



# The Oxford Boom

Annual Review 2018

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Oxford University Innovation's CEO Matt Perkins shares his vision of the future of innovation at Oxford.



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# A world-leading innovation ecosystem with Oxford University at its heart

When it comes to innovation, Oxford is the land of opportunity.

Oxfordshire is home to, amongst others, the Harwell Space Cluster, the world's largest nuclear fusion research facility at Culham, John Radcliffe Hospital, and Oxford Brookes University.

It is also home to countless high-tech, knowledge intensive companies that are at the forefront of areas such as vaccines, regenerative medicine, robotics, autonomous vehicles, treatment of mental health through virtual reality and tackling poverty around the world. These are the corporate leaders of the future.

The region has a rare blend of ideas, talent and expertise which you would be hard-pressed to find nearly anywhere else on the planet. The reason it is concentrated in this part of the country is simple: Oxford University.

Oxford has been generating world-changing research for hundreds of years. Our job at Oxford University Innovation is to support the University community to maximise global, societal and economic impact from that research. This is what gets OUI's people out of bed in the morning. We are architects of creative solutions, finding the best way for an Oxford idea to create impact that benefits as many people as possible.

In the past few years, we have been able to get more out of Oxford's ideas than ever before. The University's partnership with Oxford Sciences Innovation has been the catalyst for the Oxford Boom. As a result, our ecosystem is generating spinouts at a rate that puts us on par with any institution in the world. The spinouts we have already created continue to grow at an incredible rate, fuelled by an ever more diverse spread of investors welcomed into the region, all bidding to back the next Oxford unicorn.

Our support for the humanities and social sciences is expanding with OUI's social enterprise option, giving our academics the opportunity to build businesses with a social conscience that focus on positively impacting people's lives. Separately, we've made our incubator offer more attractive, and have since been inundated with staff and students looking to accelerate their ideas into fully fledged startups.

We are committed to finding ways for our activities to complement other universities and corporates. We are working with our partners across university innovation – running and planning joint events with Cambridge, MIT and SETSquared – to network and engage with business. We have recently worked with household names such as IBM, Barclays and Vodafone, collaborating with them and others alike to enhance the innovation stemming from the University.

We have all the ingredients to match any innovation ecosystem in the world. By mixing them together, we can create a cluster that maximises the convening power of the city and University, stacked with forward thinking startups and spinouts, with the relevance to attract the full support of government, and which works collaboratively for the benefit of everyone in it.

The potential of doing so not only benefits Oxfordshire, but the entire country. We currently live in a period of uncertainty, yet creating an ecosystem as solid and reliable as the University itself will help the UK keep its competitive and innovative edge, no matter what may lie ahead. Looking ahead further still, OUI is ready to contribute to even bigger ideas. One such ambitious plan aims to marry the Cambridge tech cluster with our own with Milton Keynes in the middle. This would create an innovation arc, combining the innovative output of two of the world's leading tech clusters with a city ripe for expansion. We believe this has the potential to create societal and economic impact beyond anything we've seen to date.

The opportunity is there, and OUI intends to play its part in realising it. Over the next few pages, you will see both how OUI plans to stimulate further innovation across Oxford, and how it is doing it already.

We look forward to working with you all in the months and years ahead to turn opportunity into reality.

Matt Perkins  
CEO



Innovation around Oxford is booming, ably assisted by the efforts of the OUI team.

It has been a genuine pleasure seeing the evolution of OUI in recent years, and I enthusiastically look forward to seeing the impact the team will have in the years ahead.

Nigel Keen  
Chairman





## Building the next big biotech

Nightstar Therapeutics went from spinout to IPO in under four years. Dr Paul Ashley, Head of Life Sciences Licensing and Ventures, asks how we can get university life sciences ideas out of the door faster.

It may be that time flies when you are having fun (perhaps even faster with age) but, having joined OUI in 2011, I am now struck by how technologies that were just a “twinkle in the inventor’s eye” a few years ago, are now making a real-world impact.

