



Global University Venturing



Magazine  
October 2021

# Oxford orchestrates successful portfolio

An updated analysis of Oxford's spinouts shows  
the portfolio remains as strong as ever post-covid.

brownrudnick



Q3 analysis:  
keeping the  
party going



On the importance  
of diversity  
and entrepreneurship



The \$1bn  
commercialisation  
portfolio

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## Global University Venturing

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# All roads lead to Beijing



By Thierry Heles  
Editor

“Xi Jinping gambles on economic tumult to cement his legacy”, “The Undoing of China’s Economic Miracle” and “China’s Unstable Political Economy” are just some of the headlines that have graced the Financial Times, The Atlantic and the Wall Street Journal in recent months.

Some of this anxiety among economists relates to property developer China Evergrande, which has been teetering on the brink of collapse due to high debt that led it to suspend the construction of multiple projects over the summer.

The group missed an \$83.5m

interest payment in September, but eventually paid bondholders in mid-October. The government never gave any indication it would support the company and the People’s Bank of China went as far as claiming that any impact on the financial system would be controllable.

The government’s willingness to potentially let the country’s second-largest property developer collapse is indicative of moves to reign back in a private sector that had been growing in influence over the past several years.

A year ago, financial services provider Ant Financial had

its \$37bn initial public offering suspended after unguarded comments by Jack Ma, although the official line was that this happened due to Ant's credit business that had grown too large and unregulated.

In another recent move, the central government took a wrecking ball to the country's booming edtech sector, enacting regulations designed to make these businesses unviable. New Oriental Education and Technology, by way of an example, has seen its shares crash from a high of nearly \$20 to less than \$2.40, slashing its market cap to just \$4bn.

It all fits into larger moves by president Xi to centralise power back in Beijing, away both from private industry and Hong Kong which had enjoyed relatively high amounts of freedom. Lest we forget, this also includes the Xinjiang concentration camps – described by Foreign Policy as “the world's most technologically sophisticated genocide”.

Some moves can appear relatively harmless at first.

The Belt and Road Initiative is a large-scale programme to finance construction projects in more than 60 countries – it has sought out particularly those nations that have been left behind by the western world but is really a way of building influence.

Confucius Institute is a global network of outposts on university campuses whose stated aim is to promote language teaching and facilitate exchanges. One may think of this as China's version of the Goethe-Institut or the British Council, but non-governmental agency Human Rights Watch is among several that have been warning for years that Confucius Institute poses a threat to academic freedom.

Drew Pavlou, then a philosophy student at University of Queensland, ended up on the wrong side of China in 2019 when he organised a small protest calling for democracy in Hong Kong and criticising Chinese influence on campus. A significantly larger group of Chinese students gathered around the protest and Pavlou was attacked. The university ended up suspending Pavlou after an investigation that found he had made unsavoury statements about China. Pavlou claimed it was an effort to silence him so the university could “avoid offending its Chinese allies” and the university's chancellor admitted he was personally concerned about the severity of the disciplinary panel's decision.

China's impact on academia goes far beyond student protests, however. The majority of the top 25 universities in the UK have some form of research or



sponsorship agreement with a Chinese military-linked organisation, according to education think tank Civitas' Radomir Tylecote, director of the defence and security for democracy unit.

Charles Lieber, former chairman of Harvard University's Chemistry and Chemical Biology Department, was indicted on false statement charges in June 2020 because he allegedly withheld information on research support, potential financial conflicts of interest and foreign collaboration – he is said to have signed a \$50,000 a month contract to establish a research lab at Wuhan University of Technology that also included a \$1.5m grant and up to \$158,000 in living expenses.

Legal proceedings are ongoing, and while some similar cases have ended up being ruled in the defendant's favour, several other scientists have wound up in prison, such as Meyya Meyyappan, a former senior nanotechnologist at Nasa, and Song Guo Zheng, a rheumatology researcher at Oregon State University.

Lieber fell victim to the Thousand Talents Plan, a Chinese government programme to recruit international experts in an effort to gain access to advanced technologies.

This is where it becomes critical for tech transfer offices: Lieber himself had founded two Harvard spinouts – Nanosys and Vista Therapeutics. Although both of these seemingly predated his ties to China – they were both launched in the noughties – there is a danger that undisclosed contracts could, at best, make spinouts potentially commercially unviable because a foreign power already has access to the information.

And that is before we get to Chinese investments in these companies. In the UK alone, a recent BBC documentary estimated that a total of £134bn have already been ploughed into British businesses ranging from pubs to utility companies.

And eight out of 10 industrial espionage cases in the US now reportedly involve China.

All of this knowledge acquired from overseas experts will be used for military innovation. Remember that when it was revealed in mid-October that China had tested hypersonic missiles – weapons that travel at five times the speed of sound – over the summer, the US had to admit that it had no idea how they achieved this.

This is also before we get to the issue of cyberwarfare. With spinouts increasingly commercialising deep tech that often involves large troves of customer data or sophisticated algorithms, it will become more and more important to protect these assets from nation states who have a keen interest in accessing such information.

Consider for a moment that TikTok was the subject of much debate over its ownership – and that was “only” a video-based social media app. Imagine the power an adversary would have if it gained access to the healthcare information of a large part of the population.

None of this is to say we stock nuclear bunkers and prepare for World War 3. But we have to be conscious of the fact that there is a new arms race going on and if the west is not careful, China will win it both through overt military power and by turning academic researchers against their own countries without them even realising it.

# News roundup

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## People



IP Group, the UK-based commercialisation firm, has announced the retirement of its chief executive Alan Aubrey (left) and chief investment officer Mike Townend (right). While both stepped down in early October, they will remain employees until April 6, 2022, and as consultants for a minimum period of 12 months

thereafter to guarantee a smooth transition. Greg Smith, chief financial officer of IP Group, has been promoted to chief executive, while chief operating officer David Baynes will add finance to his remit and become chief financial and operating officer.

Daryush Ila, associate vice-chancellor for research and technology transfer at Fayetteville State University (FSU), has been appointed vice-president for innovation and research at University of West Georgia.





Dedic Carter, vice chancellor for operations and technology transfer at Washington University in St Louis (WashU), has been appointed as the institution's first-ever vice chancellor for innovation and chief commercialisation officer. Carter will

be responsible for advancing a culture of innovation across the university, strengthen intellectual property assets and identifying new opportunities in the ecosystem.

Northern Gritstone, the UK-based investment company co-founded by the universities of Leeds, Manchester and Sheffield, has unveiled its leadership with Duncan Johnson as chief executive. Jim O'Neill has been appointed non-executive chairman, while Russell Schofield-Bezer will serve as chief operating officer. The three are joined by Alex Macpherson and Andrew Graham as independent non-executive directors.

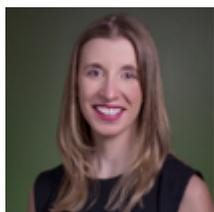


Harl Tolbert, former assistant vice-president for research and director of the Office of Technology Management at Pennsylvania State University (PSU), has moved to University of Rochester next month. Tolbert took up the

position of associate vice-president of URVentures, the university's technology transfer office, in early October. The appointment marks a return to the office for Tolbert, who had been associate director of the University of Rochester Medical Center's Office of Technology Transfer, the original name of URVentures, from 2006 to 2011.



François Hédé has become president of Linksium, the Réseau Satt member responsible for tech transfer in Grenoble and the Alpes region, succeeding inaugural CEO Gilles Talbotier. Linksium has launched 61 spinouts to date.



Lindsay Klee is the new senior director of technology commercialisation at Wayne State University and will lead its Technology Commercialization Office.

Patrick Cazeneuve has been appointed president of Toulouse Tech Transfer, one of the regional tech transfer offices that forms part of Réseau Satt, succeeding Pierre Dufresne, who had been president of Toulouse Tech Transfer since its creation in 2012. As of December 2020, the office had created 19 companies, signed 135 licences and filed 280 patents.



Raghupathy "Siva" Sivakumar has been named the first vice-president of commercialisation and chief commercialisation officer of Georgia Tech. The appointment makes permanent Sivakumar's position as chief commercialisation officer, after he had held it in an interim capacity since November 2020. Among his responsibilities will be bringing together commercialisation and tech transfer activities across Georgia Tech's campus, with a view of moving more inventions to market globally.



## Funds

University of Tokyo (UTokyo) is launching a ¥60bn (\$536m) fund to invest in its companies. The university itself is putting up \$89m to start the fund and it will seek contributions from external investors to grow it to its target size over a period of 10 years. If it reaches its target, it would be the largest university venture fund in the country as things currently stand. The fund will support companies emerging from the institution, aiming to launch 300 new ventures and increase the number of unicorns in UTokyo's ecosystem.

The EU-owned European Investment Fund (EIF) and Italian state-owned national promotional institution Cassa di Risparmio di Padova e Rovigo's CDP Venture Capital unit have renewed their partnership, committing €260m (\$305m) to tech transfer in Italy. EIF and CDP are each contributing €130m, with the latter allocating the money through its existing Technology Transfer Fund. The renewed partnership builds on ItaTech, an investment platform launched by the two with up to €200m in 2016.

Artpark, an India-based non-profit commercialisation firm, is launching a \$100m fund for robotics companies. Artpark was established in 2020 by the Indian Institute of Science and AI Foundry, with seed funding from the Indian government's Department of Science and Technology and the government of Karnataka. It aims to bring together all ecosystem players – academia, industry, government and entrepreneurs – to drive artificial intelligence and robotics technologies that can improve quality of life.

Earlybird, a Germany-based venture capital firm, has launched a €75m (\$88m) fund aimed at pre-seed and seed-stage spinouts across Europe. Called Uni-X Fund, the vehicle will aim to offer capital at a time when companies are still building their teams, developing their business plans and working on a proof of concept. The fund will source opportunities through a network of 45 professors, dubbed Uni-Xperts, at institutions such as RWTH Aachen University, Imperial College London and Karlsruhe Institute of Technology.





Austria, the Czech Republic, Germany, Poland and Slovakia are among the central European countries that will benefit from the €50m (\$59m) i&I Biotech Fund I, set up to invest in biomedical spinouts. The EIF will provide €25m towards the fund's target size. The i&I Biotech Fund I will operate out of the Czech Republic, working in close collaboration with the Czech Institute of Organic Chemistry and Biochemistry at Czech Academy of Sciences, and will invest in pre-seed, seed and series A rounds. The fund will be the first of its kind in central Europe and will aim to help central European universities to catch up with their peers in western Europe and the US.

IP Group Inc, the US subsidiary of UK-based commercialisation firm IP Group, has revealed it attracted even more funding during the first half of the year. The fundraising was led by a new, unnamed institutional investor in the US. It brought the total capital raised by IP Group Inc during the pandemic to \$72m. Only \$8.6m of the \$58.6m in capital unveiled this week was previously undisclosed. IP Group Inc raised \$50m in capital, including \$10m from IP Group itself, in February this year.

The EIF has joined forces with financial institutions SID Banka and Croatian Bank for Reconstruction and Development (HBOR) to launch a €40m (\$48m) vehicle. EIF is providing €20m, while SID Banka and HBOR are each committing €10m. The Central Eastern European Technology Transfer platform will be aimed at universities and research institutes in Croatia and Slovenia, backing regional VC funds that focus on financing research projects and technology development.

Polytechnique Ventures, a France-based investment fund, has launched with €20m (\$24m) in initial capital to invest in companies aligned with École Polytechnique. The fund was created at the behest of the institution's alumni but also plays into École Polytechnique's goal of having a vehicle backed by its incubator. It is targeting a €30m to €40m close.

Pre-Seed III Fund, a vehicle operated by Michigan State University (MSU)'s endowment MSU Foundation, has secured an additional \$6.5m of capital from public-private partnership Michigan Economic Development Corporation (MEDC)'s Michigan Strategic Fund. Michigan Strategic Fund formed the Pre-Seed III Fund with \$3m in April 2020, and it provides early-stage equity and convertible note funding for technology startups based in Michigan. MSU Foundation is running the vehicle through its Michigan Rise unit.

US-based academic medical centre Penn Medicine and Wharton Social Impact Initiative have launched a \$5m fund to invest in companies addressing health equity. Penn Medicine is owned by University of Pennsylvania (UPenn), while Wharton Social Impact Initiative was launched by UPenn's Wharton School. Over the next three years, the Fund for Health will invest in up to 10 early-stage companies that provide goods and services that strengthen social determinants of health – such as food security or housing – for economically disadvantaged people in Philadelphia.

University of Tokyo Edge Capital Partners (UTEC), a venture capital affiliate of University of Tokyo, has unveiled a programme aimed at founders trying to get deeptech companies off the ground. The UTEC Founders Program (UFP) will offer two distinct tracks – a first will invest up to \$1m with flexible terms in seed and pre-series A companies, and a second will offer grants typically worth \$50,000 but up to \$100,000 to pre-launch and early-stage companies.

Main Sequence Ventures, the Australia-based venture capital firm founded by Commonwealth Scientific Research Organisation (CSIRO), has added investment manager Australian Ethical to the limited partners of its Fund 2. The fund launched in April this year with \$194m in capital and while Main Sequence partner Mike Zimmerman told GUV he was unable to disclose the current size, he confirmed the firm was looking to achieve a final close this autumn and would provide an updated figure then. John Woods, head of asset allocation at Australian Ethical, told the Australian Financial Review that the amount represented a significant portion of his employer's VC allocation.

# Keeping the party going

- > An analysis of Q3 data shows the year continues to deliver large amounts across the board.

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By Thierry Heles  
Editor

Perhaps the only way for university venturing to go after a truly astounding first half the year was always in the same direction. And with 273 investments worth a combined \$10.6bn, the months of July, August and September did not disappoint.

The total for the year now stands at 848 deals, not too far off the 1,010 count for all of last year. It means an average of just 54 deals every month for the final quarter is needed to reach the same number of investments in 2021 – considering the least active month since January 2020 was still 61 deals, it would be a fool's bet to believe it will not happen.

Indeed, a cursory look at our data for October to date already shows more activity than that.

There was a slight drop in activity in September to 80 deals, making it the least active month of the year. Looking only at the number of deals, it could be argued that this was a delayed summer lull – August 2020 counted only 67 deals – but that does not actually appear to be the case when considering the amount of money invested.

In fact, August 2021 was the slower month in terms of money invested in spinouts and September was the busiest.

Notable, too, is that despite the month of June continuing to tower over everything else with \$4.67bn, the second quarter only accounted for \$7.2bn invested – below the \$8.85bn in the first quarter – making the most recent three-month period the one with the highest monetary value by a margin of almost \$2bn.

There was no summer lull. That is true perhaps of macro-economic factors that means money is being poured into the market everywhere, not just spinouts, but maybe also because many countries continued to struggle to emerge out of lockdowns or other restrictions. With no possibility of travelling on a vacation, it is easy enough to keep sitting in front of the computer reading term sheets.

There is a question as to whether – or rather, when – this bubble will burst. There is a real frenzy going on and this is not to sound alarmist, but the nature of economies is cyclical: the crash always comes eventually.

Massive challenges are already here: gas and electricity prices have risen so much in Europe, and particularly in the UK, that – as of the time of writing – Britain has seen 16 utility companies go bust this year – a dozen of those in September and October alone. With consumer rates capped by the government based on wholesale prices during the preceding six-month period and those wholesale prices continuing to increase, suppliers are currently losing around £400 (\$545) per customer.

The UK has of course also been in the news because of the COP26 conference in Glasgow in early November and the government has set a net zero target for 2050 which appears ambitious, but it relies on carbon offsets – at best a band aid – and 2050 is too far off in the future to really make the impact needed. As campaigner Eleanor Salter wrote in a New York Times op-ed in October: “Johnson may claim the country leads the world on climate action, but we should not fall for the trick.”

That is all before we even consider the societal issues of the pandemic that means the richest countries in the world have been throwing away vaccines because conspiracy theorists have conned people into refusing the shot, while poor countries are desperately waiting for more doses.

The pandemic has also meant that more money has flown to the top of the pyramid, with the

bottom further hollowed out: Jeff Bezos, founder of e-commerce group Amazon, is so rich that spending \$1.7m is the equivalent of the average American spending \$1.

Spinouts can – and will – tackle many of the challenges that face us. They have made solar panels more efficient, they have created coatings to keep fruit fresh for longer and above all they have given us several covid vaccines. But they are vulnerable to the same economic realities as everyone else.

It is no doubt a great time to be an investor and more money for university innovation is absolutely to be welcomed, but if we are not careful it could be a very painful landing. The current trend will continue for a while yet and some fantastically successful winners will emerge. But we also need to make sure that, once the next crash occurs, we do not let that be an argument to go back to not having as many spinouts and money being put into that particular ecosystem.

Is that really a danger? Perhaps not, but to not consider the possibility and how we can prevent it from happening would be short-sighted.

For now, of course, everything looks rosy and the top 10 largest deals of the quarter were all impressive numbers worth at least \$200m.

The largest investment was the \$1.6bn series H round picked up by Databricks, a US-based data analytics software developer based on research at University of California (UC), Berkeley. Valuing the business at \$38bn post-money, investors that poured more cash into Databricks included UC Investments, which manages UC's retirement, endowment and cash assets, and the House Fund, a vehicle focused on the UC Berkeley ecosystem. It brought Databricks' overall equity to some \$3.5bn and notably came just seven months after the spinout picked up \$1bn in its series G round from a consortium that included corporates Microsoft, Alphabet, Amazon and Salesforce.

