In the UK, universities are integral to innovation, helping to drive the economy by putting to use the outcomes of world-leading research. The University of Oxford sits at the forefront of this work.

A recent study – the first of its kind to measure the University’s contribution to the global economy – valued Oxford’s annual output at £7.1 billion, nearly £6 billion of that in the UK. Regionally, the contribution is £2.3 billion, supporting no less than 33,000 jobs. Another recent study, by software company Sage UK, found that Oxford has produced more founders of $1 billion business startups over the past decade than any other university in Europe.

In fact, UK universities deliver more influential research per pound spent than any other system in the world. To put Oxford’s contribution to innovation into context, it’s important to recognise the unique position of university research in the UK, since the close proximity of academic research and innovation is different than in other places. In Germany, for example, innovation is led by national institutes such as Fraunhofer-Gesellschaft, and in the United States the landscape is heavily populated by industry, with companies like Google, Microsoft and IBM playing a key role alongside universities.

Critically, innovation not only applies to technology, but to all of our research across all disciplines. The concept runs throughout the academic endeavour: it’s about creativity, challenging boundaries and ways of thinking, and approaching existing problems in new, and often interdisciplinary, ways. In the last year, at least half of the companies that have been generated by the Oxford University Innovation Startup Incubator have been based on social sciences research and the humanities are also producing world-changing innovations alongside colleagues in the physical and life sciences. The impact of innovation at Oxford goes well beyond direct economic measures, and shapes the world in which we will live in the future.

I am incredibly proud of Oxford’s contribution to the UK and international innovation community, and our ambition is to remain at the forefront of global research and innovation. It’s critical that we continue to foster the generation, dissemination and exploitation of good ideas. The ability to do so is at the heart of our mission to improve people’s lives.

To support this goal we will continue to work with government, local authorities and entrepreneurs to build the Oxfordshire ecosystem, which is already a vibrant emerging tech cluster. And it is only going to get better. With your collective commitment and enthusiasm, there is no reason why Oxford University could not help establish Oxfordshire as an economic powerhouse of innovation and commercial entrepreneurship, comparable to Silicon Valley in California.

This magazine outlines some of our plans to expand our commitment to innovation further, and highlights the role that you have to play in this endeavour.

The University has an integral role in driving innovation, but it is the people here, our staff and students, who are its lifeblood, coming up with new ideas and working with our commercialisation services to translate research into useful social interventions.

As we exit the EU, it is crucial that we do not lose the ability to attract people from around the world, and all academic disciplines, to share their ideas and help us deliver research excellence. It is equally important that we continue to produce world-leading research and maintain our commitment to using this to create solutions that have tangible real-world impact.

It’s critical that we continue to foster the generation, dissemination and exploitation of good ideas. The ability to do so is at the heart of our mission to improve people’s lives.
A new report has sought to quantify the University’s annual economic impact globally – and the result is a staggering £7.1 billion.

Economic analysts BIGGAR Economics were commissioned to assess the impact of the University’s internationally outstanding research, teaching and enterprise. They calculated the effect of a wide range of University activity, including direct spending, spinout companies and the productivity of graduates.

They found that in 2014/15 Oxford added £7.1 billion of value to the global economy, with £5.8 billion of that flowing to the UK. The University’s research commercialisation and innovation activities are a particular source of strength, pumping £1.2 billion into the world economy every year, almost half of it within the UK. As at 2015, Oxford had generated 136 active spinout companies – more than any other UK university. These highly innovative businesses – 129 of them based in this country – now boast a combined turnover of £600 million.

The study also found Oxford to be one of the country’s most successful organisations for commercialising research through technology licensing. Oxford accounts for £1 of every £10 of licensing income earned by UK higher education, with 80 per cent of the University’s licensing revenue coming from the US. The University’s vast range of expertise is worth a further £272 million a year to UK business through contract research, consultancy, executive education and knowledge transfer partnerships.

The economic contribution identified in the report is a conservative estimate, given that it relies on activity that is relatively straightforward to quantify. There are significant areas of economic, cultural, social, environmental and other impact that couldn’t be captured, but which deliver huge value locally, nationally and globally.