When considering the reported time and money required to bring a drug to market - now approaching \$3bn over 10+ years – it could seem that the therapeutics of tomorrow are increasingly slipping into the day after and beyond. However, I feel that we are seeing novel technologies today that could revolutionise healthcare sooner than you think.

The impressive growth and progress seen by Nightstar is a case in point. From spinning out in 2014 to a publicly listed global life sciences company in less than four years is real university innovation in action.

Nightstar is developing gene therapies for patients suffering from debilitating retinal diseases. No such therapies had been approved for use in US or Europe when we first started working on the project. In the interim, Nightstar has raised over £70m and commenced a phase 3 clinical trial. Nine gene therapy products have also become available to patients in that time with many more currently being trialled. Such is the excitement in this space, that we have been able to licence a further seven technologies to Nightstar.

Digital health is another area of rapid development. Bringing digital health technologies to market, however, can be challenging. The partnership with Sensyne Health (formerly Drayson Technologies) has brought together the research excellence of the University, the clinical insight within the Oxford University Hospitals NHS Foundation Trust, and the commercial resources of Sensyne. The System for Monitoring Patient Vital Signs in Hospital (SEND) developed in Oxford is now used in over 100 hospital wards and has recorded data from over 100,000 patients.



What we do today really does have the potential to have a major impact on the lives of those around us

Future healthcare will still need new drugs, and today’s drug discovery innovations still have the potential to provide the largest impact on people’s lives around the world. LAB282, the £13m drug discovery partnership between OUI, Oxford University, Oxford Sciences Innovation and Evotec is generating an unprecedented number of projects compared to other virtual life sciences accelerators. Crucially, these are projects that would not have been so easily identified or accelerated in such a way had it not been for the LAB282 initiative. Started in Oxford, this model is now being replicated in other parts of the world.

What we do today really does have the potential to have a major impact on the lives of those around us and so we must continue to innovate and increase our capacity to create and accelerate opportunities. I don’t believe there has ever been a better time to do this in Oxford. The future is closer than you think.

# Discovering Big Innovation

Brendan Ludden, Head of Physical Sciences Licensing and Ventures, reflects on his first year at OUI after joining us from industry.

Big Data – which formed the bulk of my old role - is often characterised by the three Vs: volume, velocity and variety. I have no hesitation in saying that at Oxford it feels like we have Big Innovation. The amount, rate, variety and indeed quality of new ideas is quite astonishing, and I had simply not appreciated the breadth and depth of excellence here until I started at OUI.

For innovation to flourish at large corporates, there needs to be support from the top down and a framework in place to help nurture the culture of innovation and to provide opportunity to those who wish to become involved.

I saw this immediately at Oxford. There is senior level support across the University community, the opportunities for academics with licence deals, spinouts and consultancy is diverse and well supported by OUI, and the presence of Oxford Sciences Innovation has brought the essential funding required to make things happen. I truly believe Oxford is getting it right and we are witnessing something very special here.



At Oxford, it feels like we have Big Innovation.

I have come to realise that two of the real strengths of Oxford University are academic freedom and the presence of so many world class experts across such a diverse range of subjects.

Consider one of the key issues of our time: artificial intelligence (AI). Not only is our community on the leading edge of research into the technology behind AI, we have a rich understanding of its use in a range of applications from healthcare to autonomous vehicles and we have the ability to understand and address the challenges it raises with morality and ethics.

There are few places in the world where this is possible.

On a final note, I've come to appreciate and understand the importance of impact. It's a very exciting time when the universities are expected to be the driving wheels of the nation both in terms of economic growth and social development. At OUI, we are putting in place support for social enterprise to ensure that research outcomes can be targeted at social good.







## Incubating change

The OUI Startup Incubator's new manager Cath Spence writes on the wave of change which has led to a flood of new applications.

It's been a year of change at the OUI Startup Incubator.

Firstly, after a long stint in the pilot's seat, the Incubator's inaugural manager Roy Azoulay took his own advice and founded his own startup. I took over from Roy in early February and have since been hard at work updating the Incubator's offering in the light of Oxford's ever changing startup ecosystem.