The huge size of Databricks' latest round means the second-largest deal of the quarter looks comparatively small, although quantum computing technology developer PsiQuantum still raised a significant \$450m in its series D round that valued it at \$3bn and thereby became the first unicorn in the portfolio of Imec. xpanse, the venture fund launched by research institute Imec. Although PsiQuantum is not a spinout – its co-founders stepped down from University of Bristol and Imperial College London to form the business – the

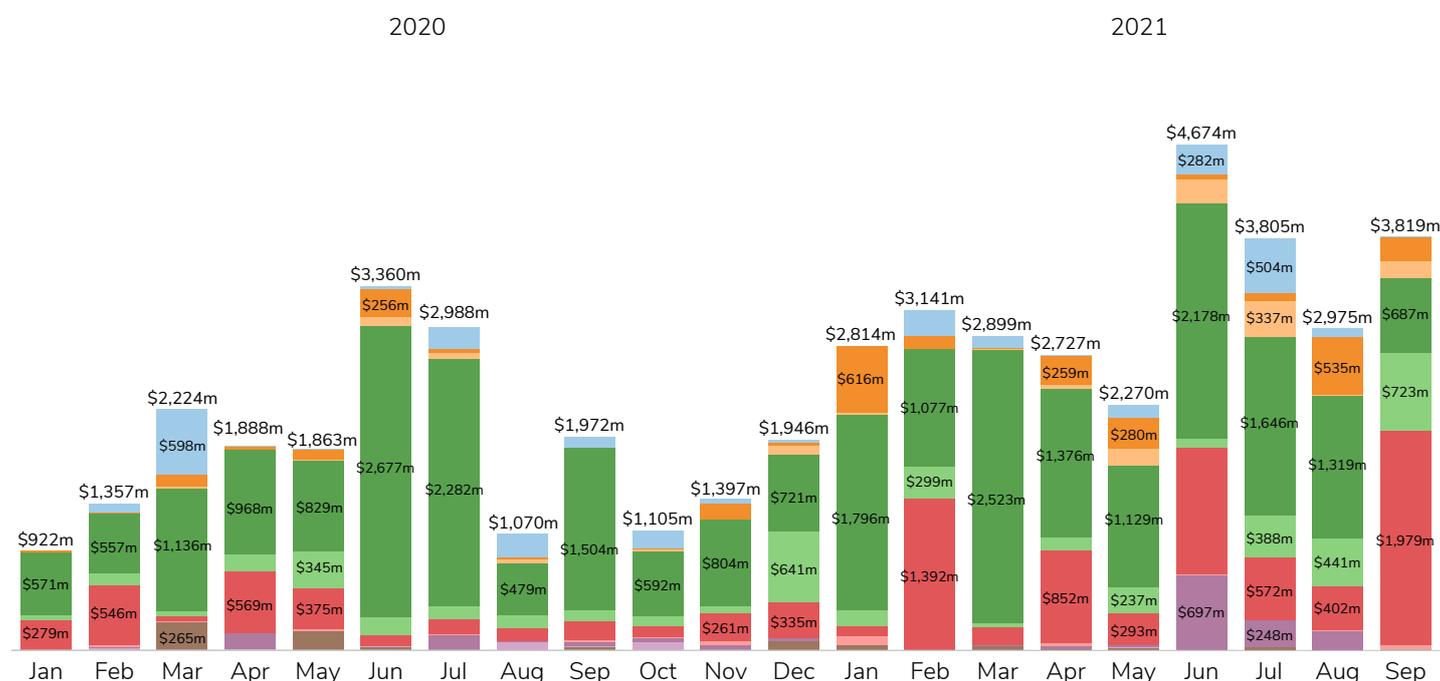
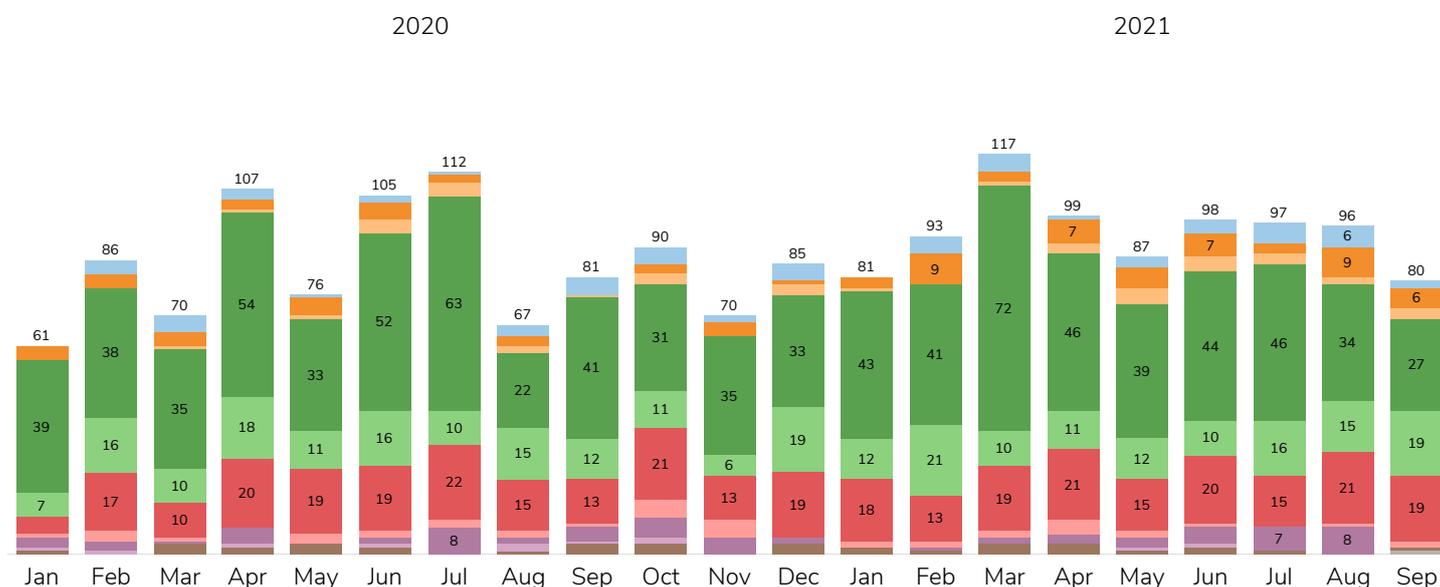
involvement of Imec.xpand still makes it a noteworthy example of how academic institutions can play a significant role in innovation.

Nature's Fynd, similarly, is not a spinout but Montana State University was one of the company's earliest supporters and all of that groundwork has meant the alternative protein developer was able to collect \$350m in its series C round from telecoms giant SoftBank's Vision Fund 2, food producer Danone, agribusiness Archer Daniels Midland, conglomerate SK and others.

### Top 10 deals by size in Q3 2021

Company	Institution	Sector	Round	Size
Databricks	University of California, Berkeley	IT	H	\$1.6bn
PsiQuantum	Imec	IT	D	\$450m
Nature's Fynd	Montana State University	Consumer	C	\$350m
Spiber	Keio University	Industrial	Undisclosed	\$312m
Sonoma Biotherapeutics		Health	B	\$265m
Apeel Sciences	University of California, Santa Barbara	Industrial	E	\$250m
Clearco	University of California	Financial	Undisclosed	\$215m
InterVenn Biosciences	Stanford University	Health	C	\$201m
Prime Medicine	Broad Institute of MIT and Harvard	Health	B	\$200m
Form Energy	Massachusetts Institute of Technology	Energy	D	\$200m

## Deals from January 2020 to September 2021



When it came to exits, a record-breaking 16 were achieved in July 2021 for a total of 26 for the quarter – bringing the year’s total to 68. That, like the number of investments, is scratching the total of 78 for 2020.

The largest exit was the \$521m initial public offering of Duolingo, the US-based language learning platform developer spun out of Carnegie Mellon University, which listed on the Nasdaq Global Select Market in late July after pricing its shares at a whopping \$102. As of the time of writing, they are trading at \$157.91, having risen as high as \$205 in late September.

Not too far behind was the flotation of Oxford Nanopore with a \$478m initial public offering, which fetched a \$4.7bn valuation and perhaps most importantly elected to list on the London Stock Exchange – eschewing the US, which has typically managed to attract such large-scale IPOs. For a closer look at what Oxford Nanopore’s listing means, read our in-depth look at Oxford’s spinouts in this issue.

UC Berkeley not only had Databricks as an occasion to celebrate this quarter, as Caribou Biosciences went public following a \$304m IPO on the Nasdaq

Global Select Market at a valuation of nearly \$910m. Although shares have continuously traded above the IPO price of \$16 and briefly reached a peak of \$32.65 in September, they have largely hovered between the \$20 and \$30 marks and are, at the time of writing, going for \$19.78.

There is one aspect of the top 10 largest exits of the quarter that warrants highlighting: all but one of them were traditional IPOs, with only University of Chicago-backed home insurance provider Kin Insurance conducting a reverse merger. This reflects the public market at large, which has gone cold on private investment in public equity financing after a frenzy early on in the year – a recent analysis by the Financial Times showed that this trend continues, with October marking yet another drop in such activity.

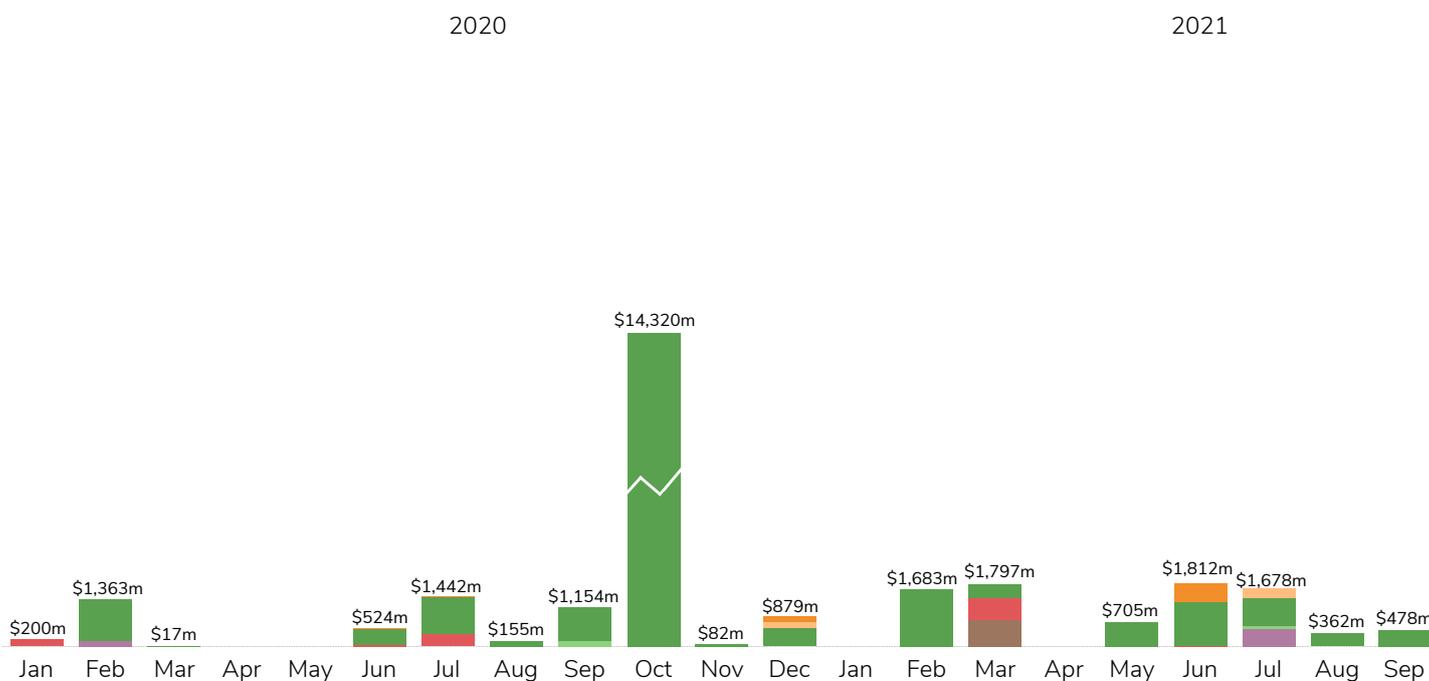
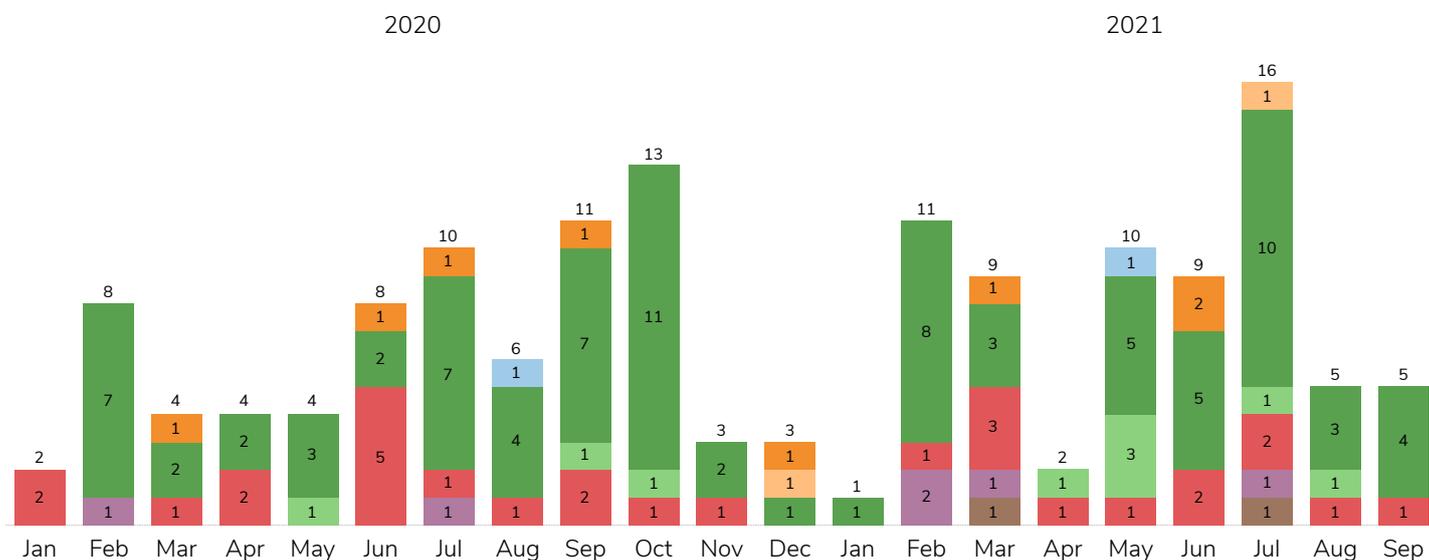
That public markets have been so receptive to IPOs of spinouts – and that spinouts have chosen this route – is reassuring and promising that this ecosystem remains healthy. That is good news for when the crash comes – the majority of spinouts will hopefully survive that downturn.

### Top 10 exits by size in Q3 2021

Company	Institution	Sector	Type	Size
Duolingo	Carnegie Mellon University	Education	IPO	\$521m
Oxford Nanopore	University of Oxford	Health	IPO	\$478m
Caribou Biosciences	University of California, Berkeley	Health	IPO	\$304m
Kin Insurance	University of Chicago	Financial	Reverse merger	\$280m
Sophia Genetics	Stanford University	Health	IPO	\$234m
Icosavax	University of Washington	Health	IPO	\$182m
Tenaya Therapeutics	Gladstone Institutes	Health	IPO	\$180m
Aerovate Therapeutics		Health	IPO	\$121m
T-Scan Therapeutics	Harvard University	Health	IPO	\$100m
Biotallys	VIB	Industrial	IPO	\$64.5m

### Exits from January 2020 to September 2021

- Consumer
- Financial
- Industrial
- Media
- Telecoms
- Energy
- Health
- IT
- Services
- Transport



# Oxford orchestrates successful portfolio

- > A year and a half into the pandemic, Oxford's spinout portfolio is as strong as ever after a record-breaking fiscal year.

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By Thierry Heles  
Editor

When Global University Venturing published its ground-breaking analysis of more than 60 years of spinouts at University of Oxford in April 2020, all the data we had collected was from a pre-pandemic world. By that point, the institution's portfolio had collected more than £2.2bn and another \$245m in equity financing overall.

Guest after guest on our Talking Tech Transfer podcast noted that the pandemic had led to an increase in activity, a reality subsequently reflected in annual reports. Having analysed Oxford's longitudinal data just before the pandemic has given GUV a unique opportunity to evaluate how

exactly these past 18 months have affected university venturing at a deep level by way of example of one of the world's oldest and leading research institutions.

During the 2020 to 2021 fiscal year, the university's tech transfer subsidiary Oxford University Innovation (OUI) added a record 23 spinouts, 4 startups and 6 social enterprises to its portfolio – with some crossover between these, this meant 31 new additions to OUI's list of companies for a new total of 275 (including two that remain in stealth and details of which we are not at liberty to disclose).

Around 77.5% of companies remain active today, a slight drop from the 78.5% in our last analysis. A total of 15 companies achieved some form of exit – either an initial public offering, an acquisition or both – before being wound down, so may be reasonably counted as successes. Including these businesses, the survival rate jumps to around 82.8%, again a slight drop on the 83.9% previously.

Across the portfolio, total pre-exit equity capital now stands at more than £2.8bn, plus another \$732m and €6.5m. Although it is difficult to account for currency fluctuations, at the current exchange rates this would be a total of more than £3.3bn or \$4.6bn.

Notably, the median amount is only £3.3m and the average is £14.8m for the rounds in British pound sterling, which constitute the majority of transactions, or \$49m and \$72.3m for the rounds in US dollar amounts – of which there were only 10.

But beyond these numbers, Oxford achieved something far more remarkable during the pandemic: the technology of its spinout Vaccitech – which listed on Nasdaq in April 2021 following a \$110m IPO – was the foundation for the covid vaccine in partnership with pharmaceutical firm AstraZeneca.

Alexis Dormandy, chief executive of the university's investment company Oxford Science Enterprises (formerly known as Oxford Sciences Innovation) which had invested in Vaccitech, said: "The fact that 98% of Covax vaccines are the AstraZeneca vaccine is because it really took a university.

"The people at the university deserve huge credit for coming up with a deal with AstraZeneca to give them the technology for free, and also the people in Vaccitech who contributed to giving that for free, which then allowed non-western countries to get access to the vaccine.

"I do not think it would happen if it was not a university venturing arm, because in money versus the good, the money would win." He added: "It is a reflection on the importance of university venturing and what it can do."

Another covid-related company was Oxsed, a social venture that was working on a rapid test for the disease. Oxsed launched in June 2020 and only five months later was acquired by Prenetics' DNAFit Life Sciences subsidiary.

This was not the only notable acquisition that occurred during the pre-vaccine days of the pandemic – epigenetics company Base Genomics, which had raised only \$11m in equity funding, was bought by molecular diagnostics business Exact Sciences for \$410m in October last year.

Matt Perkins, chief executive of OUI, wrote in the office's annual report: "Our spinout portfolio not only continues to grow, but to rapidly mature.

"Oxford Nanopore's £3.4bn IPO is stealing the headlines, while many continue to scale towards their own flotations. Meanwhile, Yasa Motors held a prominent exit of its own with its acquisition by Mercedes Benz.

"As these develop, the overall ecosystem is moving from the gold rush days of the Oxford Boom to a



Matt Perkins

more established community of innovators looking to create a rising tide of impact that raises all boats.

"While OUI's role in the process remains at that inflection point where research transfers into the wider world, we believe we have a part to play in sustaining the momentum of recent years and using our voice and convening power to help our community thrive."

That listing of Oxford Nanopore was grabbing headlines for all the right reasons: it marked a phenomenal success for the university and it also became one of the largest initial public offerings of a spinout in the nearly nine years that GUV has been covering the sector.

## Woodford proves his worth too late

There is an elephant in the room when it comes to Oxford Nanopore's flotation: Neil Woodford and his since-collapsed Woodford Investment Management, which also managed the Woodford Patient Capital Trust (now called Schroders UK Public Private Trust).

The listing was so successful, it made commercialisation firm IP Group a whopping £84m on the spot.

Oxford Nanopore was a core holding in Woodford's flagship Equity Income fund and it could have netted investors hundreds of millions of pounds. However, administrator Link Fund Solutions sold the shares to Acacia Research for a fraction of its IPO valuation a year ago.

