	Kernel Capital
04-May-18	Oxford Expression Technologies	Oxford Brookes	£2.00	Innovate UK
29-May-18	Orbit Discovery	Oxford	£6.90	OSI, RT Ventures, Borealis Ventures, Perivoli Innovations, existing investors
29-May-18	Tangentix	Bradford	n/d	Parkwalk Opportunities Fund
30-May-18	Causeway Therapeutics	Glasgow	£1.30	Innovate UK grant
30-May-18	Opsydia	Oxford	£1.90	Parkwalk, Oxford Sciences Innovation
11-Jun-18	Bibliotech Education	Oxford	n/d	Parkwalk, Oxford Sciences Innovation
11-Jun-18	Silicon Microgravity	Cambridge	\$7.00	IP Group, Parkwalk, BP Ventures, and Cambridge Enterprise (UCEF V)
22-Jun-18	Microsaic Systems	Imperial	£5.50	placing
25-Jun-18	Fuel 3D Technologies	Oxford	n/d	Parkwalk
04-Jul-18	Newcells Biotech	Newcastle	£2.00	NVM Private Equity, Northstar Ventures
20-Jul-18	Bramble Energy	UCL, Imperial	n/d	Parkwalk
23-Jul-18	Proxisense	Oxford	n/d	Parkwalk Opportunities Fund
01-Aug-18	Ilika	Southampton	£4.40	placing
02-Aug-18	Calcivis	Dundee	£3.15	Archangel Investors, Julz, SIB
21-Aug-18	Ceres Power	Imperial	£9.00	Robert Bosch GmbH
28-Aug-18	Arago Bioscience	Oxford	n/d	Parkwalk
30-Aug-18	Genomics	Oxford	£25.00	Vertex Pharmaceuticals, IP Group, Woodford Investment Management, Invesco Perpetual, OSI, Lansdowne Partners, Tanarra
03-Sep-18	EvOx Therapeutics	Oxford	£35.50	Redmile Group, OSI, Oxford University, GV, Cowen Healthcare Investments, Panacea Healthcare Venture, Borealis Ventures, private investors

secured from the European Regional Development Fund (Invest NI) and Innovate UK.

Causeway Sensors has developed a method of distinguishing between a viral and bacterial infection in a real-time point-of-care setting, enabling a reduction in the ineffective use of antibiotics for viral infections.

Causeway Sensors' solution leverages its patented nanostructure-based biosensing platform, on which this is the first application. The company has packaged the technology into a system which is robust, easy to use and mobile, and this new funding will be used to integrate the technology into a point-of-care system for first application in sepsis detection.

### Orbit Discovery

Orbit Discovery, a University of Oxford spinout developing a peptide identification and optimisation platform, has raised £6.9 million in a series A funding led by Oxford Sciences Innovation.

OSI was joined in the round by new investors RT Ventures, Borealis Ventures, and Perivoli Innovations, as well as existing investors.

Orbit, founded in 2015 by Professors Graham Ogg and Terry Rabbitts, is developing technologies developed at the University's Weatherall Institute of Molecular Medicine. It has also launched a number of peptide drug discovery and development programmes, both internally and in partnership with biotech and pharma companies.

### Opsydia

Opsydia, a spinout from the University of Oxford's Department of Engineering Science, has developed technology that will help address the risk of tampering and counterfeiting in the diamond sector.

Opsydia's technology uses laser pulses shorter than one trillionth of a second in length, shot over a million times per second, to create tiny lines which can be written as numbers or logos within the diamond. These are invisible to the human eye, but can be viewed via a microscope. This means security can be maintained even when gems are mounted in jewellery. Unlike current industry standard security marking on the diamond surface, these marks sit within the stone so cannot be polished off economically. Also, they can be so small that they have no effect on the grading or quality of the gems.

The technology is being adopted by one of the world's leading diamond groups, De Beers Group, as part of its new lab-grown diamond initiative, Lightbox Jewellery. The subsurface laser marks both prevent the stones used in the jewellery from being passed off as natural, and serve as a guarantee of quality.

Opsydia's technology can also be used to securely mark any translucent material, such as plastics and polymers, and the company also envisages future applications writing electrical circuits within industrial diamond to create advanced sensors.