The Incubator's new offer has led to a massive increase in interest with over 50 enquiries in the last six months and 10 projects accepted so far in the same period. Things have continued to heat up over the summer, and it looks as though the Incubator will be running white hot over the coming year.

Driving the influx is the halving of our equity share to just 5%, with no changes to the support we offer. We're hoping to attract investment for our incubatees and are hard at work creating a new panel of investors for our incubator teams. Our aim is for each new venture to present their business to the panel with the hope of securing very early stage funding, for a low equity stake of around 5% on standard terms and in the form of a convertible loan; keeping paperwork and cost to a minimum for everyone.

We're also changing the accelerator programme so that it will run as a rolling programme of a few days a month over six months rather than as a single block. The programme is offering a wide range of material covering business, legal and finance topics, as well as technical material such as app design and development.

To provide a more cohesive, integrated offering, we're now working with our partners at other key Oxford University incubator facilities much more closely. Part of this means we'll be offering a limited number of places on the accelerator programme to members of the other University incubators, alongside other collaborative activities.

Finally, as part of a wider programme of internal decorations at Buxton Court, we have been able to refurbish the Incubator workspace for our ventures. We're now providing proper hotdesking facilities as well as break out space with bold and colourful décor to reflect the energy and creativity of the teams working there.

The most exciting change, however, is yet to come. And that's what ideas and startups all this will generate. Between the various entrepreneur-focused organisations around the University, we've laid the foundations. It's now up to you to decide what to build.



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# The Social Enterprise Option

Dr Mark Mann writes about our new initiative to stimulate impact-led innovation across the University, the Social Enterprise.

For me, the most exhilarating part of leading OUI's activity in the Humanities and Social Sciences in Oxford is that first meeting when someone tells me their big idea, and I realise it could make a huge impact.

When hearing these ideas in years past, we may have seen the potential, but sighed in resignation that it didn't fit any pre-defined model of innovation. Nowadays, I instead find myself asking the question: "do you know what a social enterprise is?"

I speak to lawyers, financiers, accountants, chief executives daily, but it is the academic community that immediately and intuitively grasps what social enterprises are:

"Social enterprises are businesses that are changing the world for the better. Like traditional businesses they aim to make a profit but it's what they do with their profits that sets them apart – reinvesting or donating them to create positive social change."  
Social Enterprise UK

Unsurprising? Well, you could argue the academic community in Oxford are working in a 922-year-old social enterprise. The University exists to make impact first. When you talk to the academic community it is part of their DNA. OUI has helped to deliver huge impact through its 160-plus mainstream commercial spinouts. But when you look at departments such as International Development, Geography, Anthropology and Theology, the mainstream spinout model simply doesn't fit.



Social enterprises are businesses that are changing the world for the better.

This is why OUI is now launching social enterprise spinout support to help the whole academic community create impact from research that doesn't fall into the traditional spinout box. Social Enterprises sit at the boundary between companies and charities. We can find the best solution which works for a particular project, help put a team together, and help find both translational funding and seed funding to get the project off the ground. As with our mainstream spinouts, we will continue to provide advice on how to make the company financially sustainable. Most importantly we will ensure that a social or environmental mission is written into the company's DNA.

Our first social enterprise, sOPHla Oxford Ltd was spun out from the Department of International Development in July. The team in the Oxford Poverty and Human Development Initiative led by Sabina Alkire has developed a multi-dimensional poverty index, which both measures poverty and provides workable solutions to eliminate it. The company will be providing an accreditation service to businesses, which will begin in Central America, with plans to expand across the world.

This is the first of many, we already have over 20 in the pipeline and we're looking forward to helping Oxford maximise its positive impact by rolling out its great ideas for solving social and environmental problems across the world.





## Fuelling the next unicorn spinout

Turning university ideas into billion-dollar companies is the focus of Adam Workman's newly-formed OUI Investments and New Ventures team.

There has been much debate in the University (and beyond!) on the subject of unicorns and how to create them.

While there are many schools of thought, the main problem with unicorns is – much like their mythical inspiration – they are notoriously hard to spot.