The spinout was one of 18 holdings sold for a combined £224m in June 2020. Nanopore's price was reportedly £98m. Overall, Link Fund Solutions had offered such a cutthroat price that Acacia flipped the majority of the package, some of it within hours, and immediately bagged a profit of £150m.

Nanopore was one of two companies that Acacia held on to and it is a bet that has massively paid off for the patent litigation company.

Indeed, Acacia offloaded £16.4m worth of shares as part of the initial public offering and retained a 4.4% stake worth £149m at the IPO price of £4.25 a share. At the time of writing, its stake is worth £193m.

*I cannot be sorry for the things I did not do. I did not make the decision to suspend the fund, I did not make the decision to liquidate the fund. As history will now show, those decisions were incredibly damaging to investors and they were not mine.*

Neil Woodford

Is this hindsight enough to claim that Woodford was right all along? The root of the firm's collapse was an overreliance on illiquid holdings that Woodford was unable to sell on when investors wanted their money back in droves – around £10m per day. Reportedly once worth £10.2bn, the fund was worth just £3.7bn by the time it was suspended in 2019.

The drawn-out process since the collapse has meant that many investors are still waiting for their money today – Link Fund Solutions continues to wind down the fund and is unsure when exactly this will be complete.

Adding to the chaos is the fact that law firm Leigh Day launched legal proceedings against Link Fund Solutions in September 2021 claiming that Link Fund failed to carry out its regulatory duty, as authorised corporate director, to look after the best interests of investors. Crucially, that claim covers both its decision since the fund's suspension and the run-up to that suspension.

In his first interview since the collapse, Woodford showed himself combative in February this year when he announced his

ambition to launch a Jersey-based investment firm – plans that failed. Speaking to the Daily Telegraph, he apologised saying "I am very sorry for what I did wrong. What I was responsible for was two years of underperformance – I was the fund manager, the investment strategy was mine, I owned it and it delivered a period of underperformance."

However, he stuck to his view that the fund would have been successful and declared that had investors stuck with him they could be "enjoying the fruits of that faith".

He added: "I cannot be sorry for the things I did not do. I did not make the decision to suspend the fund, I did not make the decision to liquidate the fund. As history will now show, those decisions were incredibly damaging to investors and they were not mine."

The example of Acacia's win with Nanopore would agree with Woodford's claim.

There is an argument to be made that investors may have misunderstood the "patient" part of patient capital (the firm survived only five years). It was never a get-rich-quick scheme.

Tom Hockaday, former head of OUI, wrote about Woodford in his compendium on tech transfer, *University Technology Transfer: What It Is and How to Do It*, and in a subsequent interview with GUV revealed he maintained nothing but respect for him – admitting he had no real sense of what went wrong at the firm.

“I think what Woodford did with patient capital and what he did with supporting the opportunities that brilliant UK science presents to UK business and UK investors was really positive,” he said. “The role he played in getting [Oxford Science Enterprises (OSE)] going as one of the founding investors was really positive. I can talk about

the genuine positives of what he did in promoting patient capital, but the wrangling and financial management is just not a world I know.”

Arguably, Woodford’s mistake was not investing in unquoted holdings. That is a model that Nanopore has proved works – and it is a model pursued by others, such as London Stock Exchange-listed IP Group.

Woodford’s mistake was his decision to call the firm’s lead product the Equity Income fund. It created the perception that the fund would invest conservatively in companies that typically pay dividends, but unquoted stocks do not do that.

It is impossible to know whether this was wilful dishonesty, negligence or Woodford genuinely believed he was doing right by his investors, because he so passionately believed in university research commercialisation – he was, after all, a strong supporter of IP Group and one of the people who made OSE happen. But the result remains the same – investors were exposed to a risk profile that the fund name hid from them.

Is Nanopore’s listing vindication for Woodford’s vision? Yes. It is just a shame for everyone that he went about it all the wrong way.



Neil Woodford first apologised for the fund’s collapse in a Youtube video in 2019

## OSE's journey has only just begun

Oxford Science Enterprises is going about it all the right way. To date, the investment firm has raised £613m and invested around £360m of that, bringing another £600m from external investors into the portfolio. OSE itself is now worth more than £1bn after its creation led to an explosion in the number of spinouts coming out of Oxford.

Steadfastly pursuing its mission of putting impact over money, OSE reinvests proceeds and as of this year even donates 2% of its shareholding from each successful company back to the originating university department. If there is anyone else out there who does this, they have not advertised it – which seems unlikely and so this almost definitely qualifies as a unique aspect.

Dormandy joined from venture capital firm Atomico in January this year, taking over from interim CEO Jim Wilkinson who returned to his original post as chief financial officer. Dormandy immediately went to work of putting his mark on the organisation and established a group looking into how well, or not, OSE was doing on diversity and inclusion.

He said: “The way I describe it is we need to be an organisation that we will be proud of in 10 years’ time, not one we could have got away with 10 years ago.”

Describing the initiative, he noted: “We did a survey internally, there were bits we were good at and others we were not so good at. We have done quite a lot of work and we still have a lot more to do, but one of the things I am most proud of is that, without trying at all and being totally meritocratic,

five of my seven direct reports are women. There was no conscious effort to do that.

“As it happens, the whole of the life sciences team are women, again by accident. But clearly it is a much bigger issue than just women, we probably have further work to do on the Black, Asian and minority ethnic demographic – I would not say we are bad, we are probably market average but I am not sure that is a benchmark to aim for.”

OSE has now rolled out a survey to its 55 largest companies to get the big picture and start benchmarking. Dormandy added: “We will pay for and support initiatives to try and push that all in the right direction. So, we take it extremely seriously and, like anybody, if they say they are winning that battle they are deluding themselves. Everyone is at an early stage, but we are definitely on it and take it seriously.”

Dormandy already has a noteworthy take on fostering diversity. He continued: “The question for me is not: do I encourage [spinouts] to have diverse leadership? If I ever see a longlist of people I am interviewing and it is not diverse, I ask: what are we doing? I do not think it is so

much about encouraging people, I regard it as a moral minimum and a commercial minimum.

“And as I say, the fact that we have a lot of women work in our company has nothing to do with actively trying to reach people. When we look at a list we say, does that list look like a representation of the population – if it does not, then it is the wrong list.”

OSE's success leads to an obvious question: should there be more university venturing funds? “In general, it is a good idea,” Dormandy explained. “The biggest issue is the people. This is a professional industry and if they can be done well with good people, there is a huge opportunity there. If it is done as a slight afterthought – thinking we should be a bit more entrepreneurial, how do we spin a few things up – it is not that they will do any damage, except that it might set things back by them not working out. Better to do it well early.

“If you asked me what it would be like in five years’ time, yes, they will be spinning up in other places. And if you ask me in 10 years’ time, there will be an industry that is probably literally 20 times the size it is now.”

*We need to have billions in cash, not tens of millions, to build these industries around them. And the last bit we need is the attitude to go after it, because there is a mindset about: what does success look like?*

Alexis Dormandy



Alexis Dormandy

Dormandy is not shy about doubling down on that vision. Joking that he had never read anywhere that an American accent was needed to build a Microsoft or Intel, he added: “There are three things that need to happen. We need to have the capability to build these businesses, not just spin them out.

“We need to have billions in cash, not tens of millions, to build these industries around them. And the last bit we need is the attitude to go after it, because there is a mindset about: what does success look like?”

It will not necessarily be a software company. It may be something as unusual as Refeyn, which Dormandy highlighted as a portfolio success he was particularly proud of. Refeyn has developed mass photometry technology – essentially, it uses light to measure the weight of molecules.

“I first met them before I joined Oxford Science Enterprises – I was introduced to the founder four years ago,” Dormandy recalled. “I trained as a doctor, but when a professor who is using light to measure the weight of things is talking to you about the detail.. I was definitely struggling to keep up.”

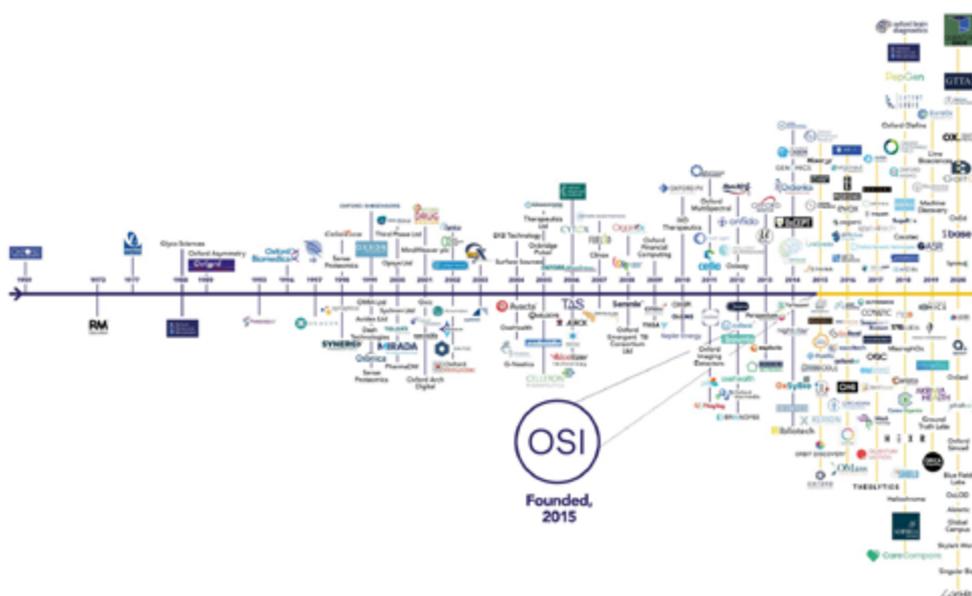
“I had absolutely no idea what the commercial model was going to be,” he admitted. “What they do is essentially the same as a mass spectrometer, but they do it for \$50,000 – a fifth of the price of others.”

The technology is so transformative, Refeyn is struggling to keep up with orders and is beating every milestone they could have. But that is not the amazing part – researchers have been writing to say the throughput of their labs had gone up fivefold since installing Refeyn’s benchtop machines, because people no longer had to queue to get access to one big machine.

“The democratisation of that technology is a massively important thing,” Dormandy declared. “The reason I love it is it has very strong, unique science that nobody else has and it appeals to me that I did not see it when I first met them, which is a lesson to all of us. You need to try harder and have a bit more imagination because that is part of the job here.”

The fact that Dormandy missed the opportunity initially was emblematic of the system, he pondered: “It would not have been funded by VCs, because the work of getting that science out into a business, there is probably two years of just doing that and there was not an investible business.”

The importance of OSE therefore can hardly be overstated. If the UK is to emerge as a powerhouse for innovation following the tumultuous years of a post-Brexit, post-pandemic world still ahead of us, university venturing will be a crucial component. It is important the government understands this – not just this leadership but all subsequent ones.



Some notes about the data on the following pages:

- The date formed refers to the date provided by University of Oxford as the date on which the company was spun out, not when it was incorporated with Companies House. The incorporation dates are usually a few months before the completion of the spinout process, but in some cases differ by several years.
- The total funding has been rounded. It includes the equity declared by the companies in their most recent annual accounts, by University of Oxford to GUV and press releases by the spinouts themselves. They are correct, to the best of our knowledge, as of September 2021. The figures do not include any non-dilutive grants, debt financing or bank loans. Some companies have disclosed they raised money, but not yet how much – in these cases we elected to either leave the field blank or display the confirmed funding only.
- Defunct companies have not filed any accounts for their most recent financial year or have an active notice in place by Companies House to be struck off and thereby be dissolved.
- PharmaDM is the only company whose status could not be ascertained, although there are no records in Belgium's official register and its software is now distributed directly by KU Leuven. It seems safe to assume the company has been wound down.
- Startups are companies that have gone through OUI's incubator only, they do not include startups from the wider university community.
- At the request of OUI, the following list does not include spinouts in stealth mode.



Company	Formed	Type	Active	Exit	Technology	Funding
OxCarbon	September 2021	Social venture	Yes		Commercial carbon offset services	
OxCCU	August 2021	Spinout	Yes		Conversion of CO2 into sustainable aviation fuel	
Sandymount Therapeutics	August 2021	Spinout	Yes			
EndLyz Therapeutics	July 2021	Spinout	Yes		Treatments for Parkinson's disease	\$3.3m
Amber Therapeutics	June 2021	Spinout	Yes		Bioelectronic platform initially focused on treating urinary incontinence	
LiliumX	May 2021	Spinout	Yes		Protein technology platform to facilitate scalable discovery of first-in-class bispecific biologics	\$125,000
OxVax	March 2021	Spinout	Yes		Off-the-shelf vaccines for solid tumours	
Oxford Green Innotech	March 2021	Spinout	Yes		Carbon-free transformation of ammonia waste into hydrogen	
Vaxine	March 2021	Startup	Yes		Supporting medical personnel in the deployment of the covid vaccine	
Viscera Technologies	February 2021	Startup	Yes		Predictive diagnostics technology initially focused on a test for helicobacter pylori	£35,000
Ujji	February 2021	Startup	Yes		Gamified life coaching app	
Aisentia	February 2021	Spinout	Yes		Machine learning and AI to reconstruct CT angiograms using non-CT images	
Hydregen	February 2021	Spinout	Yes		Enzyme catalysis using hydrogen gas to recycle the NADH co-factor, reducing waste and lowering costs	£120,000
Hare Analytics	February 2021	Spinout	Dormant		Behaviour-based analytics for business-to-consumer applications	£10,000

Salience Labs	February 2021	Spinout	Yes		Photon-based computing; joint spinout with University of Münster	
Curacode	February 2021	Spinout	Yes		Laser-printed high-security, low cost authentication labels	£30,000
Orbit RRI	January 2021	Social venture	Yes		Promoting responsible research and innovation in information and communications technology; joint company with De Montfort University	
Augmented Intelligence Labs	January 2021	Spinout	Yes		Analysis and decision support systems for marketing research; first spinout out Saïd Business School	
KleidoX Therapeutics	December 2020	Spinout	Yes		Working with marketing insights companies to develop their marketing products	
Skylark Works	November 2020	Social venture	Yes		Social purpose-led consultancy	
Singula Bio	November 2020	Spinout	Yes		Neoantigen-based cell therapies for patients with solid tumours	
GTT Analytics	November 2020	Spinout	Yes		International maritime logistics simulations	
Quantum Dice	November 2020	Spinout	Yes		Self-certified quantum random number generator	
Global Campus	October 2020	Social venture	Yes		Sustainable, integrated and inter-university learning opportunities	
LitHits	October 2020	Spinout	Yes		Mobile app to encourage book reading	
Aistetic	October 2020	Spinout	Yes		Tailored clothing e-commerce app using computer vision and deep learning to generate 3D models of customers	

Carnot	September 2020	Startup	Yes		Ultra-efficient ceramic engines	£273,000
OxLOD	September 2020	Social venture	Yes		Bringing the tools developed for heritage to the health data management	
OxVent	September 2020	Social venture	Yes		Ventilator designed to support covid patients in ICUs	£203,000
OXDH	August 2020	Spinout	Yes		IVF and maternity health data platforms and telemedicine service	
Open Clinical	August 2020	Social venture	Yes		Open source and open access innovation in healthcare knowledge	
Oxford Simcell	August 2020	Spinout	Yes		Biosensors for food safety testing, incorporated in the UK but focused on China	
Blue Field Labs	August 2020	Spinout	Yes		Expertise and knowledge regarding data privacy, ethics, data security and public policy in connection with technology use	
Global Health Research Accelerator CIC	July 2020	Social venture	Yes		Digital platform for knowledge sharing	
PhishAR	July 2020	Spinout	Yes		Cybersecurity technology to thwart phishing attempts	
Dark Blue Therapeutics	July 2020	Spinout	Yes		Co-founded by OUI, Oxford Science Enterprises, Evotec, BMS and University of Oxford to spin out successful Lab282 oncology projects	
Base Genomics	June 2020	Spinout	Yes	Acquired by Exact Sciences for \$410m in October 2020, now incorporated as Exact Sciences Innovation	Epigenetics company advancing technology to sequence DNA methylation developed at Oxford's Ludwig Institute for Cancer Research branch	\$11m

CareerShe	June 2020	Startup	Yes		Helping students aged 15 to 25 to learn about the world of work and guide them in major life decisions	
Deep Edit	June 2020	Startup	Yes		Software-based photo enhancer for professional photographers	
Oxsed	June 2020	Social venture	Yes	Acquired by Prenetics' DNAFit Life Sciences subsidiary in November 2020	Focused on developing a rapid covid-19 test, joint company of University of Oxford and Oxford Suzhou Centre for Advanced Research	£249,000
OxEd	April 2020	Spinout	Dormant		Platform to standardise assessments of language, reading and arithmetic skills in children	£100
Bloomd	April 2020	Startup	Yes		Question and answer platform connecting elderly citizens to younger users	£40,000
GaitQ	March 2020	Spinout	Yes		Wearable device that analyses the walking gait of Parkinson's patients	£625,000
Qdot Technology	April 2020	Spinout	Yes		Engineering solutions for thermal problems such as those occurring in fusion reactors	
Living Optics	January 2020	Spinout	Yes		3D laser spectrometer and single shot hyperspectral imaging	£5m
Spintex Engineering	January 2020	Spinout	Yes		Scalable manufacturing process for spinning spider silk	£306,000
Ivy Farms	December 2019	Spinout	Yes		Lab-grown meat	£6.4m
Orca Computing	December 2019	Spinout	Yes		Quantum computing technology	£2.9m
Ground Truth Labs	December 2019	Spinout	Yes		Digital pathology annotation tool	£50,000

Infinitem Education	November 2019	Startup	Yes		Artificial intelligence-powered, gamified teaching	
Collegia Partners	November 2019	Startup	Yes		Pension fund management for SMEs	£246,000
Global Malaria Vaccines	September 2019	Spinout	Yes		Germany-based holding company to receive EU funding on malaria vaccine development at the university	
Nucleome Therapeutics	July 2019	Spinout	Yes		Drug development using the non-coding part of the human genome	£5.2m
Lime Biosciences	July 2019	Spinout	Yes		DNA assembly	
Gyreox	July 2019	Spinout	Yes		Design and rapid generation of libraries of molecules for previously undruggable targets	£835,000
Machine Discovery	May 2019	Spinout	Yes		Optimisation codes for several verticals, beginning with nuclear fusion processes	£100,000
Cristal Health (dba Akriva Health)	May 2019	Spinout	Yes		Software for the submission, de-identification and sharing of mental health patient records	£3m
Oxford Ionics	April 2019	Spinout	Yes		Ion traps based quantum computing	£180,000
MiroBio	April 2019	Spinout	Yes		Therapeutic antibodies for treatment of inflammation of cancer	£31m
Rogue Interrobang	March 2019	Social venture	Dormant		Strategy gaming and consultancy	£100
Oxford Immune Algorithmics	April 2019	Startup	Yes		Portable blood monitoring device, backup app and database	£5.3m
Asymmetric Suzuki Reactions	March 2019	Spinout	Yes		Working with pharmaceutical and agrochemical companies to synthesise molecules	£65,000
Greater Change	March 2019	Startup	Yes		Fundraising for homeless people	

