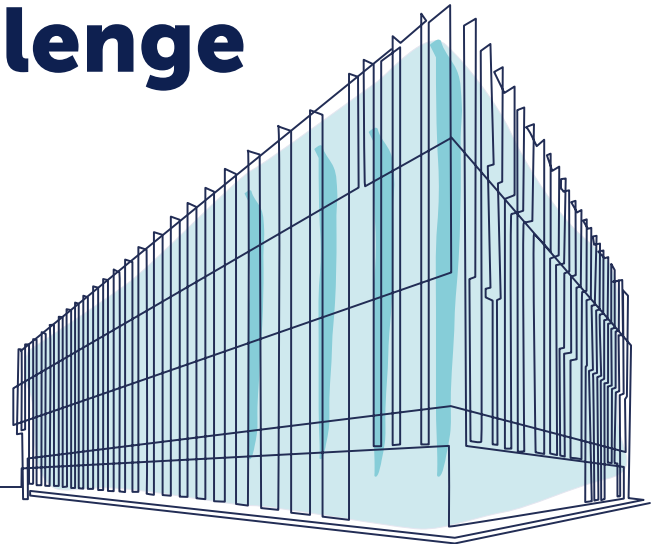
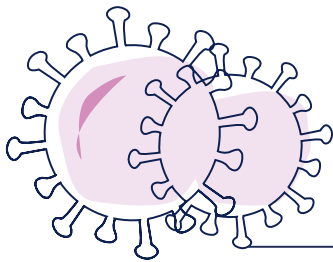


# Rising to the Challenge



## Annual Review 2021

Highlighting the activities of spinouts, startups, and social enterprises from Oxford University Innovation



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## The Response to COVID-19

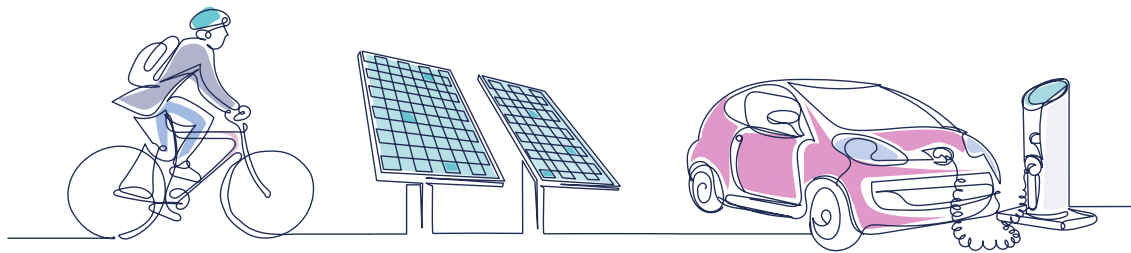
How the University, OUI and our ecosystem responded to the pandemic.



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## What's next for Oxford?

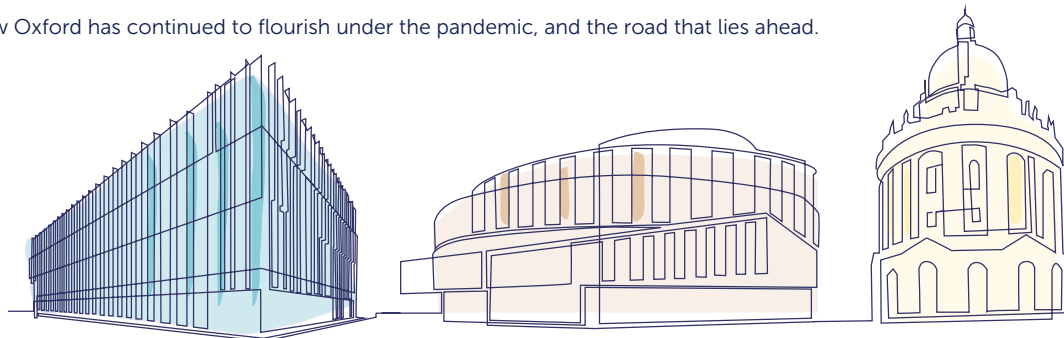
Ahead of the UN's Climate Change Conference (COP26), what can Oxford and the UK offer the world?