Rather than wasting time and energy running around trying to catch unicorns, our team at OUI Investments and New Ventures is focused on building an ecosystem that supports all our spinout companies, from the small lean enterprises through to the billion dollar unicorn.



External fundraising in 2017/18: £428.4m

Portfolio value: £155.1m

Number of portfolio companies: 125

Our new team of five professionals brings OUI's funding together with the former Spinout Equity Management, giving us greater operational oversight of how OUI manages the University's equity stakes and the financial support we can offer our innovation community. Combined with our investment funds, we have greater investment firepower, allowing us to get more deals done, build even stronger links with the investment community, and deliver greater levels of corporate engagement.

We're seeing a consistent supply of capital funnelled into our spinouts. Since 2011, our spinouts have raised a collective £1.9bn, with £428m of that in the past year.

You could look at that hockey-stick curve and say, "well that's just Nanopore". But, with regards to DNA sequencing pioneer Oxford Nanopore, while the company increased its value to £1.5bn this year, it only added £100m to the external fundraising total. While other established spinouts such as Adaptimmune and Oxitec also added substantial sums to this figure, a large chunk is made up from our younger spinouts hitting their Series A rounds. We expect that figure to grow as those same companies raise Series B rounds over the coming months.

Oxford Sciences Innovation continues to be a major catalyst for this growth, enabling us to create more companies with more resources than Oxford has been historically capable of. OSI also continues to be a beacon to other investors, which include our own University of Oxford Innovation Fund, drawing them into the Oxford Boom.

Meanwhile, the value of the spinout equity portfolio has more than doubled in recent years, rising from £68.2m in 2015 to £155.1m today.

What all this means is that our spinouts have never been more valuable, nor have they been better resourced.



# The broadening appeal of consultancy

Andrew Goff, Head of Consulting Services at OUI, discusses how a more diverse range of academics than ever before are warming up to consultancy.

The pool of Oxford experts available for external organisations to dive into is deeper now than ever before.

No longer is consultancy seen as the exclusive preserve of senior science professors. Increasingly, we are approached by early career staff from across the University's Divisions, eager to apply their expertise to client challenges and have their research make an early demonstrable impact on the wider world.

In July we produced a short video in which several of our consultants described first-hand what they had got out of their consultancies and why they choose to work through OUI. Dr Oliver Cox, a heritage expert from the Humanities Division, spoke powerfully about how consultancy provides him with an opportunity to think about academic research interests in a real-world context, saying that "Consultancy gives me that bridge into relevance."

Meanwhile, Dr Adam Mead, Associate Professor of Haematology, said participating in advisory boards provides great opportunities to meet new people and for networking, adding that consultancy "has enhanced the science that I do and also the way that I look after my patients."

Equally striking is how broad the range of clients is that we now work with. From SMEs and new spinouts to big pharma and multinationals; from charities and NGOs to the FCO and WHO; from law firms seeking expert opinion to video production companies seeking programme advisors – more organisations than ever before are queuing up to access Oxford expertise.