Oxford Brain Diagnostics	April 2019	Spinout	Yes		Software for differential diagnosis of cognitive diseases	£2.2m
CareCompare Services	December 2018	Startup	Yes		App that connects patients and families with care providers	
Oxstem Beta	December 2018	Startup	No	In liquidation as of May 2021	Therapies to stimulate formation of new beta cells in the pancreas to restore functional beta cells in people with diabetes	£1,500
Oxstem Immuno	December 2018	Spinout	No	In liquidation as of May 2021	Therapies to induce tissue repair for chronic wounds and a range of inflammatory conditions	£1,500
Cortex Organics	December 2018	Spinout	Yes		Scalable product of cannabidiol	£15,000
Sophia Oxford UK	November 2018	Social venture	Dormant		Non-profit accrediting businesses that bring their workforce out of multidimensional poverty	
Macrophox	October 2018	Spinout	No	In liquidation as of March 2021	Cancer cell therapy company	£3.3m
Ni2o	October 2018	Spinout	Yes		Brain implant to treat a variety of diseases	
Hello Display Materials	September 2018	Spinout	Yes		Light-emitting diodes using perovskite technology; joint spinout with University of Cambridge	£796,500
Handsup Technologies	August 2018	Spinout	Yes		AI-based learning support applications; rebranded from Edtopia in May 2021	£705,000
Oxford Molecular Biosensors	August 2018	Spinout	Yes		Bacterial biosensors for detection and quantification of environmental contamination	
PQShield	July 2018	Spinout	Yes		Quantum computing cybersecurity	£4.5m

Caristo Diagnostics	July 2018	Spinout	Yes		Biomarker to detect coronary heart disease	£2m
1715 Labs	July 2018	Spinout	Yes		Commercialising Zooniverse technology, which powers a citizen science portal	£600,000
HEXR	June 2018	Spinout	Yes		3D-printed personalised helmets	£4.4m
Refeyn	June 2018	Spinout	Yes		Single molecule mass spectrometer	£4.3m
Oxford HighQ	June 2018	Spinout	Yes		Sensor technology based on optical microcavities used in scientific instruments and chemical sensors.	£2.1m
Oxford Olefins	March 2018	Spinout	No	Dissolved in June 2019	Developing novel catalyst process and route to high value internal olefins	
SugarOx	March 2018	Spinout	Yes		Crop stimulant	
PepGen	March 2018	Spinout	Yes		Drug delivery platform technology	\$157.5m
Odqa Renewable Energy Technologies	February 2018	Spinout	Yes		Geothermal technologies	£775,500
Latent Logic	February 2018	Spinout	Yes	Acquired by Waymo in December 2019, now incorporated as Waymo UK	Machine learning technology for autonomous vehicles and traffic modeling	£2.2m
DeepReason.ai	January 2018	Spinout	Yes		Fast and intelligent reasoning using public or private datasets	
PalaeoPi	January 2018	Spinout	Yes		Low cost three dimensional image of museum artifacts.	
Oxford Sustainable Fuels	January 2018	Spinout	Yes		Catalyst production and processes for upgrading pyrolysis oil to high octane gasoline	£1m
VeriVin	December 2017	Startup	Yes		Through-barrier Raman spectrometer to identify and classify complex liquids in sealed containers	£300,000

Theolytics	December 2017	Spinout	Yes		Developing libraries of synthetic oncolytic viruses, with an initial focus on myeloma	£5m
BreatheOx	November 2017	Spinout	Yes		Development of asthma monitoring system	
Brill Power	November 2017	Spinout	Yes		Electical and software controls for lithium ion battery storage	£3.3m
6D.ai	October 2017	Spinout	Defunct	Acquired by Niantic in March 2020, application for company dissolution filed in September 2021	AR/VR platform technology for the software industry	£2.2m
MOA Technology	October 2017	Spinout	Yes		Screening and discovery of herbicides	£8.3m
Opsydia	September 2017	Spinout	Yes		Laser fabrication in diamond structures	£1.9m
Quantum Motion Technologies	August 2017	Spinout	Yes		Silicon-based quantum computer	£9.5m
Alloyed	July 2017	Spinout	Yes		Alloy by design; rebranded from Oxmet in October 2020	£22.7m
InkPath	July 2017	Spinout	Yes		Career development software platform	£1.1m
Ufonia	July 2017	Startup	Yes		Smart voice assistant for healthcare	
Oxtractor	July 2017	Startup	Yes		Artificial intelligence for social media marketing	
Oxford Quantum Circuits	June 2017	Spinout	Yes		Super conductors for quantum computers	£2m
Cycle.Land	June 2017	Startup	Yes		Bike sharing scheme	£552,000
Ultromics	May 2017	Spinout	Yes		Automated detection of cardiovascular diseases	\$59.1m
Scenic Biotech	March 2017	Spinout	Yes		Cell sequencing technology platform	€6.5m
Oxford Semantic Technologies	March 2017	Spinout	Yes		Machine learning technology to run complex queries on disparate data sources	£4.1m

Fungry	March 2017	Startup	No	Dissolved in May 2019	Food purchasing and delivery platform	
SpyBiotech	March 2017	Spinout	Yes		Platform for vaccine candidate development	\$39m
ProMapp	March 2017	Spinout	Yes	Acquired by Nintex in July 2018	Health outcomes	£150,000
Oxonomy	February 2017	Spinout	No	Dissolved in September 2020	Maritime trade and transport simulation	
Covatic	January 2017	Spinout	Yes		Personalisation engine built for the BBC	£2.9m
SunReign	December 2016	Startup	Yes		Marketplace for solar energy	£30,000
Metaboards	December 2016	Spinout	Yes		Ubiquitous wireless power and data using metamaterials	£5.2m
Oxford VR	December 2016	Spinout	Yes		VR software to help treat phobias	£14.3m
Oxstem Cardio	November 2016	Spinout	No	In liquidation as of May 2021	Regenerative medicines for age-related cardiovascular diseases	
Enzbond	November 2016	Spinout	Yes		Software to predict enzyme function	£1.7m
Proxisense	October 2016	Spinout	Yes		Blade tip timing instrumentation	£3.2m
Circadian Therapeutics	September 2016	Spinout	Yes		Therapeutics and diagnostics for the treatment of sleep and circadian rhythm disruption	£6.4m
Iota Sciences	September 2016	Spinout	Yes		Microfluidics technology	£9m
Flying Fish Research	August 2016	Startup	No	Dissolved in December 2018	Market research analysis	
Oxstem Ocular	August 2016	Spinout	No	In liquidation as of May 2021	Regenerative medicines for age-related diseases	£2.4m
Oxstem Neuro	August 2016	Spinout	No	In liquidation as of May 2021	Regenerative medicines for age-related diseases	£3.6m
Osler Diagnostics	June 2016	Spinout	Yes		Technology to follow levels of analytes in biological liquids	£69.4m
OxSight	June 2016	Spinout	Yes		Glasses to assist the visually impaired	£7.3m
SwitchThat	May 2016	Startup	Yes		Boiler monitoring app	

Oxford Nanolmaging	May 2016	Spinout	Yes		Super-resolution microscopes	£26.5m
Oxstem Oncology	May 2016	Spinout	No	In liquidation as of May 2021	Regenerative medicines for age-related diseases	£3.6m
Oxstem	May 2016	Spinout	Yes		Regenerative medicines for age-related diseases	£17.5m
Newton Labs	May 2016	Startup	Yes	Dissolved in the UK in September 2018 but incorporated in the US, where it continues to operate, in March 2018	Cloud-based tools for recruitment	\$400,000
Evox Therapeutics	April 2016	Spinout	Yes		Biotherapeutics for a range of severe diseases	£114.7m
Argonaut Therapeutics	April 2016	Spinout	Yes		Precision medicine for cancer	£5.2m
Omass Therapeutics	March 2016	Spinout	Yes		Mass Spectrometry	£42.5m
Vaccitech	March 2016	Spinout	Yes	Listed on Nasdaq in April 2021 following a \$110m IPO	Vaccine development	\$216.4m
Diffblue	March 2016	Spinout	Yes		Software code validation	£18.9m
Mind Foundry	February 2016	Spinout	Yes		Big data analytics	£14.8m
Zegami	January 2016	Spinout	Yes		Software, data query and visualisation tools	£4m
Oxford Endovascular	December 2015	Spinout	Yes		Flow-diverter for the treatment of intracranial aneurysms	£12m
Navenio	December 2015	Spinout	Yes		GPS-free navigation	£20.2m
T-Cypher Bio	November 2015	Spinout	Yes		Drug discovery platform; rebranded from Orbit Discovery in November 2020	£14.1m
Bodle Technologies	November 2015	Spinout	Yes		Display technology using ultra-thin films	£8.8m
Sonosine	October 2015	Spinout	Yes		Electromagnetic acoustic imaging; rebranded from Oxford Enhanced Medical in January 2021	£2m
Oxford Flow	September 2015	Spinout	Yes		Pressure flow regulator	£13.3m
Gyana	September 2015	Startup	Yes		AI-based data science software	£4.9m

Xerion Healthcare	August 2015	Spinout	Yes		Nanoparticle-augmented radiotherapy technology	£3.5m
iOx Therapeutics	July 2015	Spinout	Yes		Cancer therapeutics	£3.2m
Total Mama	April 2015	Startup	Yes		Healthcare service for women before, during and after pregnancy	£50,400
Evershelf	April 2015	Startup	No	Dissolved in September 2020	Cataloguing software for CDs, DVDs and vinyl	
Mixergy	April 2015	Spinout	Yes		Smart water boiler	£5.5m
Animal Dynamics	April 2015	Spinout	Yes		Biology-inspired design of military drones	£7.7m
UniQreate	March 2015	Startup	Dormant		Adaptive and self-learning data extraction	
Prolific Academic	March 2015	Startup	Yes	Subsidiary of US-based Prolific Technologies	Participant recruitment for online surveys	£937,500
Wrapidity	February 2015	Spinout	No	Acquired by Meltwater in February 2017 and dissolved in March 2020	Web data extraction	
Weird Science	January 2015	Startup	Yes		VR/AR tools for STEM subjects	
Singular Intelligence	December 2014	Startup	Yes		AI-based decision automation for retail and consumer goods	£237,000
BibliU	December 2014	Startup	Yes		Online textbook platform	£12m
PNLP	December 2014	Startup	Yes		Sports insights sourced through social media	
Oxbotica	October 2014	Spinout	Yes		Autonomous vehicle software	£65.6m
Deontics	August 2014	Spinout	Yes		Evidence-based clinical decisions	£2.8m
QXR Research Co A2	July 2014	Startup	Defunct	Originally known as Oxford Biochronometrics, defunct as of January 2020	Digital fraud protection	
Starticles	June 2014	Startup	No	Dissolved in January 2016	Knowledge showcasing platform	
OxSyBio	April 2014	Spinout	Yes		Tissue engineering	£11m
Designer Carbon Materials	April 2014	Spinout	Yes		Nanomaterials for applications including energy harvesting and biosensors	£252,000

Edspire	March 2014	Startup	No	Dissolved in January 2017	Online learning resources search engine	
Genomics	March 2014	Spinout	Yes		Genome analytics	£66m
OxCept	January 2014	Spinout	No	Dissolved in August 2017	Cybersecurity	£580,000
OxSonics	January 2014	Spinout	Yes		Ultrasound medical device	£28.8m
Nightstar Therapeutics	January 2014	Spinout	Yes	Listed on Nasdaq in October 2017 following a \$75m IPO, acquired by Biogen in March 2019 for \$877m	Gene therapy for rare, inherited diseases	\$95.5m
Oxford Mestar	December 2013	Spinout	Yes		Translational and regenerative medicine	£2.1m
MuOx	November 2013	Spinout	Dormant	Acquired by Summit Therapeutics in November 2013, licensing agreement with OUI terminated in March 2019	Treatment for Duchenne muscular dystrophy	
Oxford Biotrans	September 2013	Spinout	Yes		Specialty chemistry	£7m
Okurso Social Technologies	June 2013	Startup	No	Dissolved in September 2015	Lead generation by tapping into web and social media	
Perspectum	April 2013	Spinout	Yes	Filed for a \$75m IPO in July 2021 but withdrew in August 2021	Medical imaging for liver disease	£48.3m
Esplorio	January 2013	Startup	Yes		Travel diary app	£643,000
Run3D	December 2012	Spinout	Yes		3D motion analysis	£480,000
Brainomix	December 2012	Startup	Yes		Medical imaging software to analyse CT scans of stroke patients	£9.7m
OxiWay	November 2012	Startup	Yes		Recruitment software to scale the hiring process and remove unconscious bias	£464,000
Onfido	October 2012	Startup	Yes		AI-based identity verification	£152m
Oxford Vacmedix	September 2012	Spinout	Yes		Cancer vaccine development	£9.5m
OxeHealth	August 2012	Spinout	Yes		Medical device to detect pulse and breathing rate remotely	£29.5m

Intelligent Ultrasound	July 2012	Spinout	Yes	Acquired by Medaphor in September 2017 for £3.6m, Medaphor changed its name to Intelligent Ultrasound Group in January 2019	Software to improve medical ultrasound imaging	£2.6m
Active Inspiration Technologies (dba Fuell)	July 2012	Startup	No	In liquidation as of March 2020	Digital health platform for employees	£2.1m
Colwiz	May 2012	Startup	Yes	Acquired by Taylor & Francis Group in May 2017	Research management, collaboration and productivity platform	£1.5m
Oxgeos	March 2012	Startup	Yes		Geo-social games, community and advertising platform	
TheySay	December 2011	Startup	Yes	Acquired by Aptean in January 2018	Deep learning platform to detect a user's sentiment	£2.3m
Oxford Cancer Biomarkers	December 2011	Spinout	Yes		Colorectal cancer biomarker tests	£11.3m
Pilio	November 2011	Startup	Yes		Energy management software	
Oxford Imaging Detectors	October 2011	Spinout	No	Dissolved in October 2018	Electronic microscopes	£250,000
Oxford MultiSpectral	September 2011	Spinout	Yes		Multispectral digital scanners	£988,000
Oxtex	July 2011	Spinout	No	Dissolved in February 2021	Self-inflating tissue expanders based on hydrogel	£6.8m
First Light Fusion	July 2011	Spinout	Yes		Fusion energy	£44.2m
Cella Energy	January 2011	Spinout	No	Dissolved in March 2016	Hydrogen storage technology	£2.7m
Oxford PV	November 2010	Spinout	Yes		Solar cell technology	£108.4m
Ixo Therapeutics	November 2010	Spinout	No	Dissolved in April 2018	Immunotherapy	£150,000
Kepler Energy	October 2010	Spinout	Yes		Tidal turbine energy production	£250,000
OxEms	June 2010	Spinout	Yes	The company filed documents as recently as July 2021, but has not updated its website since 2015 and there appears to be no discernible business activity	Electromagnetic tags for underground utility network monitoring	£2m
Oxepi	February 2010	Spinout	No	Dissolved in September 2012	Epigenetics	£431,000

Yasa	August 2009	Spinout	Yes	Acquired by Mercedes-Benz for an undisclosed amount in July 2021, concurrently spun out Evolito which will develop the technology for aerospace applications	Electric motors and generators	£49.3m
CN Bio-innovations	July 2009	Spinout	Yes		Microbioreactor technology to improve drug discovery	£19.9m
Oxford Financial Computing	March 2009	Spinout	No	Dissolved in February 2012	Algorithms for financial apps	
Organox	November 2008	Spinout	Yes		Organ recovery for transplantation	£28.4m
Maple Tree Energy	November 2008	Spinout	Yes	Now incorporated as Trust Power, doing business as Loop Energy Saver	Smart energy meter platform	£6.9m
Oxford Emergent TB Consortium	July 2008	Spinout	No	Dissolved in July 2015	Tuberculosis vaccine developer	£4m
Semmler	March 2008	Spinout	Yes	Acquired by GitHub in September 2019, now incorporated as GitHub Software UK	Software engineering analytics platform	£7.7m
Crysalin	June 2007	Spinout	Yes		Crystal structure determination	£4.5m
Oxford BioDynamics	June 2007	Spinout	Yes	Listed on Aim in December 2016, raising £20m in its IPO	Chromosome fingerprinting	£15.7m
Clinox	June 2007	Spinout	No	Dissolved in August 2013	Development, conducting and analysis of early-stage clinical trials in oncology	
Fuel 3D Technologies	February 2007	Spinout	Yes		Handheld 3D scanner	£34.1m
Alcolizer Technology UK	November 2006	Spinout	Yes		Drug testing	£2.8m
Cytox	October 2006	Spinout	Yes		Alzheimer's diagnostic	£12.9m
Oxford Advanced Surfaces	September 2006	Spinout	Yes		Advanced coatings for polymers	£4.7m
Aurox	July 2006	Spinout	Yes		Microscopy	
Particle Therapeutics	June 2006	Spinout	Yes		Needle-less injection	£1.6m
Oxford Medistress	April 2006	Spinout	Yes		Stress diagnostic	£2.2m
TDeltaS	March 2006	Spinout	Yes		Diet biochemistry	£15m

Velocys	December 2005	Spinout	Yes	Incorporated as Oxford Catalysts Group, acquired Velocys in November 2008 and listed on Aim	Catalysts for gas-to-liquid and liquid hydrogen	£1.5m
Celleron Therapeutics	November 2005	Spinout	Yes		Cancer therapeutics	£12.1m
Oxbridge Pulsar Sources	September 2005	Spinout	Yes		Secure communications	£25,000
Salunda	June 2005	Spinout	Yes		Industrial solid state sensors	£9.6m
Oxford Nanopore Technologies	May 2005	Spinout	Yes	Listed on LSE in September 2021 following £350m IPO	Lab-on-a-chip	£805m
EKB Technology	December 2004	Spinout	No	Dissolved in July 2012	Bioprocessing to produce and recover chemicals in a single step	£375,000
Surface Therapeutics	November 2004	Spinout	No	Acquired by Serentis in October 2007, Serentis was dissolved in December 2011	Treatments for inflammatory epithelial diseases	£1.5m
G-Nostics	June 2004	Spinout	No	Dissolved in May 2012	Anti-smoking diagnostics	£250,000
Avacta	June 2004	Spinout	Yes		Breath analysis	£396,000
Oxford Consultants for Social Inclusion	August 2003	Spinout	Yes		Data analytics for socio-economic research	£40,000
Riotech Pharmaceuticals	July 2003	Spinout	Yes		Hepatitis drug development	£1.3m
ReOx	May 2003	Spinout	Yes		Drugs controlling the activity of hypoxia inducible factor	£2m
Summit Therapeutics	February 2003	Spinout	Yes	Listed on Nasdaq in 2015 following \$34m IPO	Chemical genomics	£24.1m
BioAnaLab	November 2002	Spinout	No	Acquired by Millipore in January 2009, Millipore itself bought by Merck Group in 2010, before BioAnaLab was dissolved in August 2013	Biopharmaceutical testing	£1m
Oxford Risk Research and Analysis	November 2002	Spinout	Yes		Risk analysis	£470,000
Oxford Immunotec	October 2002	Spinout	Yes	Listed on Nasdaq in 2013 following \$74m IPO, sold its US laboratory services to Quest for \$170m in 2018	T cell measurement technology, including a test to diagnose latent tuberculosis infection and disease	£66.2m