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## The Continued Growth of the Cluster

How Oxford has continued to flourish under the pandemic, and the road that lies ahead.



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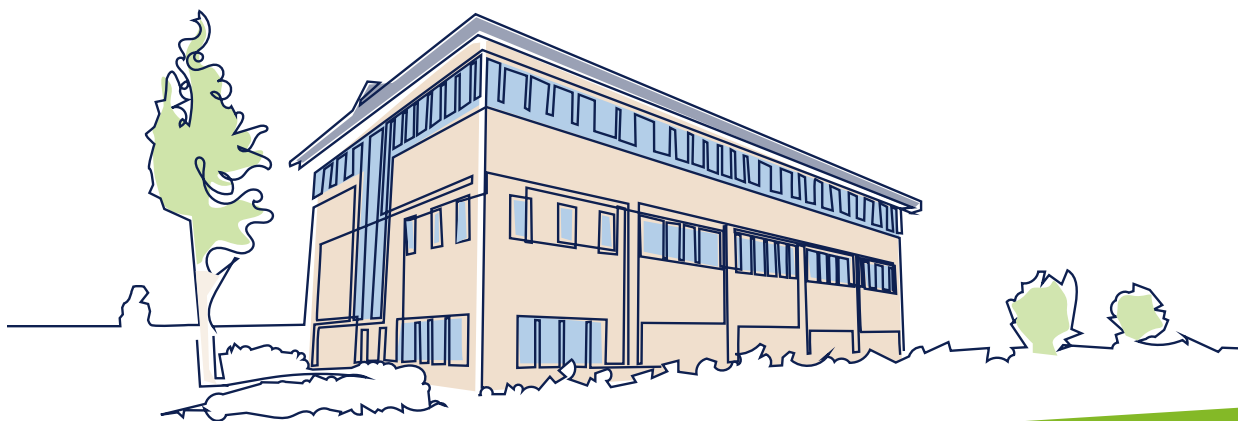
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## CEO's Message



**The core of what we do at Oxford University Innovation is to enable positive change through the application of Oxford research and expertise to the wider world. And, while many great ideas have passed through our doors over the past three decades, perhaps the most impactful has been the application of research in the battle with COVID-19.**

When the Spanish Flu struck back in 1918, the media at the time largely glossed over the significance of the pandemic and it quickly escaped our collective memory. Not this time around. The COVID-19 story has dominated the press, social media and the fleeting in-person conversations we've all had. Every part of the world has been affected by COVID-19 and has a story to tell, and Oxford certainly is no exception.

The contribution of the Oxford/AstraZeneca vaccine to combating the pandemic has been front and centre in the story of the past year, with the jab now finding its way into arms globally and saving millions of lives in the process. Similarly, the COVID-19 risk calculator QCovid was deployed with OUI support at the start of 2021, arming clinicians with the information they need to guide vulnerable patients through the pandemic. We've also created Oxsed and Oxvent, addressing rapid testing and affordable ventilators respectively, while many of our spinouts have refocused their own efforts on the pandemic.

### The Ecosystem Matures

Alongside the technologies directly related to COVID-19, OUI has overseen a tsunami of interest in innovation that the pandemic has set in motion. Our company creation statistics have hit new highs, with 31 new companies created in the past year. This has been met with ferocious investor interest, with a record £1.1bn coming into our companies. Social ventures too have bloomed under lockdown, with six created in the past year and a total of 11 since we launched the programme three years ago. Meanwhile, all parts of the business have reported record interest, with both our Clinical Outcomes and Consulting Services teams rushed off their feet in recent months.

However, as the pandemic becomes manageable as vaccines take hold, we're once again asking ourselves: what's next?

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 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.



In 2021, OUI welcomed Mairi Gibbs, Simon Warner, and Jaci Barnett as our new Chief Operating Officer, Head of Life Sciences, and Head of Consulting Services, respectively.



Continued...



OUI will continue down its path of constant evolution to better catalyse the entrepreneurial spirit emerging from the University and the Oxfordshire region. Looking forward, we will continue working with our partners both in the University and externally to define how OUI can deliver its expertise, passion and culture of innovation more broadly.