Working with Oxford University Innovation (OUI) to develop the business, Opsydia has secured £1.9 million of funding through OSI and Parkwalk. The University of Oxford and the founders, Professor Martin Booth and Dr Patrick Salter, remain significant shareholders.

### Silicon Microgravity

Silicon Microgravity (SMG), a spin-out from both BP and the University of Cambridge's Nanoscience Centre, has raised \$7 million from IP Group, Parkwalk, BP Ventures, and Cambridge Enterprise.

The company's sensing technology combines the recording of gravity data at very high sensitivities and seismic data at low frequencies. SMG is focused on developing and applying its technology primarily to improve surveillance, appraisal and production of oil and gas, with further applications in CO2 storage, water management, mining, and defence.

### Newcells Biotech

NVM Private Equity (NVM) has invested £1.5 million into Newcastle University spin-out Newcells Biotech, alongside existing investors Northstar Ventures, which has provided a further £500k.

Founded in 2015 and headquartered at the International Centre for Life in Newcastle, Newcells is developing Human Induced Pluripotent Stem Cells (hiPSCs) for efficacy and toxicity testing in the drug development sector.

The investment will be used to support expansion of the team and the development of new assays (test cells) replicating human organs or cells for the purposes of drug and cosmetic product development.

Dr Mike Nicholds, CEO of Newcells Biotech, said "We are delighted at the successful conclusion of the investment, which will enable us to increase our development capacity and accelerate the commercialisation of our unique cell-based assays for drug safety and efficacy testing.

"NVM and our existing investor Northstar Ventures understand what it takes to build high-growth technology businesses and we look forward to continuing our strong relationship with their team."

The investment in Newcells represents NVM's fifth growth capital investment of 2018.

### CALCIVIS

CALCIVIS, a spinout from the University of Dundee, has developed an imaging system which is a combination of medical device and consumables, designed to transform the assessment and management of demineralisation associated with dental caries and erosion.

The CALCIVIS® system for the first time allows the real-time visualisation of calcium ions released from demineralising tooth

surfaces, in routine dental practice. The resulting images provide a focus for discussion with patients and enable the development of a preventive treatment plan in line with dental best practice.

The company announced last month the closing of a £3.15 million equity funding round from existing investors Archangel Investors, Julz, and the Scottish Investment Bank. Julz Co, based in North Carolina, USA, is a venture capital firm focused on investments in the health care industry with an emphasis on therapeutics, medical devices, digital healthcare and services.

The proceeds of the investment will be used to support the completion of the FDA's Pre-Market Approval (PMA) review process for the CALCIVIS imaging system in the USA, the world's largest dentistry market. The filing of the PMA application to the FDA was made in October 2017. The company plans the launch of the its imaging system in the USA in 2019, subject to the PMA being approved.

## Genomics

Genomics, a spin-out from the University of Oxford, is a data science company specialising in the use of human genetic information to improve drug development. The company announced last month that Vertex Pharmaceuticals Inc of Boston, Massachusetts had led an oversubscribed £25 million Series B financing round and signed a three-year collaboration agreement.

Other investors in the round included IP Group, Woodford Investment Management, Invesco Perpetual, Oxford Sciences Innovation (OSI), Lansdowne Partners and Tanarra. Genomics will use the proceeds of the fundraising to enable further expansion, to continue to enhance its powerful database and to pursue opportunities that emerge in this fast-growing space.

Genomics has developed an analysis engine which uses genetics to understand human biology and the likely efficacy and safety of potential novel medicines. The Genomics engine links human genetic variation at over 14 million positions in the human genome to changes in 7,000 molecular, cellular, and physiological measurements and disease outcomes.

In addition to funding the resources committed by Genomics to the collaboration, Vertex will make milestone and royalty payments to the company for novel targets resulting from the collaboration that are taken through clinical development.

## Evox Therapeutics

Evox Therapeutics, a University of Oxford spinout, is using exosomes, the body's natural vesicular delivery system, to deliver drugs to previously inaccessible parts of the body.

The company has raised £35.5 million in a Series B financing round. San Francisco-based venture capitalist Redmile Group led the round, joined by new backers GV (the former Google Ventures), Cowen Healthcare Investments, Panacea Healthcare Venture, Borealis Ventures, and a number of private investors.