Oxitec	August 2002	Spinout	Yes	Acquired by Intrexon for \$160m in August 2015	Environmentally-friendly insect pest control	£28.7m
Glycoform	August 2002	Spinout	No	Dissolved in April 2012	Glycosolation technology	£5.8m
Zyentia	May 2002	Spinout	No	Dissolved in March 2010	Modification of proteins	£2.9m
Oxford Biomaterials	March 2002	Spinout	Yes		Biomimetic spinning of fibres	£490,000
Minervation	February 2002	Spinout	Yes		Healthcare consultancy	£16,000
Pharminox	January 2002	Spinout	No	Dissolved in April 2019	Anti-cancer drugs	£6.1m
Oxford Drug Design	December 2001	Spinout	Yes		Computer-aided drug discovery	£7.5m
NaturalMotion	November 2001	Spinout	Yes	Acquired by Zynga for \$527m in February 2014	Interactive character animation	£19.3m
Oxford Archdigital	June 2001	Spinout	No	Dissolved in June 2009	Development of archaeological-based IT applications	£150,000
Novarc	April 2001	Spinout	No	Dissolved in March 2006	Automotive components	£1.5m
Oxford Ancestors	April 2001	Spinout	Yes		Genetic genealogy	
Oxford Bee Company	March 2001	Spinout	No	Dissolved in September 2008	Pollination	£335,000
OxLoc	March 2001	Spinout	No	Dissolved in March 2010	Tracking devices	£2.8m
PharmaDM	December 2000	Spinout	Unknown	Also incorporated research from University of Aberystwyth and KU Leuven, the latter now maintains and distributes PharmaDM's drug design software. There are no records for PharmaDM in Belgium's official company register.	Drug design software	£400,000
TolerRx	December 2000	Spinout	No	Dissolved in October 2011	T cell therapies for autoimmune diseases, diabetes and cancer	\$150m
Oxford Biosensors	August 2000	Spinout	No	Dissolved after entering administration in June 2009	Biosensors	£9.7m

Mirada Solutions	June 2000	Spinout	Yes	Acquired by CTI Molecular Imaging for \$22m in 2003, in turn acquired by Siemens in 2005, before Mirada CEO led a buyout in 2008 and formed Mirada Medical	Medical imaging software	£200,000 (Mirada Solutions) £10.5m (Mirada Medical)
OBS Medical	May 2000	Spinout	Yes		Vigilance monitoring systems	£26.9m
MindWeavers	April 2000	Spinout	No	Dissolved in September 2014	Sensory and motor training technology	£935,000
Sychron	January 2000	Spinout	No	Dissolved in 2005	Software to develop policy-driven data centre management solutions	
ThirdPhase	January 2000	Spinout	Yes	Merged with CMED Group in 2005 and rebranded to CMED Technology	Clinical trials management	£613,000
Omia	December 1999	Spinout	No	Merged with Oxiva in 2001 to become Mirada Solutions, acquired by CTI Molecular Imaging in 2003, in turn acquired by Siemens Medical in 2005	Image analysis for measuring heart motion	
AuC Sensing	August 1999	Spinout	No	Dissolved in November 2008	Sensor development	£15,000
Oxonica	August 1999	Spinout	Yes	Listed on Aim in July 2005, raising £7.1m in its IPO, delisted in August 2009 and re-registered as a limited company in February 2011	Nanotechnology for UV protection, security and biodiagnostics	£5.1m
Dash Technologies	June 1999	Spinout	No	Merged with Celoxica (then Embedded Solutions) in 2000, Dash became dormant in 2007 and was dissolved in May 2010	Parallel hardware and software design	£500,000
Oxxon Therapeutics	June 1999	Spinout	Dormant	Acquired by Oxford Biomedica in 2007 for £16m, dormant since 2008	Immunotherapies for chronic infectious diseases and cancer	£21m

Avidex	March 1999	Spinout	No	Acquired by Medigene for €50m in September 2006, Medigene subsequently spun out Immunocore and Adaptimmune to commercialise different aspects of Avidex in 2008. Avidex was dissolved in December 2012. Adaptimmune completed a \$175m IPO in May 2015, followed by Immunocore's \$258m IPO in February 2021.	T cell receptor technology	£33.1m
Sense Proteomics	November 1998	Spinout	No	Acquired by Oxford Gene Technology in 2009, in turn acquired by Symex in 2017	Autoantibody biomarkers for cancer and autoimmune diseases	£4.2m
Celoxica	November 1998	Spinout	Yes		Ultra-low latency data access for electronic trading	£28.2m
Promic	June 1998	Spinout	No	Acquired by Biota for £6.4m in 2009, dissolved in October 2015	Antibiotics	£21.4m
Synaptica	March 1998	Spinout	No	Dissolved in August 2021	Neurodegenerative diseases	£6m
Opsys	February 1998	Spinout	No	Acquired by Cambridge Display Technology in 2002, in turn acquired by Sumitomo Chemical in 2007, before Opsys was dissolved in August 2013	Light-emitting materials	£17.4m
Synergy Pharmaceuticals	1998	Spinout	No	Listed on Nasdaq in 2011 before being saved out of bankruptcy by Bausch Health Companies in a \$195m deal in March 2019	Treatments for gastrointestinal diseases	
Oxford Gene Technology	July 1997	Spinout	Yes	Acquired by Symex in 2017	DNA technology	
Oxagen	April 1997	Spinout	Yes		Treatments for asthma, and chronic allergic and inflammatory conditions	£98.6m

Oxford Biomedica	August 1996	Spinout	Yes	Listed on Aim in December 1996 following an £11m IPO, before listing on LSE in 2001	Gene and cell therapies for conditions with a high unmet clinical need, such as ocular and central nervous system disorders	£4.5m
PowderJect Pharmaceuticals	October 1994	Spinout	No	Listed on LSE in 1997, acquired by Chiron Pharmaceuticals for £542m in 2003, in turn acquired by Novartis in 2006 before Chiron was liquidated in June 2014	Needle-less injection	£3.7m
Oxford Asymmetry	April 1992	Spinout	Yes	Listed on LSE in 1998 before merger with Evotec in 2000 to form Evotec OAI, rebranded to Evotec (UK) in 2005	Outsourcing for pharmaceutical services	£5.5m
Oxford Molecular	August 1989	Spinout	No	Dissolved in January 2016	Chemical information management	£28.8m
Oxford GlycoSciences	September 1988	Spinout	No	Listed on LSE following a £30.8m IPO in 1998, before being acquired by Celltech for £101m in 2003, in turn acquired by UCB in 2004	Biopharmaceutical research and development services	£11.2m
Continuum (Entertainment)	October 1986	Spinout	Yes		Operation of historical sites	
Oxford Lasers	October 1977	Spinout	Yes		Laser micro-machining tools and high-speed imaging systems	£285,000
RM	November 1973	Spinout	Yes	Listed on London Stock Exchange in 1994	Educational IT services	£4.5m
Oxford Instruments	April 1958	Spinout	Yes	Listed on London Stock Exchange in 1983	Analytical and superconductivity instruments	£153,000

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# Naturebeads tackles microplastics crisis

- > Bath spinout Naturebeads hopes its biodegradable alternative to microplastics can help prevent the collapse of marine ecosystems.

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By Chris Torney  
Reporter

An innovation that could drastically reduce the volume of harmful plastic microbeads in products ranging from cosmetics to paint is helping a UK cleantech developer win plaudits and attract investment.

Naturebeads, a spinout from University of Bath, has developed a process to manufacture biodegradable microparticles from cellulose. The firm, set up in 2019, is based on technology created to address the potential environmental and health problems resulting from the proliferation of plastic microbeads – also known as microplastics – in a huge range of

consumer products and industrial processes.

Microplastics are used for a number of reasons across a variety of industrial sectors: they can act as an exfoliating agent in facewash, for example, and can also create porosity in ceramics, while paint manufacturers use microplastics to act as a binding agent.

However, the leakage of microplastics, especially into marine environments, is thought to cause serious damage to fragile ecosystems. It has been estimated that 30,000 tons of microplastics escape into the world's oceans

every year and it remains unclear exactly what the impact of microplastics in the human food chain might be.

Giovanna Laudisio, co-founder and chief executive of Naturbeads, said that although there were now bans on the use of microplastics in the manufacture of certain cosmetic products, they were still very widely used.

“People have heard of the microbeads ban in cosmetics and they think the problem is solved,” she explained. “But the bans only refer to very specific products: microbeads are still used in what are called ‘live on’ products such as facial cream, sunscreen, make-up, lipstick. They are used in paint in much bigger volumes: we are talking about building paints, road paints, ship paints. And there are a lot of other applications which consumers are just not aware of.”

Naturbeads uses technology developed at the University of Bath’s Centre for Sustainable and Circular Technologies by Laudisio’s co-founders, Janet Scott and Davide Mattia. The firm’s production process involves cellulose solution being forced through tiny holes in a membrane, creating spherical droplets that are then washed away using vegetable oil. These droplets are then collected, set into beads and separated from the oil before being used in a variety of applications.

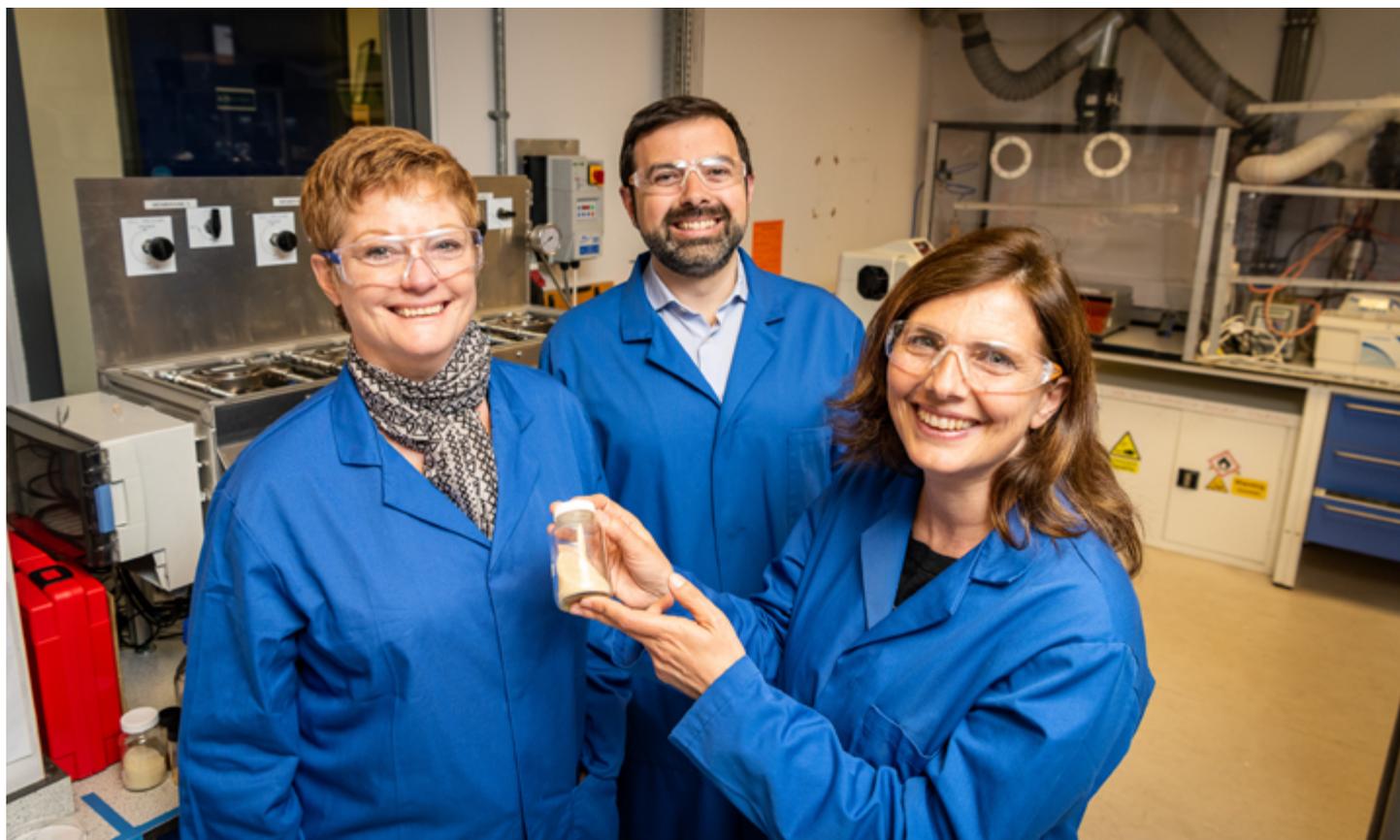
“Scott and Mattia published a paper on their innovation in 2017 and immediately started to receive a lot of interest from industry – especially cosmetics,” Laudisio explained. “There was already a ban in the United States and the UK’s own ban was coming into force in 2018.”

At this point, Laudisio was working

in technology commercialisation in Singapore, but agreed to return to Britain to help launch the company. “I told Scott and Mattia that the fact you have a technology and companies are contacting you at university is a good sign there is a market for your invention. After that, we started talking to investors and doing some market analysis.”

Initial funding for Naturbeads came from a partnership between Innovate UK and Sky Ocean Ventures (SOV), the sustainable investment arm of media company Sky, which raised almost £600,000.

SOV has since invested a further £130,000 with additional funds coming from friends and family to match another Innovate UK grant. As well as investment, Naturbeads has won a number of awards for its technology, including a Blue Tulip award in the climate



Janet Scott (left), Davide Mattia (centre), Giovanna Laudisio (right)

and energy category earlier this year and it was a finalist place in the Royal Society of Chemistry's 2021 Emerging Technologies Competition.

Naturbeads is another in the long list of UK spinouts that have been supported by SETsquared, the world-leading incubator partnership between the universities of Bath, Bristol, Cardiff, Exeter, Southampton and Surrey.

"When the company was in the embryo stage in 2018, we were part of the Sustainable Technologies Business Acceleration Hub, which is run by SETsquared," Laudisio recalled. "There was a wide range of support available for us to set up the businesses, for example to help us connect with corporates and investors – both in London and through their local networks."

A major challenge for Naturbeads when it came to fundraising, Laudisio said, was that as a hardware company with a lot of chemistry involved, the business could be more difficult for angel investors to understand.

"But SETsquared has offered us a lot of support, for example in preparing for investor meetings and making funding applications," she added. "They have access to a good network of investors who are interested in green or clean technologies."

Naturbeads was now working on a larger fundraising round to help it scale up, Laudisio said "Since we started, we receive on average one material request a week, which is a strong sign there is a need for this technology. But at the moment, we sell in small quantities: the challenge we have is that we have built a pilot plant that can produce

up to 1 tonne per year, but the customers we are speaking to want 100 tonnes, for example. So how do we move from where we are to the next stage which is 100 times bigger?"

Naturbeads is looking for £1.2m so it can work with an engineering company to see what a plant capable of producing 100 or 200 tonnes of its biodegradable beads per year would look like. The firm's success would depend to a large degree on its ability to develop a cost-effective, large-scale production process, Laudisio pointed out. "Plastic is a very inexpensive material, so if we want to replace plastics in all applications – not just premium cosmetics – we need to reduce costs."

Naturbeads biggest challenge, therefore, would be to attract funding to develop its hardware

technology, she explained. "For a company like ours, scaling up is capital intensive so it is very risky for investors. As soon as we close the current round of funding, we will look at how to raise the money we need for our plant."

One option could be to enter into some form of partnership with a chemical company: "This could mean we share some of the risk, and the partner company may already have facilities we can leverage for some parts of the process so we do not have to build everything from scratch.

"We are already receiving a lot of interest along these lines. But the challenge if we want to go into partnership is mainly related to intellectual property protection: we would have to disclose part of our know-how, and once you disclose it you lose control of it."

*SETsquared has offered us a lot of support, for example in preparing for investor meetings and making funding applications. They have access to a good network of investors who are interested in green or clean technologies.*

Giovanna Laudisio

# Orca lights up quantum technology

- > Oxford spinout Orca Computing's unique approach to the field of quantum computing underpins its potential.

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By Chris Torney  
Reporter

What sets Orca Computing apart from other quantum technology developers is its use of fibre optics and photonics to overcome one of the key challenges facing the sector – the disruption that can be caused by outside forces such as magnetic fields and thermal energy on qubits, the building blocks of quantum computing.

“What you need for a quantum computer to be really effective is an object that is super-isolated,” explained Richard Murray, Orca’s co-founder and chief executive. “It must be non-interacting with everything around it: that is the reason you often need to cool the objects down to super-low

temperatures – otherwise you put an electron in a circuit and you get bombarded with tons of thermal noise.”

Rather than using electrons, as quantum computers being developed by the likes of Google do, Orca’s machine relies on photons – particles of light. “Light is great because it does not really interact with anything: you can pass a single photon down an optical fibre and it just does not change,” Murray added. “That is the reason photons carry internet traffic: they give you this super-isolated performance. This is what you need to create and maintain quantum states and quantum

information, which is the basis of a quantum computer.”

The foundation of Orca’s approach is its quantum memory device, which allows the spinout’s technology to be based on optical fibres and telecoms equipment. This should help to overcome the hardware challenges facing many quantum computing businesses. “It means we do not have to design and manufacture really specialist components,” Murray said. “A lot of other companies rely on nanofabrication and etching of chips; our approach means we can use an off-the-shelf telecoms laser, and connect it with a bunch of optical fibres using some non-specialist components. This means the system can be built much more flexibly and with a lot less money.”

After completing his PhD in quantum technologies at University of Southampton, Murray worked for technology consultancy TTP before moving on to Innovate UK to help develop the agency’s quantum computing projects. This brought him into contact with Prof Ian Walmsley and Josh Nunn, who were working in quantum technologies and photonics at Oxford.

“The idea of applying light to quantum computing made a lot of business sense,” Murray noted, “and the technology Walmsley and Nunn were working on excited me. But a lot of the reason I decided to set up Orca with them was related to Walmsley and Nunn as people: a lot of academics do not realise the value of outsiders – non-technical people – coming into the business and running it.

“They were full-time academics, but rather than them getting in the way and inhibiting the growth of the company so they could stay involved, they were happy for me to work with them to get Orca off the ground.”