## Spearheading Social Ventures

I am also immensely proud of the work we have spearheaded in the social ventures space. While OUI has become a global leader in how we transform patentable ideas from areas such as life sciences and AI, university innovation as a whole has much to offer in how we maximise the potential of concepts, policy innovation and thought leadership. It is clear that in order to address the UN's Sustainable Development Goals (SDGs), divergent thinking and the will to walk the path less trodden will be required to overcome these global obstacles and create a better world for future generations. Our social venture programme is still in its nascent stages, yet our companies are already targeting five of the 14 SDGs. These companies have both the agility of business entities and the purpose of state-owned organisations at their core, and clearly are a key resource to develop. By continuing to do so while inspiring peers to join us, OUI aims to elevate social ventures to a point where these socially-focused ideas can become a critical economic asset to the UK while doing good in the world.

Fundamentally, we want to see a world where not just the innovations pertaining to the pandemic, but all the ideas we manage realise their potential for transformative positive change across all sectors of society. As a goal, this may never be fully achievable but, as a vision that OUI aspires to, it is something that we strive towards every day. In partnership with our university colleagues, our companies and our partners in the ecosystem, we will endeavour to make it a reality.

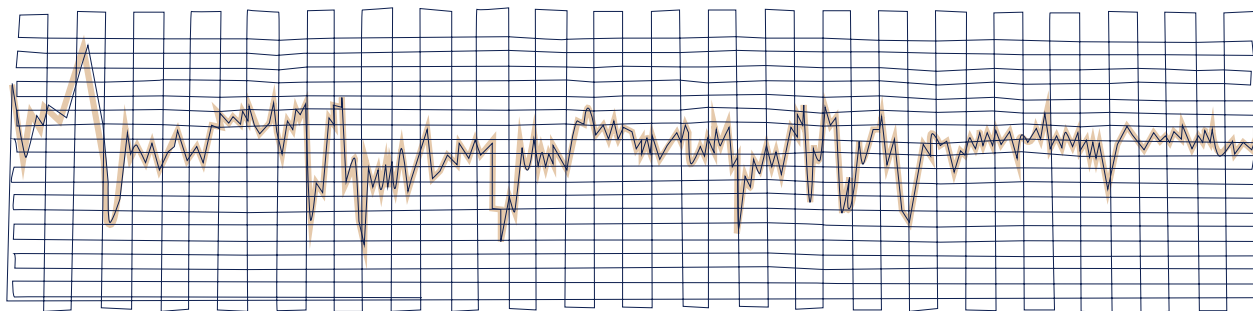
**Dr Matt Perkins, Chief Executive Officer, Oxford University Innovation**



OUI is proud to support IDEA (Increasing Diversity in Enterprising Activities), a new initiative from the University of Oxford to tackle challenges and inequalities faced by underrepresented groups in entrepreneurship and innovation.



# Clinical Outcomes



**The Clinical Outcomes (CO) business at OUI has enjoyed another amazing year of growth despite the downturn in licensing due to COVID-19. Clinical trials and other studies employing our outcome measures have been hit hard by the pandemic, with income from licences to our growing portfolio of measures being down by about a half. Fortunately, the Outcomes team have been able to adapt rapidly and returned a record year, achieving 35% growth in income on last year, the third year running we have achieved such growth.**

COVID-19 has undoubtedly impacted the way clinical trials and routine clinical care is conducted both in the UK and abroad. Our licensees have had to adapt quickly to support socially distanced clinics which has driven remote digital deployment of our measures, or Electronic COAs (eCOAs). In 2021 we saw a 53% increase for eCOAs on the year before. Also, in response to a demand for greater quality control of eCOAs, CO has now formulated its own new eCOA review service offering, with a pricing and testing structure to suit the client type and resource required. This new service will also ensure the integrity of our managed COA portfolio is retained for the benefit of all stakeholders and patients.

The pandemic has had a knock-on impact on clinical trials and our associated income, but we have reason to believe we are seeing the green shoots of recovery. We have been receiving an average of around 40 new licence requests a month since August 2020. This has shot up to over 60 since March. This year, we have granted over 700 licences (including 149 commercial) of which 126 were in May alone.