Existing backers Oxford Sciences Innovation (OSI) and Oxford University also supported the round. Evox previously raised a £10m Series A in 2016, led by OSI.

The company will use the investment to further develop its exosome therapeutics portfolio, which includes both the exosome drug platform and a number of exosome-based therapeutics which Evox is developing.

According to OSI "In the context of the Oxford tech cluster, the EvOx round is particularly significant as the first OSI-backed spinout to complete its Series B. The post-OSI cohort of spinout represents a third of the 160-plus companies OUI has supported over its 30-year history, all created in the past three years. Many of these companies have completed their Series A rounds, and more Series B rounds are expecting in the coming months. The news also comes after a significant uptick in investor activity around Oxford spinouts over the past year. Since 2011, Oxford spinouts have collectively raised £1.9bn in external fundraising, over £500m of which was secured in the past twelve months."

*Several spinout companies which listed on AIM in previous years have continued to raise further investment by placings:*

## Ilika Technologies

Ilika, a spinout from the University of Southampton's School of Chemistry in 2004, was listed on AIM in May 2010. The company has developed solid state battery technology which may have applications across the Internet of Things (IoT).

In August the Parkwalk Opportunities EIS Fund participated in a £4.4m funding round.

## Microsaic Systems

Microsaic Systems a spinout from Imperial College London, joined the AIM market in April 2011. The company is a developer of point of need mass spectrometry instruments. In June the company completed a placing which raised £5.5 million (gross).

Glenn Tracey, Microsaic's CEO, commented "We are delighted to have completed this fundraise with a good mix of high calibre institutional and private investors. The new funds have strengthened the company's balance sheet and will allow us to continue to further enhance our miniaturised mass spectrometer instruments to ensure our continued competitiveness, as well as put Microsaic in a stronger position to support existing partnerships and further commercial agreements – we have signed six new OEM distribution partnerships so far this calendar year."

## Ceres Power

Ceres Power Holdings plc, a spinout from Imperial College London which floated on AIM in November 2004, announced

last month a strategic collaboration with Robert Bosch GmbH as well as a £9 million strategic equity investment by Bosch. Ceres is the developer of the SteelCell®, a low cost Solid Oxide Fuel Cell technology.

The agreements provide staged revenues to Ceres through technology transfer and licensing and longer-term royalties on 5kW SteelCell® stacks, as well as initial engineering services. The initial value to Ceres Power to 2020 will be around £20 million, subject to performance criteria.

#### *A couple of recent grant awards . . .*

#### **Oxford Expression Technologies (OET)**

OET is a spinout company launched jointly by Oxford Brookes University and the Natural Environment Research Council (NERC). The company has been awarded a £2 million contract from Innovate UK, as part of the Vaccines for Global Epidemics Round 2 competition. This award will allow OET to continue its work in developing the first economically viable vaccine against the Crimean Congo Haemorrhagic Fever (CCHF) virus. The competition is wholly funded by the Government Official Development Assistance, through the Small Business Research

Initiative and the Department of Health, with the aim that vaccines developed as part of the competition will be appropriate for use in low and middle-income countries and outbreak settings.

#### **Causeway Therapeutics**

Causeway Therapeutics, a University of Glasgow spinout, has developed TenoMiR, which switches off disease pathways, restoring tendon function and structure, and reducing the need for lengthy periods of physiotherapy. The company will use a grant of £1.3 million from Innovate UK to begin Phase 1 human trials in 24 patients early next year.

Neal Millar, co-founder and clinical senior lecturer in orthopaedics at the Institute of Infection, Immunity and Inflammation at the University of Glasgow, is leading the trials. "Tendinopathy represents a serious unmet clinical need, with one in three GP consultations in the UK being due to soft tissue tendon disease," he said.

The trials will see the TenoMiR technology, a replacement therapy, locally injected into injured tendons, with the hope it will restore the tendon to injury-free levels and fault-free tendon repair.



## Spotlight on . .

### University of Strathclyde

Strathclyde has developed an unusually integrated entrepreneurial ecosystem



At its heart is the **Strathclyde Entrepreneurial Network (SEN)**, which comprises the University's extensive investment, commercialisation and enterprise activity, and reflects its commitment to identifying and supporting innovation.