Murray claimed that a lot of academics saw spinouts as “a way to get their research funded”. He added: “Many of them think they should own a lot of the company even though they are not devoting a lot of time to it.”

Orca was set up in late 2019 with £1.5m (\$2m) in pre-seed funding from Oxford Science Enterprises, the investment company established by University of Oxford. Orca’s approach to fundraising involved quite a steep learning

curve, however, Murray admitted. “In the early days we were naïve about how we presented our business that to investors. We said, we are a great team, we have got a fantastic idea, give us some money please. Luckily, I think early-stage investors know people will be in that position and are a bit more sympathetic.”

Orca is now working on its series A round, with the aim of raising £10m. “At that point you have to grow up quite a lot. Investors will ask you for a list of milestones: the revenues you are going to generate, the customers you have contacted.”

The spinout has been talking to “anyone who will listen” about its next round, including angels, UK institutional investors and even some funds in the US. “We are too early for the really big funds, but it is good to get our name registered with them,” Murray suggested. “We are still pre-revenue, but we are building quantum computers which will have a revolutionary impact eventually when we get there – and that means investors do not treat us the same as a software company, for whom all of the challenges are related



to onboarding customers and customer retention.

“Instead, for us all the risk is on the technical side. So, we do not spend as much time as other companies focusing on how much customer traction we can demonstrate.”

Orca expects its main route to market to be through the suppliers of computing systems such as data centres, rather than by marketing directly to end users such as drug-discovery companies or banks. At the moment, however, one of its biggest challenges lies in recruitment.

“We make life a little bit difficult for ourselves as we only pick really good and capable people,” Murray pondered. “That means not just going through your PhD, but showing you worked hard and delivered some results.

“Some of the most specialist roles that we have not hired are

a combination of product people – who have brought products to market – and are not terrified by quantum and photonics. But it can be hard to find anyone in that overlap.”

The UK’s immigration rules have not helped: Murray asserted the visa process in Britain had practically ground to a halt at present. “But we grew up in covid times, and I think the world has changed: Zoom is a fact of life now, it allows you to connect to people easily. We currently have subcontractors in France and India due to visa issues, but we find it works.”

Orca has also benefited from its links to SETSquared, the enterprise partnership of the universities of Bath, Bristol, Cardiff, Exeter, Southampton and Surrey. “We collaborate a lot with different universities because there is a lot of challenging work we need done

but we do not have the bandwidth to do ourselves,” Murray revealed. “And SETSquared have been great: they have helped us streamline those interactions. What is particularly great is that they are very commercially minded: they know the journey that startups are going on in a way universities often do not.”

Murray pointed out that the most meaningful impact SETSquared had had on Orca’s development was its assistance in developing proposals for grant funding from Innovate UK.

“SETSquared got people in to read the proposals and help us write them – and even though I had worked at Innovate UK, there were several pieces of advice that really helped.” This recently resulted in Orca having a £10m-plus grant approved for a collaborative project involving 15 research institution partners.

# Verv captures energy cost opportunities

- > Launched out of University of Bath, Verv's technology analyses the energy usage of white goods and air conditioning units.

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By Chris Torney  
Reporter

Verv, the smart energy company founded by Peter Davies at University of Bath six years ago, is on the verge of international success. The spinout has developed machine learning technology to produce devices that can monitor domestic energy consumption while also detecting and predicting faults on appliances such as air conditioning units.

But its early progress – featuring pre-seed investment of around £750,000 from utility British Gas, a subsidiary of energy group Centrica, as well as involvement in internet technology producer Google's Launchpad mentoring programme – was almost derailed

by problems around its series A round.

Verv attracted more than £6.5m (\$8.9m) from backers including Centrica and the EU-supported sustainability accelerator InnoEnergy in 2019. But the involvement of another major investor in the day-to-day running of the company following the series A round did not turn out as planned, Davies explained.

"I had quite a negative experience because an investor came in and they changed the dynamic of the board," he noted. "I chose to leave the company after I completed my year's lock-in – and instead of

allowing a simplified handover they waded in and overcomplicated it on the promise they would provide further funding, which never materialised.”

With Verv struggling in his absence, Davies was persuaded to return to the company at the start of 2021 to resume control. “I removed the incumbent shareholder, reduced the size of the board, and I got a new investor in. Then I got the business back up to speed, keeping the tech team and the intellectual property with the help of Centrica and my chairman.

“After I had left, the company seemed to slow down and changed direction so it was my priority to get back into a startup

mentality, with a focus on the customer and making sure we had the product they wanted to buy.”

The current surge in energy prices around the world is creating a major business opportunity for Verv, which is based in London and manufactures in Wales. Davies added: “People are going to want to know about the bottom line: they want to know where the wastage is happening and we can point that out for them.”

With a focus on air-conditioning units and heat pumps, Verv’s biggest markets are likely to be in the United States and the Middle East. The firm is selling its devices via manufacturers and in partnership with maintenance companies and installers, although

the pandemic has affected its ability to enter new markets.

“Covid-19 has massively slowed down the ability to make easy quick sales, but on the other hand it has allowed us to get our heads down and get the tech working,” Davies elaborated.

Davies began life as an entrepreneur while studying at Bath, setting up an engineering consultancy focused on aerospace and Formula One and then an energy consultancy providing reports for businesses.

“At that time, however, consumers cared more about energy consumption than businesses so we ended up setting up a product company,” he recalled. Verv created a smart home product following investment from British Gas: this enabled household energy consumption to be broken down into individual appliances.

“We sold a lot of units in Britain but subsequently we found that this did not scale very well outside the UK,” Davies conceded. “In the Middle East, the US and various other places, the biggest energy consumer in the home is the air-conditioning unit, and that is what people really cared about.

“So, we did a bit of a pivot and put all our technology into what is called a smart isolator. That does two things: it shows any excess energy usage or wastage by the appliance. It can also do predictive maintenance, for example it can tell you if your air conditioning filter is blocked, or if your capacitor or compressor has gone.

“It uses machine learning to analyse factors like changes in harmonics and consumption patterns, and from that the device



Peter Davies

can work out what the fault is.”

SETsquared, the incubator partnership between the universities of Bath, Bristol, Cardiff, Exeter, Southampton and Surrey, had played a vital role in Verv’s success, Davies acknowledged. “I had already set my first company up into SETsquared, and they put me on their investor-readiness course with Verv.

“The programme just helped us set things up to make it a super simple investment for anyone who wanted to come on board.”

Startups often fall into the trap of not thinking about their business from an investor’s point of view, Davies declared. “You do not want to overwhelm them with technology. I used to spend way too long in my presentations talking to investors about tech and now it is about half a slide. Ultimately, they just want to know what you can do, are you selling it and what is your business model.”

He continued: “SETsquared have been amazing since the day I left university. Public relations-wise, they are brilliant – they are always including us in the right events. Anything that is happening in London, they always bang on our door. We would never be anywhere near where we are without them.”

Davies’ initial involvement with the organisation was as an undergraduate: “I told one of my lecturers I wanted to start an engineering consultancy business and he put me in touch.

“It massively helps that SETsquared have been separate from the university because that has allowed them to grow. And they have some brilliant people at the top, which is always helpful.”

Davies noted that while some academics took a back seat once a spinout had been formed, he had always been keen to drive the business forward while also

taking a hands-on approach to technology development.

“If you look at some of the best entrepreneurs – the likes of Elon Musk or Bill Gates – they are engineers that ended up taking on the business side. I think if you understand everything that is going on – the finances, the technology and the operations – you can run things a bit better.”

The plan now was to have a fresh series A round and then achieve an exit for Verv, Davies said. “It is all about proving traction and proving we can take the step to the next stage.”

# On the importance of diversity and entrepreneurship

- > Brown Rudnick's Sarah Melaney discusses the female founder journey with Sierra Medical's Liberty Foreman.

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By Sarah Melaney  
Partner, Brown Rudnick

Over the past 50 years, women have transformed their lives and goals through higher education and employment, in some cases accessing those sought-after seats in the board room. However, a large gender gap still exists which is particularly prevalent amongst entrepreneurs. For example, in the UK, for every three female entrepreneurs, there are five male counterparts. In response to this, Brown Rudnick has established a new transatlantic initiative with the aim of helping female entrepreneurs to achieve their goals by helping to bridge the funding gap between male and female entrepreneurs.

Watch this space.

An entrepreneur's journey is never simple and as a corporate lawyer I have an insight into some of the roadblocks that many entrepreneurs face, particularly women entrepreneurs who typically find it harder to secure funding. We had to think creatively about what we could do to help level the playing field for women entrepreneurs and came up with this initiative.

I was introduced to Liberty Foreman, chief executive of Sierra Medical, by an investor over the summer of this year and we soon became firm friends. Foreman is

a great example of an entrepreneur with grit who is fighting to take her company to the next level. For anyone starting out, some of Liberty Foreman's responses below will hopefully help you on this amazing journey that you are about to begin.

**Please provide a short overview of Sierra Medical and your current fundraising requirements.**

Sierra Medical (SM) is a patent-protected healthcare artificial intelligence (AI) software company tackling early-stage cancer diagnostics. By combining infrared light, satellite imaging processing techniques, proprietary data libraries and AI, SM is developing a platform technology that can detect subtle biochemical changes indicative of cancer. The technology can be applied to any type of sample and any type of disease without causing any damage.

**What is your background?**

I have a BSc in molecular genetics and a PhD in analytical biochemistry. Cancer affects the lives of so many people, so it became a focus of my research.

**What made you take the leap to start your own company? Did the university assist with your initial set up?**

I was always very entrepreneurial, so for me it felt like a natural progression. I wanted to make sure that the research and development that I had achieved during my PhD did not just sit on a shelf in a library but was used in the real world to help people, so I decided to try and spin out the technology.

**What are the hurdles you have had to overcome?**

I think it would be more appropriate to answer what hurdles have I not had to overcome. They include choosing and managing talent, through to corporate structure and corporate governance and everything in between. There are so many elements to getting beyond the idea stage so it's important to have trusted advisers around you.

**What are the three biggest lessons that you have learnt along the way?**

- Believe in your gut instinct, if something does not feel right then it almost definitely is not.
- Listen, but not too hard – everyone has an opinion so try to wait for consistency amongst many before making too many changes to any deck or strategy.



Liberty Foreman

- Embrace your mistakes, you learn more and faster by making mistakes, they are what build you and your company.

**If you had to give a piece of advice to anyone thinking about starting their own company – what would it be?**

The initial cheque or funds that you receive are not going to be the thing that makes or breaks the company, it is who gets involved and at what price that is important. Taking money or founding the company with the wrong individuals or funds will cripple your business and it might take you years to realise it.

**What are your goals for this year and the long term?**

We plan to raise £3m (\$4.1m) by the end of the year. Our longer-term vision is to have a portfolio of diagnostics tests tackling deadly cancers using simple samples like a cheek swab, saliva, urine or blood.

**What is your biggest achievement to date?**

Although Forbes 30 under 30 and Aviva's Woman of the Future should probably be there, I still think it is getting a PhD and inventing our platform technology, because if you knew me as a child you would not have thought that I would have been capable of achieving this.

If you need any advice, please do reach out to Brown Rudnick at <https://brownrudnick.com/contact-us/>

# New challenges and bigger opportunities

- > SETsquared has grown in scale, scope and ambition after welcoming Cardiff University to its membership.

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By Simon Bond  
Executive director, SETsquared

The themes of this year's GCV Symposium – sustainability and impact investing – capture the “let's build back better” attitude that I have seen emerging across our ecosystem as we start to re-imagine what our future could and should be like.

GCV Symposium's choice of themes has an uncanny knack for setting the agenda for the future – May 2019's theme was “navigating through the turbulence”. How prophetic and what a timely call for preparedness. This year's choices of sustainability and impact investing are similarly agenda-setting and I am certain they will

define our next decade and more.

SETsquared has “navigated the turbulence” of the last couple of years and is back, both bigger and better. In truth, SETsquared has always been growing – today's ecosystem of spinout, startup and scale-up ventures is tenfold the original scale envisaged when we were founded in 2002. However, with Cardiff University joining in September 2021, SETsquared is now an enterprise partnership of six research-intensive universities, and this really increases our scale.

Cardiff's new incubation space – Cardiff Innovations@sbarc – which opens this winter will add

significantly to our established network of innovation centres in Bath, Bristol, Exeter, Southampton and Surrey. Meanwhile the university partners continue to develop new facilities that attract high-growth companies by embedding SETsquared into their innovation and applied research initiatives. Two recent examples are the Surrey Heartlands Health Tech Accelerator of which University of Surrey is a core partner and the University of Bath-led Innovation Centre for Applied Sustainable Technologies, both of which offer the companies they work with access to SETsquared.

Cardiff increases SETsquared's scope too. SETsquared member companies have always made an important contribution to the economic development of our region. As a partnership of six universities, SETsquared will now develop across a bigger geography which includes the south of Wales as well as England, and undoubtedly our scope of activities will develop as a result.

### Backing sustainable tech ventures

The ambition of SETsquared has increased as well. The COP26 Summit focusses the world's attention on the action required to meet the goals of the Paris Agreement and achieve net zero by 2050. It is a challenge that touches everyone and every organisation in the world. As a result, SETsquared is doubling-down on our support of the innovation-led

companies that we all need to be successful in order to achieve these targets.

- We are increasing the number of new university spinouts and licensing opportunities with a new fast-track Innovation to Commercialisation of University Research (ICURe) programme which is exclusively for energy and environmental research.
- We are opening up new investment opportunities for our startups with the new Climatetech: Innovation & Investment Roundtable – an initiative that includes the participation of leading venture investment organisations such as Mitsubishi Venture Office and Zero Carbon Capital.
- We have launched a new campaign to Scale-Up Sustainable Technologies venture's Research, Development, and Innovation projects with our universities.

SETsquared has grown in scale, scope and ambition. As a result, we are now more ready than ever to step up to the most pressing challenges of our age and unlock investment for our ventures to deliver even more innovation, impact and growth. SETsquared continues to be very much "open for business" and we welcome ventures, entrepreneurs, and investors to our programmes and our ecosystem.

To find out more about any of the initiatives mentioned in this article, visit: [SETsquared.co.uk](https://SETsquared.co.uk).



The above illustration shows a cross section of Cardiff's new Innovation Centre, sbarc | spark, which is due to be operational in 2021

# The \$1bn commercialisation portfolio

- > Deakin University has emerged as a new leader in Australia and New Zealand, posing the question as to whether a university can build a \$1bn portfolio.

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By Ken Mahon  
Partner, Victorian universities, Campus Plus

Recently Knowledge Commercialisation Australia (KCA) released its annual Survey of Commercial Outcomes from Public Research (SCOPR). With a reported doubling of commercialisation revenue in the two years from 2018 to 2020, it is the first time the report has delved into the commercialisation activities of the survey participants. And it has revealed some interesting and encouraging results, particularly in its final chart on “Equity held in Startup and Spinout Companies 2018-2020”.

Based on the KCA survey, Deakin University has the highest equity portfolio valuation for startups

and spinouts of any Australian and New Zealand public research organisation, even exceeding the CSIRO’s reported holdings, which I am assuming are treated separately to any interest from the Main Sequence Ventures portfolio.

Deakin has achieved this with a small team compared to some other institutions but consistent with a venture capital firm operating a similar sized portfolio. And while the reported commercialisation returns of less than \$1m for 2020 is low, the portfolio size and spread does provide the university with options to realise future commercialisation returns.

Or in summary: Deakin's reported outcomes for 2020 are that it has a staff of four full-time equivalents, managing 13 active spinouts or startups, with a portfolio value of about \$165m, delivering commercialisation revenue of less than \$500,000, from research revenue of about \$85m and about \$200m in research expenditure resulting in 30 invention disclosures.

If Deakin can achieve a portfolio of this scale given its size and relatively shorter commercialisation experience, what potential is there to see Australian universities achieve research commercialisation portfolio valuations of more than \$1bn?

Why should that be a goal? What frameworks and support need to be in place to make that happen? Is it possible given the impact of the pandemic on the university?

A research commercialisation portfolio with a strong equity basis provides a university with more options to realise a return beyond a traditional licensing revenue approach. Those options include returns from sale of equity, access to dividends, and of course research income streams. Notably the Deakin result does report low commercialisation returns at this stage, but what impact could there be from the Li-S Energy (ASX:LIS) listing and other opportunities approaches with diversified and evolving portfolios over time.

How valuable to a university would a commercialisation portfolio be if it can deliver an annualised income stream in the order of 5% to 10%? Especially if that portfolio could then grow 25% to 50% per annum through existing and new value, or as even reported in the KCA

survey, double in two years. For a portfolio of \$100m then that is \$5m to \$10m a year, and you can do the simple maths to see what a larger portfolio might realise. Then add in a reasonable exit into the mix.

Some universities will be comfortable with their current approach – look to the reported performance of Auckland and University of Queensland (UQ) as examples. Others will be looking for new ways to increase and diversify revenue streams. A venture-based approach to building a commercialisation portfolio can certainly play a role. UniQuest, the tech transfer arm of UQ, is a leading Australian such example of where a portfolio approach is in play with strong licensing returns from human papillomavirus vaccine Gardasil and more – but it looks like they just lost the equity crown to Deakin.

Getting to the point where there is a portfolio with options to deliver those returns, and maintaining that portfolio does require some practical frameworks, effort, support and patience.

Starting with the end in mind, post translation the focus for university commercialisation shifts to managing obligations as an equity or rights holder, ongoing research engagement, and of course maintaining the intellectual property (IP) portfolio as well.

Most universities will generally be a passive player once a commercialisation has completed translation and will be able to manage this within their current frameworks. A more active participation post-translation will require a university to be more proactive in its management

approach.

But having commercialisation outcomes that have been translated and managed in a portfolio is the easy part.

Now the difficult part. Translation of research is high risk and challenging – commercialisation of university research is hard.

In Australia it is well a recognised challenge. At the federal government level there is the in-progress review into University Research Commercialisation by the Department of Education Skills and Employment (DESE), and the ongoing reference to its importance by the current and previous ministers.

DESE have just released an updated consultation on Higher Education Research Commercialisation IP Framework and the discussion paper proposes a standard form IP framework. I think it might be missing the point.

In his opinion piece in the Australian Financial Review of September 26, 2021, John Howard highlighted the need for greater collaboration between universities, industry and government and highlighting the growth in research income. The same point applies to commercialisation and collaboration.

From a personal perspective the challenge of commercialisation is less about the IP, sorry, and more about people and the attitude of organisations towards commercialisation and finding effective pathways to realise value from research.

It is what makes it so hard.

In my opinion this, the cultural willingness to commercialise is the

greatest challenge to successful commercialisation and must be a key factor in any framework period and necessary for building a valuable portfolio. It is also in part reflective of the IP licensing “rope-a-dope” that can suck too much oxygen from the experience for all stakeholders and where I think the current DESE consultation misses.