Clinical Outcomes translation activity has flourished this year. We have supported the international adoption of our measures with 35 internal translation projects completed and 63 new additions to our existing library of available translations. We now count 545 localised versions among our 36 measures, most of which have been translated and linguistically validated as compliant with sector good practices and in accordance with requirements of the European Medicines Agency and its counterpart in the USA, the Food & Drug Administration. The growth of our library of translations is also supported by groups of non-Oxford academics who, by following specific guidelines, create translated versions of the questionnaires for research purposes. Their contribution supports the global impact of our measures and aids the local adoption of our questionnaires in academic scenarios worldwide.

Alongside the translation project work for our portfolio of questionnaires, we have performed many translations and linguistic validations for third parties' questionnaires, including for the prestigious European Organisation for Research and Treatment of Cancer (EORTC) and their portfolio of cancer related COAs.



The Outcomes team have been able to adapt rapidly and returned a record year, achieving 35% growth in income on last year, the third year running we have achieved such growth.



We have extended our remit by helping clients delivering rare language projects such as Creole for Haiti, Cebuano and Ilocano for the Philippines, and minor African languages such as Ganda and Swahili, which demonstrates our commitment to make COAs available and accessible as widely as possible.

2021 is the first year CO has been actively supporting non-Oxford parties to manage their Clinical Outcome Assessments (COAs), with the addition of Sheffield University's Duchenne Muscular Dystrophy Quality of Life questionnaire developed with charity Duchenne UK, or DMD-QoL, to our portfolio. This health outcome measure aims at increasing the chances that patients with DMD could access innovative treatments. CO's contribution was managing the translation of the DMD-QoL into 26 language versions. It the single largest project CO has tackled to date and greatly enhanced the global impact and engagement of DMD-QoL.

In summary, the pandemic has been a challenge for CO and its users, with clinical trials and associated activity which our questionnaires monitor as healthcare providers worldwide switched track to focus on COVID-19. Yet, through adaptability from CO in redeploying its questionnaires electronically and expanding our reach through translation, we have risen to that challenge and laid firm foundations for the future of CO's operations.

## Financial Report

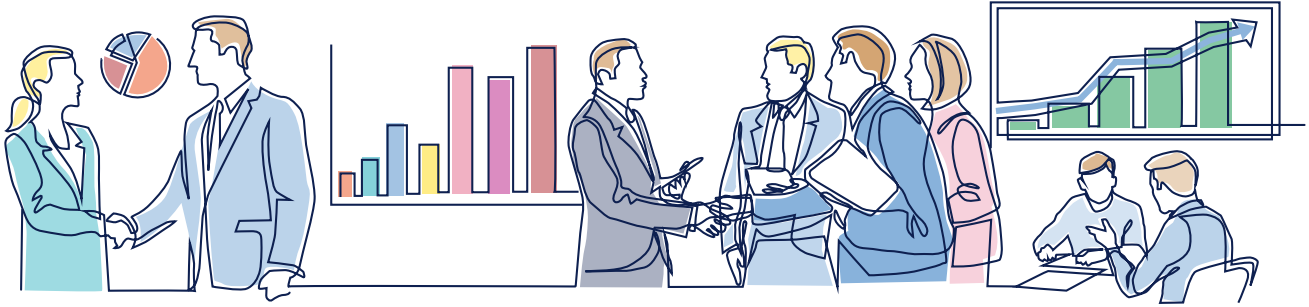


### **Oxford University Innovation's total income for the 12-month period from 1 August 2020 to 31 July 2021 totalled £19m.**

In addition to its income, OUI received £6.08m from Oxford University for managing the Intellectual Property and Spinout Investment portfolio and associated services. OUI invested £7.1m into the protection and development of IP and other direct project costs.

During the year, OUI activities returned £9.2m to researchers and the University.