The Vice-Chancellor, Professor Louise Richardson, explains, ‘This report provides evidence for something long known around Oxford: the University drives the economy, both locally and nationally, as well as having a significant international presence. We provide jobs, attract investment and conduct world-leading research that improves the lives of the people of Oxfordshire and of the United Kingdom. We are a global institution deeply rooted in a vibrant local community and can be an engine of the British economy into the future.’

For more information visit www.ox.ac.uk/economicimpact

WHAT’S IN A NAME?

If you look at the Oxford English Dictionary, innovation is defined as ‘the alteration of what is established by the introduction of new elements or forms’. In the innovation literature (and there’s lots of it) the focus is often on the development of products or services for commercial gain. Ask a person on the street and they may say something about technology or gadgets. Confused yet?

So what does it mean when we talk about innovation at Oxford?

The Innovation Working Group was set up in 2014 to review how we can most effectively make use of our intellectual property for national, international and institutional benefit. The group grappled with the meaning of innovation across subject areas and sought to reflect its many facets.

Innovation, they said, means encouraging students and researchers to exchange knowledge across disciplinary and institutional boundaries, to take risks, and to realise the latent potential of their intellectual capital. The impacts of our innovation may take many forms, including entrepreneurial activity, social enterprise, or cultural engagement, but all share their common roots in a commitment to creative and lateral ways of thinking, connecting and problem-solving.

The University’s Innovation Strategy, developed out of the working group’s recommendations, emphasises that innovation comes through active engagement with a wide range of stakeholders, including industry, health care providers, charities and community organisations, creative, cultural and heritage organisations and policy makers.

So at the heart of innovation, then, are concepts that actually feel pretty familiar: creativity, lateral thinking, collaboration, the exchange of ideas, the freedom to take risks and the search for solutions. Whether it’s through discovery, commercialisation, or policy, process and technological advancement, the ultimate goal is to stimulate high-quality research and deliver social and economic impact to the nation and the world. And that’s probably something on which we can all agree.
Announcing the first ever University of Oxford Innovation Photography Competition – your chance to showcase what innovation looks like in your work and study!

There’ll be weekly prizes throughout September and October and grand prizes for each category – plus an overall Judges’ Choice winner – with all sorts of fun prizes. You can enter as many categories as you like. So get snapping!

Categories are:
- People and Partnership
- Inspiration and Discovery
- In the Field
- Machines and Equipment
- Weird and Wonderful

The competition is open to all current staff and students of the University of Oxford. Entries close 31 October 2017.

Find more information and submit your entries at www.ox.ac.uk/picturethis

PICTURE THIS!
The Humanities Innovation Challenge is run by Oxford University Innovation (OUI) and The Oxford Research Centre in the Humanities (TORCH). Members of the Humanities Division submit innovative and entrepreneurial ideas with the hope of securing £1,000 of financial support, and in-kind support worth over £5,000. Professor Karen O’Brien, Head of the Division, sees the competition as an important way to celebrate and publicise innovation success. ‘It’s amazing to see the range of innovative ideas that we are able to produce,’ she said, adding that innovation is absolutely fundamental to the future of the humanities.

The five carefully selected finalists pitched their ideas to a judging panel of entrepreneurs, creative thinkers and innovation experts. From an anorexia recovery app to career skills provision in Nigeria, the ideas were as creative as they were diverse.

First prize went to Dan’s Mycelium project after extensive deliberation by the judges, who were encouraged by the large possible market for Mycelium and the difference it could make to people’s lives and careers. Dan plans to spend the funds on producing a prototype of the Mycelium card game before hosting a series of testing events in Oxford and London.

Second place went to Dr Emily Troscianko, from the Faculty of Medieval and Modern Languages, and her Food to Freedom project. Incorporating a core recovery app complemented by freestanding browser-based courses, Food to Freedom will offer the first tailored support for the entire process of recovery from the notoriously treatment-resistant eating disorder anorexia nervosa.

In third place was the interdisciplinary team behind the Sensory Access to Art project – Iain Emsley of the Oxford eResearch Centre, Dr Tora Graven from the Department of Experimental Psychology and Nicola Bird, Susan Griffihs and Jessica Suess of Oxford University Museums. The project is about developing tools to improve access to visual arts for blind and partially sighted people using a combination of audio description and tactile representation of art works.