Firstly, the motivation, experience and skill of researchers, professional staff and executives (individually and collectively) in a university need to be aligned in understanding what is valuable in IP and how it is realised. Secondly, recognising there are a range of commercialisation approaches to enable and realise value from the IP and most returns are often not recognised across the entire value chain until some point in the future.

But the key challenge remains culture and how that shapes approaches to commercialisation – both by universities and any external parties involved.

As an idle study check your favourite university’s current strategy to see how often commercialisation and translation feature. What does that say about attitude to commercialisation – add-on, nice to have, or integrated in strategy?

In building a commercialisation culture most approaches look to developing an entrepreneurial culture for researchers as a central theme. That is important, but one part of a more complex story where commercialisation of research is involved and adopting commercialisation approaches beyond licensing.

In my thinking on commercialisation portfolios my perspective is often dominated

*In building a commercialisation culture most approaches look to developing an entrepreneurial culture for researchers as a central theme. That is important, but one part of a more complex story where commercialisation of research is involved and adopting commercialisation approaches beyond licensing.*

Ken Mahon

by a venture-based approach to commercialisation. I do recognise licensing and research in and of themselves are valid and can be a right approach for the right situation – I just think there is more in the venture approach. Venture based approaches encompass university-led startups, researcher spinouts, joint ventures, for purpose vehicles and others often require the university to have skin in the game. Venture-based approaches incorporate licensing and research aspects and have the potential to deliver the greatest returns overall, but not without risk.

Further building a commercialisation portfolio extends beyond traditional university research and broader university operations and integrates corporate venturing, innovation management and venture investment thinking with business and research skills – and a degree of courage.

Adopting a venture-based commercialisation portfolio approach is not exclusively an investment fund management approach either because the portfolio incorporates for profit and

for purpose engagements across venture, licensing and research elements to deliver impact and realise value.

But a healthy dose of the investment management discipline does not hurt. Especially regarding investment strategy, governance and management decision making, often readily or normally resident in a university where research commercialisation is involved.

While there is certainly expert support and investment available, as noted previously often the greatest challenge in translation and commercialisation rests with a university and its capacity to facilitate and support the initial commercialisation effort itself.

In keeping with the people theme, access to talent that can translate research is essential – whether they are researchers, professional staff or key partners. Preferably all three.

The pandemic and its impact on university income has placed more pressure on university management. Can they afford to invest in commercialisation, can they afford not to, and with

reference to the KCA report have they even got the right balance?

But the pandemic has also increased the profile of some of our researchers and universities. It has accelerated broader strategic and global shifts and an increasing interest in “sovereign” solutions and capability.

We are now seeing the emergence of translation focused investment and management models which look to bring execution expertise and support in addition to investment. The amount of dry powder, increased interest in

impact investment, emergence of “venture science”, “venture studios” and the range of new initiatives at state and federal government levels suggests funding is available for the right opportunities.

Of course, the management and distribution of any returns, maintaining the portfolio and managing poor performers can be difficult, hence a portfolio approach. But building an equity portfolio with options to realise future returns could provide additional income to a university – and seed other opportunities as well.

UQ has long been a leader. The emergence of Deakin is a new indicator.

So, given the current environment and challenges confronting universities is it possible to build a \$1bn commercialisation portfolio?

With courage and culture – more so now than ever.

– This article was first published on LinkedIn. It has been edited for style and republished with permission. You can find Ken Mahon [on LinkedIn](#) and learn more about Campus Plus [here](#).



# From entrepreneurs to studios to agents

- > Corporations in the first nine months of the year have been involved in more deals by value than the entirety of 2020, according to GCV Analytics.

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By James Mawson  
Editor-in-chief

More than a decade ago, venture capitalists Marc Andreessen and Ben Horowitz looked at talent agency Creative Artists Agency (CAA) for inspiration in how to support entrepreneurs and run their then-new firm.

Michael Ovitz, CAA's co-founder, served on Andreessen and Horowitz's prior startup, Opsware's, board from 2000 until Hewlett-Packard's \$1.6bn acquisition in 2007 and shared his secrets with the two partners, Horowitz told the Wall Street Journal back in 2011.

Behind the scenes, however, they were also looking closely at

corporate venture capital firms, such as Intel Capital, for insights in how to add strategic value to entrepreneurs and also connect them to their nascent portfolio companies, insiders said.

The model has worked for all parties able to add value to entrepreneurs and win deals in an increasingly competitive landscape for scalable businesses. The third-quarter results have seen record activity in the venture industry, with hedge funds alone investing about \$153bn in 770 deals so far this year, which was about 4% of deal volume but about 27% by value, according to Kristin Kramer at investment bank Goldman Sachs

in its podcast, Why Hedge Funds Are Turning to the Private Markets.

Corporations in the first nine months of the year have been involved in more deals by value than the entirety of 2020, according to GCV Analytics.

The ability of investors to identify areas of interest and pull together a working group of entrepreneurs and people to test out a thesis through accelerators or venture studios has grown in efficiency.

As James Currier told Azeem Azhar on the Exponential View podcast published by Harvard Business Review: “We can look to the movie industry as a historical example of what will happen.

“When we first had movie technology in the 1920s, you had entrepreneurs doing it. And then you got these studios, which had the knowledge about how to make movies – the technology, the audio, the distribution of the movie houses. And the studio model dominated until the 1960s, when enough people had been on enough great movies.

“So all the people who worked on Casablanca, all the people who worked on Gone with The Wind – they had seen what it looks like when you make a great movie, when you had enough of this operational expertise out there. Then you move to a world where the agents ran Hollywood because they could pull together a group of 12 and they could pretty reliably make a great movie.

“And we are getting to that point in tech, on business SaaS [software-as-a-service]. And these network effect businesses are still not well understood, but they hopefully will be in the next 15 or 20 years.

*The advantage of having multiple clear and defined stage gates in an iterative process is that the team can be objective about success and failure.*

Pat Riley

And we will move to more of an agent model where you can bring together a group of 12 people and they can attack a problem like this and solve a problem that is a little more intractable, like competing with Uber.”

As Pat Riley from Global Accelerator Network highlights in his blog about its White Paper, The Rise of Startup Studios: “While the specific stage gates and cost per gate may differ from studio to studio, almost all studios have some form of go/no-go process.

“And, the order of the stage gates may shift from project to project. For example, if a project starts because a customer approaches the studio intending to solve a problem, it reduces risk faster.

“The advantage of having multiple clear and defined stage gates in an iterative process is that the team can be objective about success and failure.”

The model is highly effective in the right hands, whether by groups, such as Mach49, that can enable inside-out innovation or intrapreneurship or university-

affiliated providers, such SETSquared, Cambridge Innovation Capital and Oxford Science Enterprises, that can support entrepreneurs and link them to investors and corporations.

The funding, however, has been usually provided as equity but the value of a business has been particularly driven by network effects, that is how customers or suppliers or other actors (all called nodes) work together.

Value derived from these network-driven businesses then usually accretes to the shareholders and employees. But the rapid growth in non-fungible tokens (NFTs) and the blockchain open up ways to support the wider set of nodes that make a business works, Currier and Azhar noted in their podcast.

Some of the most interesting discussions at the GCVI Summit in September centred on how corporate venturers are receiving NFTs alongside equity in startups in return for specific help with network effects.



Source: Global Accelerator Network

But the two can also work independently.

If a CVC sees 1,000 or more potential investments but backs 1% of them the work involved remains intense. Value captured from the non-invested startups has been usually limited often to insights and potential introductions to other development officers for partnerships or purchases.

With tokens there could be ways to further take advantage but most finance officers are struggling to value or recognise this and the question of where to allocate time and support to which projects remains crucial.

Investing, therefore, will likely remain the tip of the innovation spear for identifying opportunities to back even in a decentralised world and especially if you can find the platforms that will enable the metaverse or multi-chain future, such as Rangers Protocol or DeSo Foundation.



**Global University Venturing**

*Awards*

**2021**



# Deal of the Year

> Exscientia, \$225m series D (University of Dundee)

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By Chris Torney  
Reporter

The \$225m series D round for University of Dundee's drug discovery spinout Exscientia is the Global University Venturing Deal of the Year Award winner for 2021. The round, which was led by SoftBank Vision Fund 2, an investment vehicle for telecoms conglomerate SoftBank, also featured pharmaceutical firms Novo and Bristol Myers Squibb as well as funds run by BlackRock, GT Healthcare Capital and the Abu Dhabi state-owned Mubadala Investment Company, among other organisations.

Exscientia was spun out in 2012 and lays claim to being the first company to use artificial

intelligence in drug design: the firm's artificial intelligence (AI)-based platform manages the whole drug-discovery process, from target identification through design and patient selection.

In January 2020, Exscientia announced what it described as a "huge milestone" in AI drug discovery when it began a phase 1 clinical study in Japan of DSP-1181 – an AI-designed treatment for obsessive-compulsive disorder, developed in partnership with pharmaceutical firm Sumitomo Dainippon Pharma. Exscientia CEO Andrew Hopkins said: "This was a huge milestone for not only us, but for the industry, as the first time

a drug designed using AI has entered into testing on humans.”

Speaking as the series D round was announced in April, Hopkins added: “All of our investors share Exscientia’s vision to discover better drugs, faster, through AI and automation. Our patient-first AI platform has repeatedly demonstrated its ability to precision design drugs that address patients’ needs.

“With the series D completed, the quality and depth of our shareholder base allows us the freedom to continue to scale both our platform and pipeline.”

The D round followed rapidly on the heels of a \$100m series C raise in March. And the excitement that the company has created among investors has been further evidenced by the news that the firm had filed for an initial public offering in the US on the Nasdaq Global Select Market in September. The IPO, which was completed at the start of October, raised more than \$350m.

Exscientia has also benefited from a commitment from the Bill and Melinda Gates Foundation to raise \$35m in a concurrent private placement. The collaboration with the philanthropic organisation will run initially for four years and is expected to focus Exscientia’s expertise on developing drugs to tackle coronavirus agents and improve the world’s preparedness for future pandemics.

“We need to fight today’s pandemic but also ensure we are prepared with new drugs to combat viruses with future pandemic potential,” said Hopkins. “We are honoured to work alongside the Bill and Melinda Gates Foundation to advance this mission by ensuring accessibility and affordability of these therapeutics globally.”

Other nominees in this category were:

- Form Energy, \$240m series D (MIT)
- Graphcore, \$222m series E (University of Bristol)
- Centessa Pharmaceuticals (University of Cambridge, University of Toronto Mississauga, University of Cologne, University of Dortmund)
- Paige, \$100m series C (Memorial Sloan Kettering Cancer Center)

# Exit of the Year

> [Sana Biotechnology, \\$588m IPO \(Harvard University\)](#)

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By Chris Torney  
Reporter

Sana Biotechnology's spectacular initial public offering has earned it the Global University Venturing Exit of the Year Award for 2021. The firm, a specialist in developing medicines based on stem cells, uses technology licensed from Harvard University and in its IPO on the Nasdaq Global Select Market in February raised almost \$588m – nearly four times as much as Sana's original \$150m target.

An opening-day surge in the share price gave the company a market capitalisation of almost \$6.5bn, making it the largest IPO for a preclinical biotech company on record.

Sana was set up in early 2019 with funding from Fidelity's F-Prime Capital, Arch Venture Partners and Flagship Pioneering. In March that year, the company licensed technology from Harvard University's Office of Technology Development (OTD) that is helping it use hypoimmunogenic stem cells to engineer novel therapies which are less likely to be rejected by patients' immune systems.

At the same time, Sana also agreed a non-exclusive deal with OTD for technology that assists with ex vivo genome editing. The firm's co-founders include Chad Cowan, a former associate professor in Harvard University's Department

of Stem Cell and Regenerative Biology, and Richard Mulligan, emeritus Mallinckrodt professor of genetics at Harvard Medical School.

Sana's chief executive, Steve Harr, was previously chief financial officer for biotech firm Juno Therapeutics until its \$9bn acquisition by Bristol Myers Squibb subsidiary Celgene in early 2018.

Sana disclosed its first fundraising round in June 2020 with more than \$700m from a group of backers which included GV, the corporate venturing arm of Alphabet, Canada Pension Plan Investment Board, Baillie Gifford and Alaska Permanent Fund. Launch investors F-Prime Capital, Arch Venture Partners and Flagship Pioneering also took part.

In the week before its IPO, Sana set its price range at between \$20 and \$23 per share, with plans to issue 15 million shares. Heightened demand ultimately saw the spinout issue 23.5 million shares priced above the original range at \$25: by the end of the first trading session, however, shares had soared 40% to \$35.10.

Sana plans to use \$190m of the proceeds from the IPO to invest in the continued development of its in vivo cell engineering platform and related candidates.

Meanwhile, another \$190m tranche has been earmarked for the company's ex vivo cell engineering platform. A further \$80m is being used to boost its manufacturing capabilities, and \$40m has been allocated to research and development activities.

In July, Sana announced it would commence work on a 163,000 square foot production facility in California, to manufacture the company's late-stage clinical development and early commercial product candidates.

Other nominees in this category were:

- Base Genomics, University of Oxford (\$410m acquisition by Exact Sciences)
- Farapulse, University of Iowa (\$295m acquisition by Boston Scientific)
- Oatly, Lund University (\$1.43bn IPO)
- Evolv, Duke University (reverse merger at \$1.25bn valuation)

# Fundraising of the Year

## > University Bridge Fund II, Atlantic Bridge

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By Chris Torney  
Reporter

Atlantic Bridge's first University Bridge Fund has played a vital role in helping Ireland's most promising innovators on their path to global success – an achievement that the second fund, launched earlier this year, looks set to build upon.

Focusing on deep tech, the €80m (\$93.7m) University Bridge Fund II will continue the work done by its predecessor in applying Atlantic Bridge's effective approach to startups and spinouts in Ireland. "The Bridge model involves very high-touch, deep operational expertise being applied to the companies we invest in," explained Helen McBreen, a partner at Atlantic Bridge. "We will also

connect those companies with our global investment teams located in London, California, Paris and Munich, and also with our partner fund in Beijing."

She added: "At Atlantic Bridge, we are committed to developing deep relationships and networks between our universities and investment and corporate partners creating a vital investment fund in the Irish ecosystem focused on commercialising our cutting edge deep-tech innovations."

For the second fund, University College Cork joined existing Fund I partners Trinity College Dublin and University College Dublin. "Cork

is very participatory in all their commercialisation efforts,” McBreen said. “What we are trying to do is work together to have a stronger impact on the culture of entrepreneurship within universities, and what attracted Cork into this fund is the unique model we have created so we can raise the bar and increase the quality of spinouts here.”

As well as those three academic institutions, Fund II has received capital commitments from the EU-owned European Investment Fund, state development agency Enterprise Ireland and financial services group Allied Irish Banks.

McBreen explained the fund would invest heavily in the semiconductor space given the team’s previous activities in this area. Specifically, she noted, this would cover the likes of artificial intelligence (AI) platforms for data centres, robotics, as well as “any kind of sensors that see hear and speak, and conversation technologies as well”.

Underpinning the fund’s approach is Atlantic’s success at syndicate building. “Deep technology companies have very large capital pathways to get to value inflection milestones – particularly in the medical field,” McBreen pointed out. “We have partnered now with well over 30 international investors across our portfolio companies. That is really beneficial because it means when companies are going through their series As, they have a larger network of VCs to potentially approach.”

Since its launch in 2016, the first fund has invested in more than 30 companies to raise over €250m in equity and non-equity routes, McBreen underlined. Among its portfolio are Ireland’s first quantum computing developer, Equal1, and beekeeping-technology company ApisProtect.

She added that the innovation ecosystem in Ireland had many elements that contributed to the funds’ success: “In our universities we have amazing infrastructure and support for innovators and innovative companies; we have great accelerators, funders and policymakers – a huge range of factors that are helping the development of early-stage companies.

“What we are trying to do is build really strong, global companies here – and to use the Atlantic Bridge model as a conduit to their success.”

Other nominees in this category were:

- Main Sequence Ventures
- V-Bio Ventures
- Keio Innovation Initiative
- The Engine

# Investment Unit of the Year

## > Cambridge Innovation Capital

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By Chris Torney  
Reporter

Cambridge Innovation Capital (CIC)'s appetite for dealmaking has remained undimmed during the pandemic, with a slew of new investments in recent months highlighting the patient capital fund's ongoing commitment to supporting world-leading life-sciences and deeptech businesses.

With more than £300m (\$410m) under management, CIC's relationship with University of Cambridge and its technology transfer office, Cambridge Enterprise, has seen it invest in more than 30 companies since it was founded in 2013.

Over the past 12 months, CIC

also participated in a £15m raise for the life sciences accelerator Start Codon in collaboration with pharmaceutical firm Novartis, while the CIC-backed incubator Deeptech Labs (DTL) unveiled its first cohort of five investee companies in June this year.

DTL runs a three-month programme designed to grow startups from the seed to series A stage, and the participants have each received an initial investment of £350,000. The unit is also backed by chipmaker Arm and Martlet, the investment offshoot of aerospace manufacturer Marshall of Cambridge.

Speaking at the time the inaugural cohort was brought into DTL, Andrew Williamson, managing partner at Cambridge Innovation Capital, said: “Cambridge is one of the best places in the world to build a deeptech business, with access to best-in-class talents, exceptional intellectual property, and experienced entrepreneurs and investors.”

The businesses currently being supported by DTL include Circuit Mind, which develops technology that helps engineers design reliable circuit boards in hours, taking advantage of artificial intelligence and high-performance computing, and Contilio, which has created a 3D artificial intelligence analytics platform for the construction industry. Williamson added: “This is a very high-quality first cohort and we look forward to working with them in the future and supporting their growth.”

In the summer, CIC also backed a successful series D round for CMR Surgical, a robotics technology developer, raising \$600m and valuing the company at \$3bn. The round was co-led by telecoms group SoftBank’s Vision Fund 2 and healthcare investment group Ally Bridge, and also featured internet company Tencent and GE Healthcare, a subsidiary of conglomerate General Electric.

CMR has developed the Versius surgical robotics system, which has been designed to broaden the scope of keyhole surgery procedures so they can be applied to a wider range of patients.

Perhaps the most significant exit in 2021 for CIC was the \$390m acquisition of Inivata, a developer of precision cancer diagnostics technology spun out of University of Cambridge and Cancer Research UK, by cancer diagnostics service provider NeoGenomics in May.

CIC had been involved with Inivata since participating in its \$6m seed round in 2014. Robert Tansley, partner at Cambridge Innovation Capital, said: “CIC has backed Inivata since its seed round and participated in every round since, validating CIC’s differentiated strategy of gaining early access to the most innovative life sciences and technology companies in the Cambridge ecosystem and partnering with them through their lifecycles. This acquisition will accelerate patients’ access to their technology.”

Other nominees in this category were:

- UTokyo Innovation Platform
- The Engine
- Osage University Partners
- Uniseed

# Technology of the Year

> DnaNudge, Imperial College London

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By Chris Torney  
Reporter

DNA analysis that can help obese people and diabetes sufferers choose the right food to eat is the innovation that underpins the success of Imperial College London spinout DnaNudge, winner of the Global University Venturing Technology of the Year Award in 2021.