## Achievements



**Disclosures: 307**

**Patents under management: 4455**

**Consulting Services Deals: 531**

**Total Deals: 796**

**Spinouts: 23**

**Startups: 4**

**Social Enterprise: 6**

**Total Companies: 31**

**External investment into spinouts: £1,148m**

**Total seed-stage investment into spinouts: £13.6m**



OUI set a new record for spinout and total company formation in 2020/21, at 23 and 31, respectively. It also saw record levels of investment into spinouts, with our community securing £1.16bn.



# The Oxford Response to COVID-19



**A hot topic of conversation in university innovation is how we can demonstrate impact. Questions we ask ourselves include: how many lives are we positively affecting with our activities? How are we impacting those lives? What are the tangible outcomes of our research, and how can we improve the adoption – and yes, the impact – of those outcomes?**

For Oxford, one particular journey we've collectively been on for the past 18 months has made demonstrating impact a relatively straightforward process: creation and delivery of the COVID-19 Oxford/AstraZeneca vaccine.

To the casual observer, delivery of the vaccine within a year may have seemed easy. But from the perspective of OUI, we have seen a truly Herculean effort across the Oxford innovation ecosystem to design, test and manufacture the vaccine, and our broader response to COVID-19.

The vaccine itself is a story of impact two decades in the making, with Oxford research led by Professors Adrian Hill and Sarah Gilbert into adenoviruses as a platform for vaccines stretching back to the turn of the millennium. Since 2016 this research has had a symbiotic relationship with our innovation activities, with our spinout community continuing to develop, support and invest in this research.

Originally conceived as a potential candidate for a universal flu vaccine, the ChAdOx-1 platform would be re-engineered at the beginning of the COVID-19 crisis into the AZD1222 vaccine, currently making its way into arms around the world.

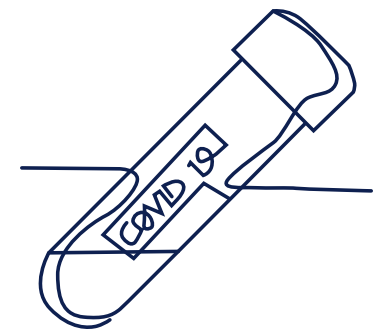
## Bringing together an organisation

"A crucial aspect of the Oxford AstraZeneca deal was coming to an agreement on costs which saw the vaccine priced at \$3 a shot, with AstraZeneca agreeing to produce it at cost throughout the length of the pandemic, compared with much higher prices per shot for Moderna and Pfizer's vaccines," said Angela Calvert, Deputy Head of Life Sciences at OUI. "This is predominantly down to the University's firm stance that this needs to be a shot for the whole world, not just developed nations."

Bringing together an organisation as decentralised as Oxford University to work collaboratively on the rapid and effective delivery of AZD1222 to a carefully selected licensing partner was no small task. Researchers in the Jenner Institute have been working around the clock for over a year. Other staff from the Vice Chancellor down have been directly involved in making the deal happen. Our news office has barely had an hour go by without a new enquiry about this, one of the world's biggest stories over the past year. OUI itself has played its part in supporting the deal and management of intellectual property (IP) related to the vaccine. And, of course, thousands of others around the world were involved in the testing, manufacturing and distribution of the vaccine itself.



Originally conceived as a potential candidate for a universal flu vaccine, the ChAdOx-1 platform would be re-engineered at the beginning of the COVID-19 crisis into the AZD1222 vaccine, currently making its way into arms around the world.



And yet, the vaccine is only one part of our COVID-19 story.

Another major achievement for Oxford has been the introduction of QCovid, a risk calculator rolled out across the UK at the start of 2021. Developed by Professor Julia Hippisley-Cox, QCovid has proven an essential tool for GPs in rapidly identifying patients most at risk from severe complications from COVID-19, allowing them to provide guidance on shielding.

“The QCovid calculator was an essential tool in saving lives during the third lockdown,” said Fred Kemp, Deputy Head of Life Sciences at Oxford University Innovation. “With the pandemic in full swing during the winter months, it was essential that GPs knew who among their patients needed to ensure they weren’t in COVID’s path. Without QCovid, the resulting toll of that wave could have been far more severe.”