The Humanities Innovation Challenge event marks just one part of ongoing work to support and promote innovation within the Humanities and Social Sciences Divisions. Chief Operating Officer of OUI Dr Adam Stoten echoed Professor O’Brien’s sentiments, describing the competition as a ‘great demonstration of the growing engagement of researchers in humanities with knowledge transfer and commercialisation’. He also recognised the need for additional efforts, saying that ‘we have to match the creativity of the researchers in the support mechanisms we offer’. To this end OUI have already begun working with all of the entrants from the Humanities Innovation Challenge, helping them bring their ideas to fruition.

OUI and TORCH wish to thank the sponsors of the event, Penningtons Manches and Parkwalk Advisors, who gave financial support and also provided two members of the expert judging panel.

**AND THE 2017 HUMANITIES INNOVATION CHALLENGE WINNER IS...**

Dan Holloway, the Head of Administration and Finance in the Faculty of Linguistics, Philology and Phonetics, has won the 2017 Humanities Innovation Challenge with Mycelium, a simple, fun tool for individuals, groups and businesses to train their creative skills.
When Professor Aditi Lahiri, from the Faculty of Linguistics, Philology and Phonetics, set out to prove her hypothesis about the brain’s abstraction of language, she did not expect her research would lead to the creation of a mobile-based automatic speech recognition system, FlexSR. It is precisely this kind of serendipity that is frequently at the heart of innovation, particularly in higher education.

The importance of innovation and entrepreneurship at Oxford is increasingly apparent. Recent analysis values the economic impact of the University’s innovation and enterprise activities at £1.2 billion a year. Oxford Sciences Innovation, which provides investment for Oxford University spinout companies, has grown to £580 million and the University has doubled its spinout generation through Oxford University Innovation from 10 in 2015 to 21 in 2016.

Globally, university research now underpins around 75 per cent of key inventions, and a new economic review by European innovation network Science|Business suggests long-term payback on R&D investment of 20 per cent a year.

Chas Bountra, Professor of Translational Medicine in the Nuffield Department of Clinical Medicine, and former Vice President and Head of Biology at GlaxoSmithKline, is delighted with the progress that the University has made in the last several years. ‘I hear a lot more of my colleagues and students talking about innovation, entrepreneurship and commercialisation, and about the impact of their research.’ The University is full of people striving to do things in a better way, he says, and working with industry is one way of achieving that.

Yet the main driver for innovation is often pure intellectual curiosity. Dr Holly Reeve is Project Manager of HydRegen, an early-stage technology that promises to make the production of fine chemicals cheaper, faster and cleaner – from fragrances to food colouring. Dr Reeve and Professor Kylie Vincent were awarded £2.9 million from the Industrial Biotechnology Catalyst for a five-year project to take the HydRegen technology towards market. Initially, though, they just set out to answer an interesting question. It wasn’t until they’d found the solution that they started thinking about its industrial application.

That sentiment is echoed by Professor Aditi Lahiri. ‘I never saw a product at the end of the line,’ she acknowledges, ‘and I think that is true for many of my colleagues.’ For her, innovation is primarily about the process of research. She collaborates with neurologists, computer scientists, engineers, mathematicians, historians and others, using tools from other disciplines to help answer linguistic questions. The fact of proving her hypothesis is her primary source of satisfaction, rather than commercialisation of FlexSR. She is keen to remain involved in the development of the app, but not necessarily in a hands-on way.

Dr Russell Layberry, a Senior Researcher at the Environmental Change Institute, shares this view that innovation doesn’t have to be product-focused. His work involves using mobile technology for environmental monitoring and analysis in remote locations and he is Chief Technical Officer for the spinout company Pilio. ‘The word innovation itself just means something new. All research should be that or it’s not research. It can be software or a method
Professor Bountra accepts that not all academics want to get involved in commercialisation, and that’s fine. ‘I don’t expect all academics to want to set up companies. There is more than one type of academic or one type of impact. It’s that combination of elements – great teaching, great research, great innovation – that universities have to offer.’

Where they want to do so, however, it’s important the right support is in place. As Professor Lahiri points out, academics may not be best placed to know if there is a potential commercial output from their work and those supporting innovation around the University need to understand that. ‘They can’t wait until an academic says, “I have a product.”’ They need to talk to researchers, find out about their field and see if it can result in a product.