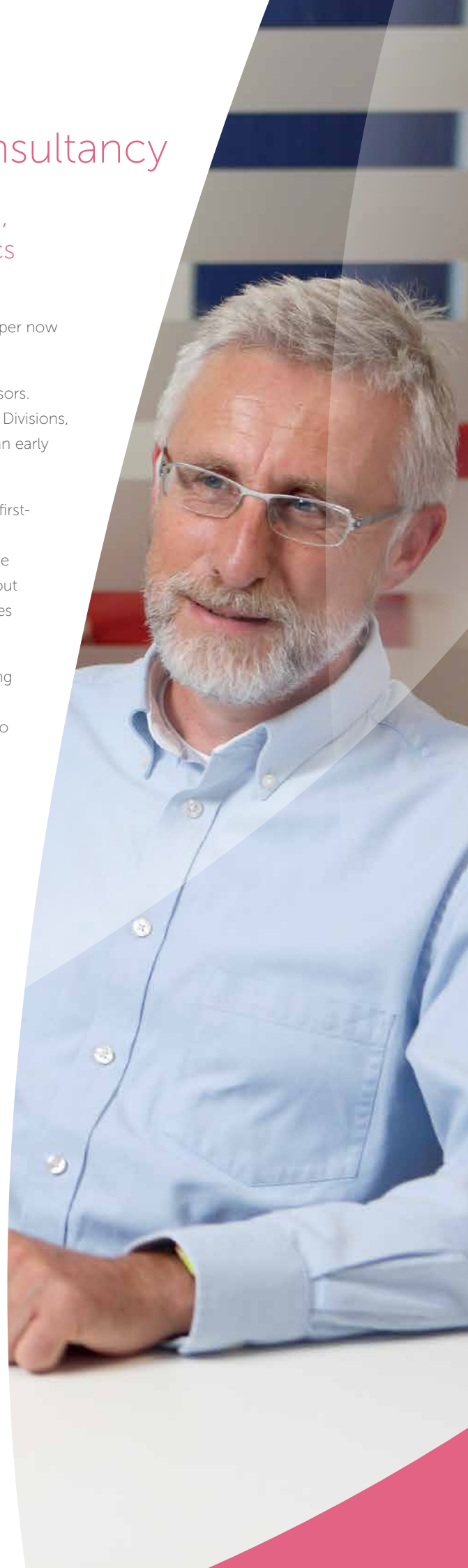


No longer is consultancy the exclusive preserve of senior science professors.

Our consultants see consultancy as about relationship-building and gaining new perspectives. In addition, while many are driven by the potential impact of consultancy, it can be a valuable source of income, both for the consultant and the University as a whole. Around a third of the contracts OUI Consulting Services signed this year have, or will, generate funds for the University.

Consultancy can, and does, lead to downstream opportunities for research partnership too. For instance, when Frances Platt, Professor of Pharmacology & Biochemistry, took on a consultancy role with Orphazyme, a Danish biopharmaceutical company, that work led directly to an eight-year collaborative funding stream including a Wellcome Trust Pathfinder grant.

This demand is reflected in our key metrics and speaks to the scale of our activities in Consulting Services, underlining another successful year for the team.





## Stewards of innovation

Dr Adam Stoten, Chief Operating Officer at Oxford University Innovation, reflects on the changing face of commercialisation in Oxford.

Thirteen years is a long time in technology transfer and nowhere is this more true than in Oxford, where we have seen incredible changes to our innovation ecosystem and to how we approach the business of translating IP and expertise into societal benefit. Having worked during this period in roles supporting the commercialisation of Oxford technologies – several within OUI and also in executive and board roles for some of our spinouts – it's been a fascinating personal journey, and one that demands the occasional reflection on the past to put into context our future direction.

Back in 2005, when I first started at OUI, technology transfer was still a nascent activity in the UK. While the likes of Oxford, Cambridge, UCL and Imperial were all leaders in developing services to support academic inventors and consultants, the scale of activity was a mere fraction of what it is now. What enticed me to join the team in Oxford back then was the rate of growth, which suggested that the intellectual giant that is the community of academic researchers at Oxford had not so much woken up, but rather was turning its laser-like attention to commercialising the outputs of the university's world class research.

Since then, the culture of entrepreneurship and enterprise has been fuelled by many important events. The focus on impact of the Research Excellence Framework (REF) has created a uniform pressure on all UK universities and academics to understand and articulate the impact of research in a more meaningful way. The innovation support infrastructure in Oxford has improved out of all recognition in the last decade; besides OUI, we have seen the creation of Oxford Sciences Innovation plc with £600m+ to invest in Oxford spinouts; the Oxford Foundry is supporting student entrepreneurship; divisional business engagement teams have been established to increase partnerships with industry, and new facilities have been developed to house new ventures – the BioEscalator and the Begbroke Accelerator. A major Innovation Review by the university in 2014 helped underscore the institutional commitment and underpins many of the more recent changes.