SEN is dedicated to helping students, staff and alumni to launch new business ventures, commercialise research and develop entrepreneurial skills, helping them develop tools for success.

Strathclyde's successful track record for spinning out and licensing has generated more than £45m in royalties and created more than 60 spinout companies, including **Cascade Technologies** and **Smarter Grid Solutions**. Over 40 of these spinouts are still trading, and have a cumulative annual turnover in excess of £130m at present.

Strathclyde has generated over £3.75m from spinout exits.

A recent exit was the 2016 acquisition of the University spinout mLED, a world leader in the design and manufacture of micro-LED solutions for Wearables, to virtual reality firm Oculus VR.

[www.spinoutsuk.co.uk](http://www.spinoutsuk.co.uk)

Strathclyde began to formally invest in seed and subsequent spinout funding rounds in 2012. To date, the University has invested in 13 of its spinouts.

3F BIO, which is developing methods to make proteins more sustainable, concluded a £6.16m fund raise in which the University participated – its share of the funding round was its largest single investment commitment to date.

Early this year, Strathclyde implemented a new stage-gated process to better identify opportunities for commercial support and move them more effectively through the pipeline to start-up or spin-out.

One such opportunity is ClinSpec Dx, which is developing serum diagnostics for brain cancer and other diseases. The company



has recently had its Health Economic study published in the British Medical Journal.

SEN also has a growing reputation for supporting the formation of start-ups, having helped launch more than 178 companies since 2005. SEN has a pipeline of nearly 100 new entrepreneurs looking to commercialise their ideas.

The University's Rising Star programme identifies potential high growth opportunities and fast tracks them through an accelerator; assisted by SEN's Enterprise Partners from the entrepreneurial alumni community, who have given their time and energy to assist these young businesses. In addition to professional advice, the programme also offers up to £10k in monetary and in-kind support.

SEN-supported businesses can also access finance through the Strathclyde Entrepreneurs Fund (SEF), which aims to address the funding gap that early-stage companies often face when seeking investment. SEF provides equity up to £50k alongside external investors to University-related enterprises.

The Fund has recently completed investments in four companies started by entrepreneurs who studied at the University:

**Estendio** is developing Present Pal, a presentation support software which enables users with dyslexia to deliver a more confident and prepared presentation.

**Power A Life** is an ethical mobile accessories brand which provides a solar light to children in developing countries for

every product sold. Power A Life has been supported by Strathclyde since its director and founder, Jeremie Warner, was an undergraduate architecture student.

**Drinkly** is a platform that allows customers the ability to order over 600 products from its partner off-licences, delivered chilled to their home, office or sent as a gift. The business was started by former Strathclyde student, John Robertson who graduated in 2000 with a BSc in Mathematics.

**Teqnox** is developing a product to limit the risk of injury from a horse-riding accident through the use of a flexible, easy to adjust and maximal protection body protector. Its founder Carmen Cummiskey spent five years at Strathclyde studying Sports Engineering, Design Manufacture, and Engineering Management.

For more information on Strathclyde's investment, commercial and enterprise activities, please contact:

Gillian MacAulay, SEF Manager ([g.macaulay@strath.ac.uk](mailto:g.macaulay@strath.ac.uk))

Stuart Mackenzie, Commercialisation Infrastructure Manager ([s.mackenzie@strath.ac.uk](mailto:s.mackenzie@strath.ac.uk))

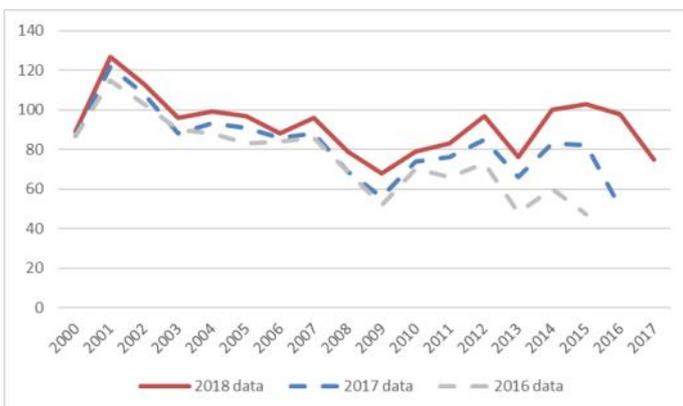
Catherine Breslin, Commercialisation Manager ([catherine.breslin@strath.ac.uk](mailto:catherine.breslin@strath.ac.uk))