Oxford and its companies have also got involved in mass testing. At the beginning of the pandemic, Oxford Nanopore shifted its focus onto rapid testing for COVID-19. This initial work has led to Nanopore broadening its application of technology in this space to be able to rapidly test for and identify pathogens, both new and existing, allowing for new variants and threats from COVID-19 to be detected at pace.

## Oxsed, a social venture

Alongside Nanopore’s efforts, OUI assisted the formation of Oxsed, a rapid testing social venture. The company became our fastest exit in history, going from spinout over the summer of 2020, to being acquired by Hong Kong-based life sciences firm Prenetics, in October. Its technology, RaViD Direct, produces accurate results in 30 minutes for £20 per testing kit, and is already being deployed in Heathrow and Hong Kong airports.

“The speed at which Oxsed was acquired demonstrated just how in demand this technology was over 2020,” said Jane Jin, Senior Licensing and Ventures Manager at Oxford University Innovation. “On the back of the deal, Prenetics has entered into a collaboration agreement with the University on rapid, molecular testing for infectious diseases and has set up a new Innovation Centre for Advanced Molecular Diagnostics at the Oxford Suzhou Centre for Advanced Research.”

Another social venture created to respond to the crisis was OxVent. Formed to manufacture low-cost “no-frills” ventilators to meet the NHS’ demand at the start of the crisis in the UK, the technology had a royal intervention, with prototypes loaded onto Her Majesty’s personal helicopter then flown in for evaluation by the UK government. The NHS was ultimately able to meet demand for ventilators in the UK, however OxVent is now aiming to make their technology available to low-income countries where the pandemic continues to rage.

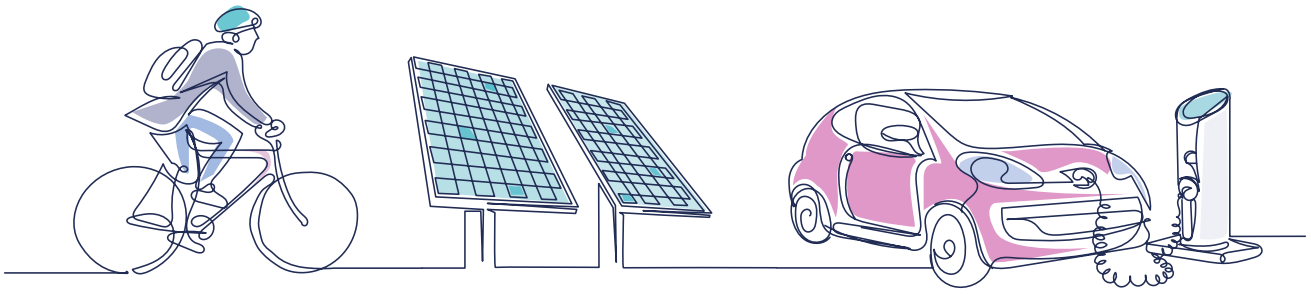
These technologies and more have demonstrated how much impact technology from Oxford can have, particularly in a time of crisis. With that said, we are all looking forward to the day when we can talk about impact from areas of university research beyond COVID-19.



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# The Year of Cleantech



**Ahead of the UN's Climate Change Conference (COP26) taking place in Glasgow in November 2021, the eyes of the world will be on the UK and what we as a nation can bring to the table in tackling the biggest looming threat to the planet: climate change.**

While the UK has taken steps to reduce its carbon footprint and become carbon neutral by 2050, the average UK citizen is still contributing seven tonnes of emissions per annum, which is above the global average. Further, the UK's emissions since 1750 are estimated to be around 80 billion tonnes, placing the country fifth for overall cumulative emissions.

Much of our carbon debt comes from the Industrial Revolution and the following decades. Arguably, as it was UK technology and innovation that underpinned the Industrial Revolution, with environmental consequences that were unimaginable at the time, the UK has an obligation to play a role to play in moving the planet towards a more sustainable future. Simply put, can we as a nation use that same flair for innovation that created the crisis to get us out of it?

At Oxford University Innovation, we certainly believe so. Oxford's researchers from all four divisions are addressing the imperative need for a sustainable future. While a good portion of the University's output on sustainability tackles policy and governance, Oxford's ideas are also powering an array of commercialisation opportunities.