There’s a shared sense, though, that innovation is essentially about making things better. And for Professor Bountra, Oxford is a great place to do that. ‘We have lots of the right ingredients at Oxford – lots of massively talented people who are driven by a sense of urgency to improve things, lots of space for growing companies and more money and resources for supporting innovation and commercialisation. In terms of what I do, I would not want to be anywhere else.’
People are the lifeblood of research and innovation at Oxford and our ability to remain at the forefront of the global innovation and research community. A Question Time session in June 2017, open to all staff, explored the value of innovation and the systems available to support it. Chaired by Professor Ian Walmsley, Pro-Vice-Chancellor for Research and Innovation, the panel represented a range of perspectives: Professor Alison Woollard, Academic Champion for Public Engagement with Research; Professor Karen O’Brien, Head of the Humanities Division; Professor Matthew Wood, Deputy Head of the Medical Sciences Division and Professor of Neuroscience in the Department of Physiology, Anatomy and Genetics; and Dr Matt Perkins, Chief Executive of Oxford University Innovation (OUI).

Professor Walmsley began by highlighting the progress that has been made in recent years, including the development of the University’s first Innovation Strategy. Central to the growth of innovation at Oxford, he said, is building a culture where academics at all career stages understand that innovation can be a useful and interesting part of their work, as well as ensuring that the support is in place for potential innovators. Professor Wood agreed that support is critical, citing the example of the new BioEscalator, which fosters the commercialisation of bioscience and medical research in Oxford.

For the arts and humanities, Professor O’Brien emphasised that it is important that humanities colleagues come to their own understanding of what innovation means for them. A lot of the Humanities Division’s work in the area is about building awareness that humanities research can and does deliver cultural, social and, where appropriate, economic benefits.

While OUI has typically worked more with the physical and life sciences, its role, explained Dr Perkins, is to find ways to help all of the divisions to find commercial outlets for their research. OUI’s free Startup Incubator has proved central to growing ideas-driven enterprises, generating 22 startup companies that are having a positive real-world societal impact.

If you’d like to hear more of the panel’s views, listen to the full session at www.ox.ac.uk/questiontime
In discussing the possible challenges associated with innovation, Professor O’Brien commented that Oxford perhaps has fewer barriers than other institutions, with access to capital and resources like OUI, the Said Business School Launchpad and the forthcoming Oxford Foundry entrepreneurship hub. The University’s devolved nature is one of its strengths, allowing freedom for academics to pursue their interests, but the panel acknowledged that the complexity of Oxford can be a barrier to engagement with potential external partners and collaborators. Interdisciplinary mechanisms play an important role in overcoming these issues, and should be encouraged and promoted.

The panel agreed that the focus remains on academic excellence. It is for academics themselves to decide how innovation relates to them and their work, acknowledging that for some people, innovation and commercialisation aren’t a priority. Yet, as Professor Woollard noted, understanding innovation in a broad and inclusive way – beyond technology and gadgets – can mean that it’s relevance is wider than many people initially think.
Innovation means many different things to different people. Innovative discoveries and techniques can aid our understanding of the human body, find new ways to bring ancient texts to life, integrate new systems to make all our lives easier, and much more. The role of Oxford University Innovation (OUI) is to support the University’s innovators in any way we can, enabling Oxford’s technology and expertise to have greater worldwide impact.

When a new idea reaches OUI, there are two main ways it can progress: the licence and the spinout.

Licensing is very much the bread and butter of what we do – with £1 in every £10 of licensing income earned by UK higher education institutions coming to Oxford – and it can be an incredibly effective method for getting technology out into the wider world.

OUI recently structured a deal between the University, Oxford University Hospitals NHS Foundation Trust and Drayson Technologies to licence a suite of healthcare technologies developed at Oxford. The deal makes it easier to share this NHS-developed technology to the wider NHS by working with a third party.

When the technology is a suitable basis for a new company, then we’ll opt for the spinout option.

Spinouts are essentially startup companies but with University intellectual property at their core. Typically they require longer development time than a standard startup, bespoke resources such as an experienced leadership team and investors who understand spinouts, and a willingness to be flexible. The business might need to restructure, change its marketing approach or even pursue a new application for the technology that wasn’t conceived of during the research, before it sees results.