Fiona Strang, Commercialisation Manager ([fiona.strang@strath.ac.uk](mailto:fiona.strang@strath.ac.uk))

Fiona Ireland, Head of Enterprise ([fiona.ireland@strath.ac.uk](mailto:fiona.ireland@strath.ac.uk))

## Ten years on

Two features of our Spinouts UK Annual Reports usually attract the most interest – the number of new spinouts per year, and the current status of spinouts incorporated ten years ago. We give below a summary of the latest information.



The first chart shows the number of spinouts incorporated year by year from 2000 to 2017. The three lines show the numbers we have reported in successive years, and demonstrate the extent to which we have been able to 'backfill' the Spinouts UK database as we discover further information. The differences between the three lines is greatest in recent years, meaning that

that we are likely to find further spinouts for these years as our research progresses. It also means that the decline in the number of spinouts created is not as sharp as it has appeared in recent reports; there certainly seems to have been a decline in 2017, but this might be adjusted as more data comes to light.

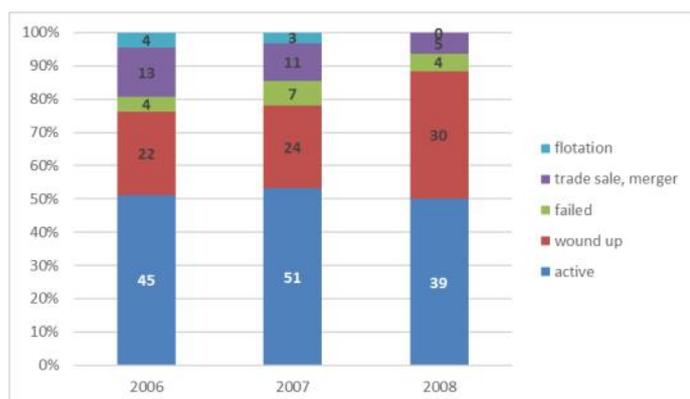
One reason for the late discovery of recent spinouts is the fact that they are often announced well after the date of incorporation – this might be at the time the IP is licensed by the university of origin to the new company, or at the time when a new product or service is launched, or investment secured, with no previous announcement having been made. It will be clear from our list of recent spinouts added to the database on page 8 that this is the case for most of them; the date of incorporation is not particularly meaningful for many universities, which often use the IP licence date or first funding to record the beginning of a spinout business, but it is the only clear and objective data point available.

The chart includes all spinouts we have been able to trace which meet the HESA/HEFCE definition, ie the company was formed to commercialise IP owned by the university. It does not therefore include companies started by members of staff or recent graduates that are not based on university owned IP, nor does it include companies started by students.

The chart shows the rate of spinout formation – many of the companies included in the figures are no longer trading, or have exited by way of IPO or trade sale.

As everyone in the technology transfer world is aware, it takes many years for an IP-based business to prove its technology then bring its product or service to market. To give an ongoing view of progress, our Annual Reports have taken a ten year milestone to analyse outcomes, assuming that this is a reasonable period of time for a spinout business to get established, and for those which turn out to be unviable to have left the market.

The second chart shows the breakdown for spinouts incorporated ten years ago (2008), together with those incorporated in



the previous two years, to show the current status of companies incorporated in each of the years shown. For all three years, roughly half of the companies are still active, but this term covers a range of activity levels from dormant to high levels of investment and in some cases revenue. The number of successful outcomes (IPO, trade sale) has reduced considerably for companies formed in 2008 – in fact no IPOs, and only three trade sales. These took on average a reasonable 6.5 years from incorporation to exit – ADUS (Dundee) 5.0 years, Mesuro (Cardiff) 6.3 years, and Permasense (Imperial) 8.2 years. Clearly any currently active spinouts from these three years which reach IPO or trade sale will increase the average time to exit.