The firm's DNA testing products can also aid those suffering from hypertension and high cholesterol, while its rapid covid-19 test kits – branded as CovidNudge – saw DnaNudge awarded a £161m (\$220m) UK health service contract in August 2020.

This success resulted in a \$60m

series A funding round in August this year. The raise was led by investment firm Ventura Capital with involvement from private banking group Julius Baer, and DnaNudge now plans to use the capital to market CovidNudge and its other testing innovations internationally.

At the time of the round, Regius Prof Chris Toumazou, co-founder and CEO of DnaNudge, said: “The game-changing nature of our innovation has created an extraordinary commercial opportunity within next-generation medical diagnostics, and the global investor community is very excited by the transformative potential of a

rapid, gold-standard RT-PCR testing platform that can screen for multiple viruses simultaneously.”

He added: “We are delighted to have completed this successful fundraiser which will allow us to dramatically speed our plans for worldwide availability, particularly in the US, Japan, Europe and other key territories where interest is extremely high.”

CovidNudge has been used by prominent private-sector organisations in the UK to check for coronavirus infections among their staff – most notably in the performing arts sector. High-profile clients have included the Royal Opera House and London Symphony Orchestra, as well as Glyndebourne opera house.

DnaNudge's core product, the DnaNudge Nutrition service, analyses customers' DNA along with certain lifestyle factors to encourage healthier or more appropriate food choices when shopping. The company plans to extend this technology to cover purchases of skincare products.

In the summer, DnaNudge won the Royal Academy of Engineering's prestigious MacRobert Award for engineering innovation, in recognition of its foundation testing platform. This platform is capable of testing simultaneously for all known Sars-CoV-2 variants, influenza A, influenza B and respiratory syncytial virus, as well as markers that can indicate genetic risk for a range of health conditions. This can all be done using the same test cartridge, from sample direct to result.

On receiving the award, Prof Toumazou said: “We are absolutely delighted to be named the winner of the 2021 MacRobert Award, joining the ranks of some of the UK's most innovative and world-changing engineers. The past year has been challenging for all, but the determination and commitment of the entire DnaNudge team to get behind our health service and deliver a truly life-saving solution has been incredible.

“We look forward to expanding the capabilities of our transformative genetic testing platform to address other major global health challenges, including in the area of oncology and sexually transmitted diseases. This is just the beginning of our technology's capabilities.”

Other nominees in this category were:

- Nuvectis, Institute of Cancer Research
- Stablix Therapeutics, Columbia University
- Atalanta Therapeutics, University of Massachusetts
- Ensoma, University of Washington and Fred Hutchinson Cancer Research Center

# CVC Investment in a Spinout of the Year

> PsiQuantum, \$450m series D (Microsoft's M12)

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By Chris Torney  
Reporter

Right now, quantum computing is perhaps the single most exciting development in the world of technology – so it is appropriate that the Global University Venturing 2021 Award for CVC Investment in a Spinout should go to M12 for its involvement in the \$450m series D round for PsiQuantum, a US-based developer of quantum computing technology.

M12 is the corporate venture capital arm of software provider Microsoft and its first involvement with PsiQuantum came in April 2020, when it joined BlackRock, Playground Global, Atomico, Founders Fund and Redpoint

Ventures in a \$215m series C round. The series D, which took place in July this year, was again led by BlackRock and involved Baillie Gifford, Blackbird Ventures and Temasek, the Singaporean government's investment firm.

PsiQuantum – whose mission statement is “building the first useful quantum computer” – was founded in 2016 by Jeremy O'Brien, Terry Rudolph, Pete Shadbolt and Mark Thompson, a team of academics from the UK and Australia who had been researching quantum computing and developing photonic quantum processors at Imperial College London and University of Bristol.

The firm's series D round reportedly valued it at \$3.15bn, which means that PsiQuantum is the first unicorn in the portfolio of Imec.xpand, the venture capital fund set up by research institute Imec. Imec.xpand is thought to have been involved in an early round of funding for the company worth \$230m at the end of 2019.

At a very basic level, the aim of quantum computing is to solve highly complex calculations that are effectively beyond the capabilities of conventional computer. Speaking at the time of M12's initial investment into PsiQuantum in 2020, managing director Samir Kumar said: "A quantum computer has the potential to unlock commercial value in scenarios where current compute power is the constraint. Such a machine would also foster a new wave of developments in quantum algorithms in chemistry, materials, and other domains."

Kumar added: "While it is enticing to imagine the benefits and opportunities of a quantum computer, PsiQuantum is not distracted by what is beyond the finish line. They are disciplined and focused on the task at hand: delivering on a machine with hundreds of error-corrected, logical qubits.

"We at M12 have been impressed by the PsiQuantum team and look forward to their continued development."

In the time between the series C and series D rounds, PsiQuantum made significant advances in the development of its 1 million qubit machine – most notably in reducing its physical footprint. A qubit is the quantum equivalent of a bit in conventional computing, and measures processing power.

Following the announcement of M12's participation the series D round, Kumar said: "With over 70 PhDs on staff, a strong intellectual property portfolio and a mutual partnership with semiconductor manufacturing leader GlobalFoundries, PsiQuantum is well-positioned to fulfil their ambition: to deliver the world's first fault tolerant quantum computer with one million physical qubits."

The other nominees in this category were:

- Deep Genomics, \$180m series C (SoftBank Vision Fund 2, Alexandria Venture Investments)
- Artios, \$153m series C (M Ventures, Novartis Venture Fund and Pfizer Ventures)
- Prime Medicine, \$200m series B (GV)
- Century Therapeutics, \$160m series C (Leaps by Bayer)

# Tech Transfer Office of the Year

> Edinburgh Innovations

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By Chris Torney  
Reporter

That the innovation ecosystem in Scotland manages to punch well above its weight – not just in the UK but in Europe as a whole – is in no small part thanks to Edinburgh Innovations.

The unit is a wholly-owned subsidiary of University of Edinburgh, and was founded more than 50 years ago. Its track record over that period, and in the last decade in particular, is outstanding. More than 500 startups and spinouts have been launched since 1967 and of all the companies spun out of Edinburgh Innovations since 2010, 85% are still trading.

In September, Wobble Genomics,

a specialist in RNA sequencing technology, became the latest Edinburgh spinout with a £1.2m investment round jointly led by Old College Capital, the university's in-house venture investment fund.

According to chief executive George Baxter, his organisation's remit is somewhat wider in scope than that of many other technology transfer offices. "We also cover industrial awards, translational awards and student enterprise as well," he explained. "So, we are a little bit broader than what many standard tech transfer offices are in other universities: we are very active in student startups, for example. In fact, last year we were

seventh in the UK on the total number of students startups with about 85. We expect to be in the top two or three this year.”

Edinburgh stands out among its Scottish peers with top rankings in areas such as investment into new spinouts, the number of spinout companies and engagement with students, Baxter pointed out. In 2020, Edinburgh invested £32m into new spinouts – roughly six times the level recorded in 2015.

The unit’s success has been recognised not only by Global University Venturing but also in the prestigious Converge awards in Scotland. Edinburgh’s Genevieve Patenaude won the top prize in 2020 for her Earth Blox innovation, a satellite intelligence system which provides information to help mitigate the impact of natural disasters and climate change.

Baxter pointed to the strong angel network and investor community in Scotland as a major source of the nation’s success in enterprise and innovation. As well as the UK-wide support available through the likes of Innovate UK, institutions north of the border benefit from the funding and expertise made available by Scottish Enterprise. “It has been very important and I think will continue to be very

important,” he explained. “Something which I am really proud of is that if you look at our support from the Scottish government, we are by far the most efficient university. We are by far the largest output per pound of their support for the innovation of any Scottish university – and in fact, we are up there in the top handful in the UK as well for the same type of funding.”

Baxter said that perhaps the most important factor in Edinburgh Innovations’ current success was its staff: employee numbers have doubled to 120 since he was appointed in 2016. “I cannot speak highly enough of them,” he stressed. “It makes it much easier to be a chief executive if you have got a fantastic team.”

Other nominees in this category were:

- Axelys
- University of Manchester Innovation Factory
- UnternehmerTUM
- University of Michigan Office of Technology Transfer

# Personality of the Year

> Alexis Dormandy, CEO of Oxford Science Enterprises

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By Thierry Heles  
Editor

Oxford Science Enterprises (OSE), the investment company established by University of Oxford, was already an impressive beast long before Alexis Dormandy took over its leadership. Having raised £613m (\$845m) from a diverse set of global investors, OSE has helped build more than 100 spinouts, playing a substantial role in the foundation of more than 60 of these. So far, it has invested £360m into its portfolio.

In large part, this is thanks to the foundational work laid by Dave Norwood, the university and the capable hands of chief financial officer Jim Wilkinson, who served as interim chief executive between

the departure of Charles Conn and the arrival of Alexis Dormandy in January 2021.

Dormandy's career to date could not be more impressive if he tried: having originally trained as a medical doctor, he moved to consultancy McKinsey in 1993 and joined diversified holding group Virgin in 1995. At Virgin, he launched several new subsidiaries, including the world's first virtual mobile phone network – Virgin Mobile. He eventually rose to chief operating officer of Virgin, before joining telecoms firm Orange's executive leadership in 2004. He subsequently helped raise \$120m as European chairman of charity

RED from 2006 to 2008.

His most recent stint before coming on board at OSE was four years at venture capital firm Atomico, where he was a partner focused on the enterprise, consumer and deeptech industries.

That wealth of experience has meant that since taking over at OSE, Dormandy has not only kept up the pace at which OSE was moving but has stepped it up. There are the obvious changes, first and foremost the rebrand from Oxford Sciences Innovation to Oxford Science Enterprises in September.

In a statement at the time, Dormandy said: “Six years ago, OSI was just an idea. One year ago, OSI was a startup celebrating its fifth birthday. Today OSI has entered the next phase of its journey – an ambitious business that recently passed its £1bn valuation.

“The Oxford Science Enterprises team past and present, should feel incredibly proud of what they have achieved, in such a short space of time – it is truly amazing.”

There is also the expansion of OSE’s team to include new leads for life science, technology and late stage portfolio companies – Katya Smirnyagina, Alexis Zervoglos and Ceri Morgan. There is the addition of people like Lilly Busmann, who was hired to build value across portfolio companies, and the appointment of a scientist-in-residence, Sarah Leonard, who works with the life sciences investment team to generate portfolio companies in areas with unmet needs.

Then there is the behind-the-scenes activity. Within weeks of joining, Dormandy initiated an internal survey to understand how diverse OSE is and how this can be improved. Such a survey is now also being rolled out to the largest portfolio companies.

And then there are the headline-grabbing news stories, most remarkably the fantastically successful flotation of UK-based DNA sequencing technology spinout Oxford Nanopore in September 2021. The company raised \$478m in proceeds, fetched a \$4.7bn valuation and did it all, notably, on the London Stock Exchange and not on Nasdaq.

If anyone thought OSE had reached its peak, Dormandy’s arrival has made it clear that the company has barely begun climbing the mountain. And under his leadership, it is doing it all with a newly refocused energy on putting impact before money. As Dormandy himself put it on a recent episode of our Talking Tech Transfer podcast: “We need to be an organisation that we will be proud of in 10 years’ time, not one we could have got away with 10 years ago.”

The other nominees in this category were:

- Brian McCaul, Qubis
- Markus Wanko, IST Austria
- Moray Wright, Parkwalk Advisors
- Sara Wallin, Chalmers Ventures

# Lifetime Achievement Award

> Anne Lane, CEO of UCL Business

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By Chris Torney  
Reporter

After two decades spent building up University College London's technology transfer subsidiary into a powerhouse on the international stage, Anne Lane is a wholly deserving recipient of the Global University Venturing Lifetime Achievement Award for 2021.

As CEO of UCL Business (UCLB), Lane has to date helped to raise more than £1.5bn (\$2bn) for spinouts from the university – one of the world's largest, boasting over 40,000 students from 150 countries as well as around 12,500 staff.

In 2020, as the coronavirus pandemic struck, Lane's UCLB

was as active as it has ever been, striking 700 licence deals and almost 2,000 covid-response licences. The strong partnerships that UCLB had forged with medical researchers and National Health Service Trusts meant that it played a pivotal role in the UK's pandemic response, Lane said.

Most notable was the development of the UCL Ventura device, a continuous positive airway pressure breathing device designed to prevent covid-19 victims having to go into intensive care and on to ventilators. The Ventura project was a collaboration between UCLB, UCL Hospital and Mercedes AMG High Performance

*UCL has a very radical approach: it is research-intensive, from arts and humanities to historical and social sciences, to computer science and engineering. It has a strong innovation and enterprise culture as well. This is the basis UCLB works from, and it gives us a lot of reach – and a lot of dealflow.*

Anne Lane

Powertrains, the Formula One engine manufacturer.

“This demonstrated something I think universities are good at doing anyway,” Lane explained. “Where lots of groups get together and work as a very diverse team to bring something to the benefit of society very quickly. And in this case, it was patients infected by covid-19 who had become seriously ill.”

UCLB was able to rapidly disseminate the technology behind the Ventura device around the world thanks to its express licensing platform, which had until that point been typically used for lower-value software licences.

At UCLB, Lane created what she described as a “fully integrated commercialisation company”. She elaborated: “UCL has a very radical approach: it is research-intensive, from arts and humanities to historical and social sciences, to computer science and engineering. It has a strong innovation and enterprise culture as well. This is the basis UCLB works from, and it gives us a lot of reach – and a lot of dealflow.”

Lane pointed out that UCLB’s global reach was evidenced by its spinouts, with four IPOs on

the Nasdaq market in the last four years – such as Orchard Therapeutics and MeiraGTx, developers of cell and gene therapy technology.

Lane said: “We are large and very successful but that is based on more than 20 years of doing technology transfer and commercialisation. The fact we have been going a long time makes a big difference – as well as having such a large institution behind us.”

She also pointed to the value of the UCL Technology Fund, which recently reached the first close on a £100m raise for its second fund. “The Technology Fund has been incredibly important: we could not have done many of the things we have done without access to those funds,” Lane explained. “With the UCL Technology Fund, we have a unique model because UCLB co-manages the fund.”

UCLB has also benefited from its leading role in Apollo Therapeutics, a collaboration between UCL, Imperial College in London and University of Cambridge as well as pharmaceutical firms AstraZeneca, GSK and Johnson & Johnson. Apollo, which was set up to transform early-stage science into patient treatments, recently raised £100m in a series A round.

Lane said: “The thinking behind Apollo was that universities spend a lot of time researching and then developing projects to try and license them to big pharma – but they then have to redo the work because it has not been carried out in the way the pharmaceutical company would do it.

“That is not a very capital-efficient way of bringing on new projects. Apollo has particularly helped researchers who do not necessarily want to go into a spinout – they are interested in commercialisation, but they want to carry on with their academic careers. This allows them to do that: the Apollo collaboration will take those projects on, invest in developing them further and take them to a big value inflection point.”

Lane’s link to UCL goes back further than the 21 years she has spent in the institution’s technology transfer company. She completed her PhD at UCL in the 1990s, followed by a post-doctoral fellowship. Lane then moved to Harvard to carry out more post-doctoral research and subsequently relocated to Montreal to work in out-licensing and portfolio valuations for RTP Pharma, which was later acquired by SkyePharma.

Erica Fawell worked with Lane

*I regard her as the most accomplished and long-standing member of our profession in the UK and am delighted that she has won such recognition from GUV.*

Jeff Skinner

at RTP Pharma and recalled: “Agreeing to come on board and assist the business development function of a newly funded and untried biotech startup, she adapted readily to the culture and became a valued asset and key participant in the enterprise.

“I am enormously proud of Anne’s achievements and take pleasure in seeing her become the leader and visionary that I always knew she could be.”

Having also completed an MBA during her time in Canada, Lane saw a new role advertised at UCL Ventures, the precursor to UCLB. “I had realised during my time being a scientist that there were people who were much better at it than I was,” she explained. “So, this was a job that meant I could continue being involved with the science and really help to make the maximum impact but without doing the science myself.”

Jeff Skinner was the director at UCL Ventures who hired Lane. “I recruited Anne at a time when UK university technology transfer units – including UCL – were run by ‘inspired amateurs’ who were learning as they went,” he recalled. “Anne came with an established background in licensing and, though I think she struggled with some of her academic colleagues at first – ‘they just will not do as they are told’ – she came to earn

their respect by sheer dint of being an excellent and cheerful advocate, and by concluding licensing agreements that served their commercial and academic interests – and that never unravelled. She simply did the job without drama.

“I regard her as the most accomplished and long-standing member of our profession in the UK and am delighted that she has won such recognition from GUV.”

Lane’s predecessor at UCLB was Cengiz Tarhan, who said: “Anne took over the helm at UCLB from me nearly three years ago and I have watched her grow into that role with pride.

“She has been instrumental in the success of UCLB. Anne was always supportive and a key member of my team. She is very able, patient, tolerant and perseveres – and many of these characteristics complemented mine well. She manages people and builds their respect and is a good negotiator. I was deeply appreciative of her wise counsel over the years. She has been a loyal colleague and friend and deserves to be recognised with this award.”



Anne Lane

Donna Hackett, Lane's first boss at UCL, added: "Anne began her technology transfer career with me in 2000 at UCL Ventures and has never looked back. Her enthusiasm and commitment are infectious. She is collegiate, incisive and exceptionally knowledgeable.

"She is a well-deserved recipient of this award and I am pleased to know Anne as a friend."

Lane added: "UCL is a great place to work: it is very flexible, and the fact we have been able to do what we have done as a company is testament to this. It has a great innovation culture and a wide-ranging approach."

Lane highlighted the fact that UCLB also worked with the social sciences as social enterprises. "We do not just focus on a financial return, and I think that is really important especially, when you are working at a university: that is generally what people are there for, to make a difference.

"My role is always exciting, and there is always something new every day. And you get a reward: you see the benefits of what you are doing, and you cannot say that about every job."

What are the key lessons Lane has learned during her time at UCLB? "Be flexible: that seems to be my

mantra at the moment. And take opportunities as you see them. Sometimes you do not think things are going to take you very far but they do. Try new things out, do not be afraid to take some risks."

She continued: "Working in research generally can be a very ambiguous environment, things are not black and white. But working in tech transfer and commercialisation takes that ambiguity to a whole new level. The key thing is to listen to what the research and your academics are telling you: they are the ones who know more than you ever will about what they are doing.

"And you need their support: you are never going to be able to commercialise any research without the inventor being on board. They are the people that make the difference."

Lane also pointed to the importance of the work done by organisations such as TenU, PraxisAuril, Autm and STP in making the industry more accessible to those who were at an early stage in their careers or from non-typical backgrounds. "When I was doing my PhD I did not even know about technology transfer, but now I get a lot more enquiries from people who want to get into what we do."