Based on zoology research, spinout NaturalMotion’s original animation technology was ahead of its time. When the company was established in 2001, founder Torsten Reil wanted to apply his technology to gaming animation, but the hardware in the early 2000s – PlayStation 2 and the original Xbox – couldn’t keep up. So NaturalMotion began by doing animation for films, including The Lord of the Rings series. Eventually, gaming hardware caught up, and NaturalMotion’s technology became the gold standard for gaming animations. This led to a long-lasting relationship with UK-based games developer Rockstar, with NaturalMotion’s animation tech under the hood of Grand Theft Auto V, the fastest selling entertainment product of all time.

NaturalMotion went on to bring out its own highly successful mobile games, CSR Racing and Clumsy Ninja, the latter featuring at the launch event for the iPhone 5. In 2014, NaturalMotion was acquired by Zynga in a $527 million deal that returned $50 million to the University, and its technology still helps its graphically superior games stand out in the crowded mobile gaming market.

OUI is committed to supporting the entrepreneurial spark around Oxford, explains Gregg Bayes-Brown, Marketing & Communications Manager at Oxford University Innovation.

It is important to recognise that the support required for spinouts differs from typical startups. Spinout management teams have to combine the entrepreneurial spirit of the startup world with experience leading research-based companies. Bespoke investment funds are needed, given the longer development times. Crucially, such companies need the fertile breeding ground of a spinout-friendly innovation ecosystem around a university.

Oxford has attracted and developed just such an ecosystem. Since it was founded in 1987, OUI has helped create over 160 spinouts. With the help of a number of engaged investors, including the world’s largest fund focused on a single university’s spinouts in Oxford Sciences Innovation, our spinouts have raised a combined £1.4 billion in external funding since 2011 and have an estimated global turnover of £600 million. As of 2015, around half of our active spinouts remained in the Oxfordshire region, supporting 1,889 jobs.

OUI also supports Oxford’s student and alumni bodies through the Startup Incubator, which supports traditional startup concepts emerging from both communities, and has nurtured 69 projects since founding in 2011. It provides funding, networking, mentorship and space, and runs an accelerator programme several times a year to help Oxford startups develop more rapidly.

OUI also organises and supports a number of events, including the Oxford Technology Showcase, Idea Idol and the Humanities Innovation Challenge. We also provide professional support for academic consultancy engagements. Our Consulting Services team manages all the contractual and administrative aspects of
consultancy, minimising the administrative burden while protecting the interests of both the academics involved and the University.

Visiting Researcher Kathy Parkes first engaged Consulting Services when she was approached by the Driver and Vehicle Standards Agency (DVSA). The DVSA was looking to tap into her knowledge and expertise around workload among driving examiners and wanted to understand the potential effects of increasing by two the number of tests each assessor conducts in a week. While the increment may seem slight, it adds extra pressure to the already stressful job of observing 17- and 18-year-olds drive a car under examination conditions. Following Kathy’s comparison of data from the 1980s and the DVSA’s current data, her conclusions led the DVSA’s decision not to increase the workload for assessors.

Consulting Services assisted Kathy with her initial engagements with the DVSA, negotiated the contract and helped chase down data from the DVSA essential for her consultancy work. Currently providing consultancy for a legal firm in Europe, Kathy said that organisations prefer to work through OUI, which can do the leg work, adding: ‘I wouldn’t want to do the consultancy work on my own. I much prefer to have OUI for contractual management.’

OUI is always looking to support more of Oxford’s researchers and innovators. If you’ve got an idea that you want to take forward, we’d love to hear from you, no matter what type of innovation it may be.

Find out more at innovation.ox.ac.uk

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Oxbotica is a spinout of Oxford’s Mobile Robotic Group, launched in 2014 through OUI.

The Startup Incubator supported development of Cycle.land, launched by alumnus Agne Milukaite (left).

NaturalMotion’s hugely successful mobile game, Clumsy Ninja.
Being enterprising is about creativity, perseverance, seeing the opportunities and making the most of it.

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At Oxford University, we’re passionate about the creation and impact of our research and how, in partnership, we can apply this to real challenges.

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