There were relatively few company failures (where the companies concerned had commenced trading but were unable to continue), but a large proportion of the total cohort were wound up (implying that they had not reached the stage where their business affairs required the appointment of an administrator or liquidator).

Time will tell, but it seems that universities are narrowing their focus on the market potential of the ventures they take to spinout. It takes considerable resource (and expertise) to prepare a spinout for launch and development, and the lower number of spinouts created in the past ten years might see fewer companies wound up; failures are inevitable (although unpredictable) at this early high risk stage, but universities do not want to spend resource on ventures which have an unclear place in the market.



## Record investment in UCL spinouts which could transform patient outcomes

In its 25<sup>th</sup> year of commercialising technology at UCL, UCLB, part of UCL Innovation & Enterprise, saw three of its companies focused on delivering advanced therapeutics to treat a range of diseases, receive a substantial amount of investment following two initial public offerings worth £177 million (\$235 million) combined and one Series B funding round of £88 million in June.

**Autolus Therapeutics Ltd, Athena Vision Ltd, and Freeline Ltd** were spun out from UCL by UCLB, with MeiraGTx acquiring a majority of Athena Vision on formation in 2015 and the remainder in 2016.

In addition, MeiraGTx and Freeline have benefited from investment from the UCL Technology Fund, a £53m fund established by UCLB and Albion Capital to invest in commercialisable technologies emerging from UCL.

The three companies are pioneering treatments for cancer, eye, salivary gland and neurodegenerative diseases, and chronic systemic diseases based on cutting-edge technology, some of which was developed at UCL.

The investment will boost their ability to make significant headway in bringing cell, gene and regenerative (advanced) therapies to market and transforming outcomes for patients.

UCL is a world-leader in advanced therapeutics, its strength underpinned by over 30 years of research supported by partner NHS Trust hospitals, research councils, charities, government and industry.

This extensive network has enabled a community of over 100 world class scientists at UCL to deliver on the promise of what is recognised as the third pillar of pharmaceutical therapeutics.

Dr Celia Caulcott, UCL Vice-Provost (Enterprise), commented “UCL is a power-house of research with the best minds working on the world’s toughest challenges. The successful development of a range of advanced therapeutics is testament to the expertise and vision of our talented researchers and generous support of our partners locally and globally.

“These companies have the potential to significantly improve the lives of many and we are proud to be able to nurture and support them, alongside other partners, in their mission.”

In June, **Autolus Therapeutics Ltd** made its debut on the NASDAQ, raising \$160 million investment. Founded in 2014 and based on advanced cell programming technology pioneered by Dr Martin Pule (UCL Cancer Institute), the London-based company is committed to bringing life-changing treatments to cancer patients by reprogramming their own T-cells to combat the treatment of haematological malignancies and solid tumours.

Earlier that month, MeiraGTx Holdings plc, a London and New York-based clinical stage gene therapy company focused on developing potentially curative treatments for patients living with serious diseases, raised \$75 million at the close of its initial public offering on the NASDAQ.

**MeiraGTx** has core capabilities in viral vector design and optimisation and gene therapy manufacturing, as well as a potentially transformative gene regulation technology. With an initial focus on the eye, salivary gland and central nervous system, MeiraGTx currently has four ongoing clinical programs using customised adeno-associated viruses (AAV) as vectors for delivering genes.

Also in June, **Freeline Therapeutics**, a clinical-stage company focused on treating chronic systemic diseases with liver-targeted AAV gene therapy, announced that it had raised over £88 million of new capital in a Series B financing.

Founded by UCLB and Syncona in 2015 to develop and commercialise gene therapies for bleeding and other debilitating disorders, its next-generation AAV gene therapy platform has been developed by Professor Amit Nathwani (UCL Cancer Institute).

Professor Bryan Williams, Chair of Medicine at UCL and Director of the NIHR Biomedical Research Centre at UCLH and UCL, said “These are the first of what we hope will be many examples of world class medical research being pulled through into patient care to give our patients first access to some of the most exciting new treatments in medicine, to improve the outcomes of our patients with some of the most challenging medical problems.

“It illustrates the importance of partnership between our world class universities and our leading NHS hospitals in delivering the most advanced medicines in the world. The BRC has been critically important in developing this partnership.”