The changes at OUI have also been profound. From an early focus on the two hard science divisions, we are now also working at increasing scale with Social Sciences and Humanities; learning what commercialisation means to their researchers and how we can best support them. Our Startup Incubator has, since 2010, expanded our support to students and alumni, and has helped create ventures such as Onfido that have raised tens of millions of investment. Academic consultancy has gone from an activity separate to OUI to one of our three main business activities, turning over £5M a year. Our Licensing and Ventures group now receives more than 400 new inventions each year (around three times the number received in 2005) and is responsible for 120+ commercial deals and 20 spinouts annually – putting us in the same league as the top US universities.

I fully expect OUI to continue to evolve in tune with the University's needs. With the ongoing roll out of the Industrial Strategy, a new Knowledge Exchange Framework on the horizon to assess institutional competence, and REF 2021 preparations, the scope for OUI to further enhance Oxford's reputation in Innovation is enormous. Likewise, the commitment by government to increase UK R&D expenditure to 2.4% of GDP in the next decade means that our IP, our spinouts and the advice given by our consultants all assume even greater significance in helping achieve this ambitious target.

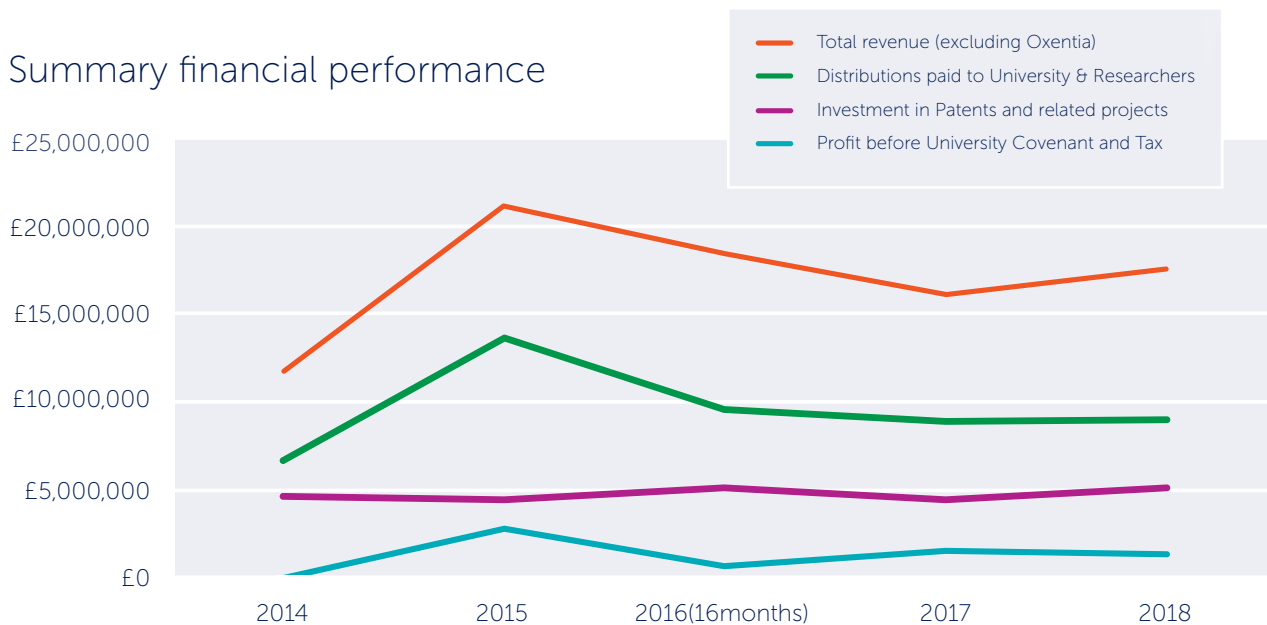
Core to all of this are our employees; those who have provided insights in this annual review, and the many others in their teams and in our support groups who display the same commitment to building a world-leading innovation ecosystem in Oxford and ensuring the Oxford Boom is as loud and long as possible.