Anne Prener, Chief Executive Officer of Freeline, said “Freeline is proud to have been spun out of UCL and to be building on the ground-breaking science of liver directed gene therapy that Prof. Nathwani and his team pioneered. Going forward spin-outs as well as close collaboration between universities and companies will continue to be important for developing innovative products for patients with devastating diseases.”

“It’s a privilege to help UCL researchers turn their ideas into viable companies with the potential to positively impact our lives. Working with each of these spinouts from conception to date, all those involved across UCL, UCLB and our partner hospitals deserve to be congratulated,” said Cengiz Tarhan, Managing Director of UCLB.

Learn more about UCLB and its spinout companies at:

[www.uclb.com](http://www.uclb.com)

# Project partners

We are very grateful to the following organisations for their support



**Imperial Innovations** is focused on commercialising the best in UK academic research, drawn from academic centres within the 'golden triangle' formed by Cambridge, Oxford and London. We have end-to-end capability, taking research at the earliest stage and working with it right through to commercialisation. [www.imperialinnovations.co.uk](http://www.imperialinnovations.co.uk)

**IP Group** works with leading universities to develop and commercialise some of the world's most exciting technology innovations.

Offering more than traditional venture capital, IP Group provides its companies with business building expertise, networks, recruitment and business support.

The Group's portfolio includes early stage to mature businesses across the biotech, healthcare, technology and cleantech sectors. [www.ipgroupplc.com](http://www.ipgroupplc.com)



The University of Manchester Intellectual Property UMIP®

**UMIP**, a division of The University of Manchester IP Ltd, is the University's agent for IP commercialisation. UMIP brings the University's groundbreaking inventions and software into the commercial world by attracting entrepreneurs, investors and corporate venture partners to our campus and engaging with academic colleagues to license or spin out companies. [umi3.com](http://umi3.com)

**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](http://www.marks-clerk.com)



**Mercia Technologies** is a leading UK technology investor with a particular emphasis on the Midlands, North of

England and Scotland. We focus on high growth sectors leveraging the team's deep expertise across four fields including digital & digital entertainment; software & the internet; electronics, materials, manufacturing & engineering; and life sciences & biosciences. [www.merciatech.co.uk](http://www.merciatech.co.uk)

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



In partnership with



[www.m-fl.co.uk](http://www.m-fl.co.uk)

**Oxford University Innovation (OUI)** is the research commercialisation company of the University of Oxford, managing technology transfer and consulting activities. Having created more than 150 spinouts, Oxford



is first in the UK for number of spinouts, the number that survive, and jobs created. In the 2016~17 financial year OUI completed more than 50 licenses and consulting agreements every month. [innovation.ox.ac.uk](http://innovation.ox.ac.uk)



**PraxisAuril** provides a single voice for 5,000+ university business collaboration specialists working in 200+ universities and stakeholder organisations around

the world. Our members benefit from a unique and comprehensive range of training programmes, practical tools, advocacy and connectivity. PraxisAuril operates in the best interests of the sector, driving consistent professional standards, development, and recognition of the KE profession. [www.praxisunico.org.uk](http://www.praxisunico.org.uk)



**Scottish Enterprise** helps translate ideas and research into more spinout and start-up companies, and encourages Scottish companies to make use of technology and research being developed. [www.scottish-enterprise.com](http://www.scottish-enterprise.com)



**UCLB** is a technology transfer company commercialising on the research and innovations developed by UCL. Offering world-class expertise in areas from life sciences to engineering and

from the arts to the built environment, we work to make commercial connections between the expertise and innovations of UCL's academics and the needs of industry and the wider marketplace. [www.uclb.com](http://www.uclb.com)

**University of Birmingham Enterprise** supports academics



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who want to innovate, take their ideas to market, work with

businesses and social enterprises, or enrich their professional lives by doing academic consultancy projects. We do this by providing enterprise training, funding, office and laboratory space, and a full technology transfer service. University of Birmingham Enterprise also manages investment funds and the incubation services and facilities at the Birmingham Research Park. [www.birmingham.ac.uk/enterprise](http://www.birmingham.ac.uk/enterprise)