# Accounts

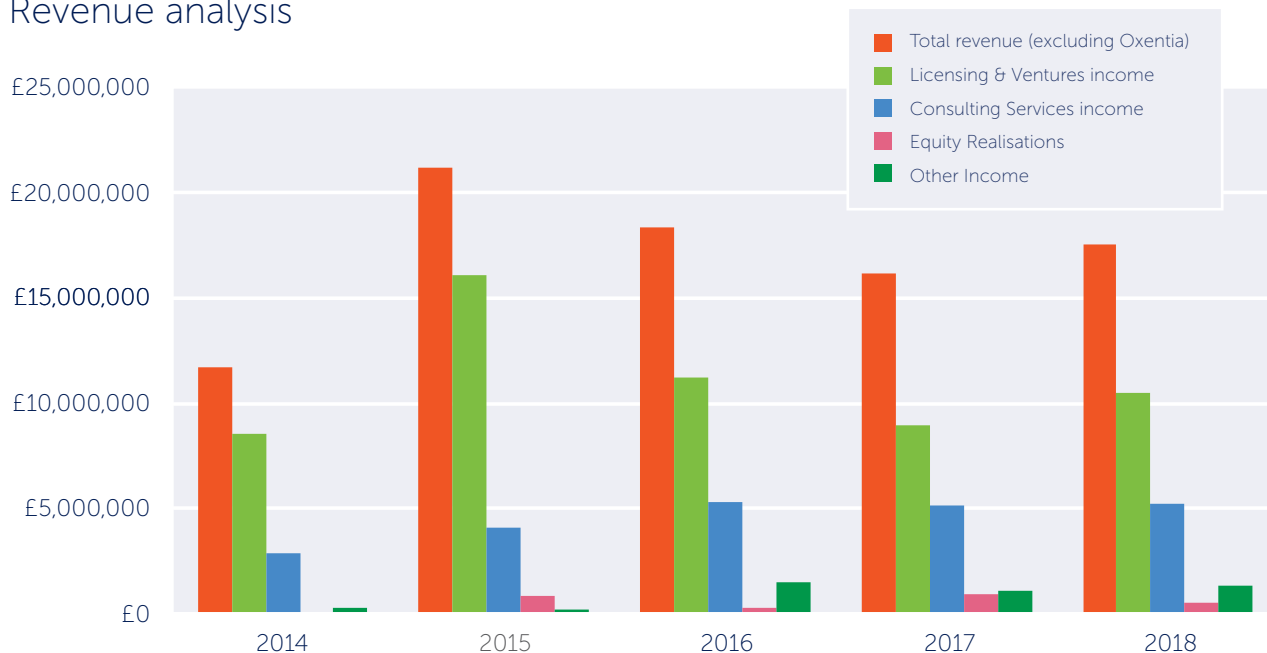
Oxford University Innovation's total income for the 12-month period from 1 August 2017 to 31 July 2018 comes to £17.6m.

Income in the charts below has been adjusted to reflect income without Oxentia, which became its own entity on 1 August 2017, and is based on unaudited accounts. The University subvention for this year stands at £3.5m, which was primarily invested in the external costs of patenting inventions. OUI's activities returned £8.9m to researchers and the University during 2017/18.

## Summary financial performance



## Revenue analysis





Total external investment since 2011:  
**£1.9bn**

Spinout #150, 6D.ai, is first US-launched spinout

Patents under management:  
**3881**

Nanopore raises £100m investment

Deals:  
**694**

Revenue 2017/2018:  
**£17.6m**

Vaccitech raises £20m for flu vaccine

LAB282's first year a success

Disclosures:  
**457**

Spinouts created 2017/2018:  
**21**

Homeless donations app, Greater Change is launched


External investment 2017/2018:  
**£428.4m**

Statistical Consulting opens its doors

Former incubatee Onfido secures \$30m

Distributions to researches:  
**£8.9m**

Nicola Blackwood and Jonathan Flint join OUI board

  
Total spinouts since 1987:  
**162**

Nightstar goes from spinout to IPO in four years

Value of spinout portfolio:  
**£155.1m**

Translational funding awarded 2017/2018:  
**£16.1m**



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