## Cleaning up with our IP

The intellectual property in the OUI portfolio includes cleantech projects which stretch across transport, sustainable materials, energy and cleaning up the environment. We're supporting researchers working on hydrogen fuel and electric vehicles, sustainable chemicals, energy storage and fusion, and carbon capture and recycling projects, and many more projects in these sectors.

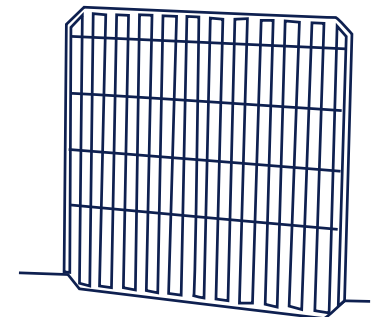
To date, the University has created 24 spinout companies in the cleantech space, representing nearly 10% of our overall portfolio. The OUI Incubator is filling up with cleantech ideas, such as Debug which is looking to deploy insect protein in animal feed and pet food. Our social venture programme is a natural fit for cleantech and targeting the UN's Sustainable Development Goals (SDGs), with our 11 social ventures already addressing 5 of the 17 SDGs.

While many of these companies are still in the early stages of their development, some of our more mature spinouts are making waves in the cleantech space.

Oxford PV is developing next generation perovskite solar cell technology. During 2020, the company set a new record for solar energy, converting 29.5% of sunlight into energy.



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Oxford PV's worlds most efficient panels



Compared to the current generation of silicon-based solar cells which have conversion rate of 15-20%, Oxford PV's technology is light years ahead of the competition. The company also unveiled a research programme to take its technology to 37% efficiency over five years in 2018, and followed the news by raising £65m during 2019. Oxford PV plans to begin selling its products to the public next year.

Another company working on energy solutions is First Light Fusion. Aiming to deliver fusion energy over the next decade, FLF recently raised \$25m in December 2020, which the company used to complete upgrades to its "Machine 3" – capable of discharging 200,000 volts and in excess of 14 million ampere (equivalent to nearly 500 lightning strikes) within two microseconds. The next step for the company will be demonstrating "gain" (ie. more energy created in the reaction than it takes to generate it) in the coming years with plans to open a plant in the 2030s.

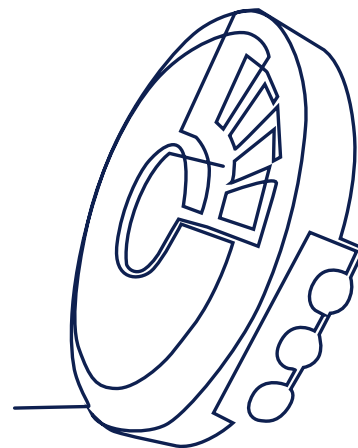
Beyond energy production, electric motor spinout YASA recently teamed with Ferrari to help the Italian supercar manufacturer deliver its first e-supercar. Earlier in the year the company opened its first Oxfordshire-based manufacturing facility, putting Oxford technology in the driving seat of the electric car movement. As this report was being prepared, the company was acquired by Mercedes Benz. YASA will keep its staff, locations and branding, and the deal opens up a new and exciting chapter for one of Oxford's biggest cleantech assets.

A novel addition to our cleantech line-up this year has been Ivy Farms, the first UK company working on cultured meat. Formed in 2019 but coming out of stealth mode in 2021, the company aims to deliver lab-grown pork products before moving onto beef in a way that eliminates suffering for animals. Bovine emissions alone presently account for twice the environmental impact that all the world's vehicles add to the atmosphere. Consequently, should Ivy Farms prove successful in its efforts to move meat eaters from traditional methods to cultured meat, its impact on both deforestation and cattle emissions would be immense.

Solving the climate crisis will require a multi-faceted approach that stretches over all sectors of society. However, at its core, we need technologies that both address our current damaging lifestyles, and underpin the needs of future generations in a sustainable fashion. Accomplishing this goal will require innovators in vibrant and supportive ecosystems from around the world. The University stands with those innovators to deliver a better, cleaner world, and OUI is ready to help Oxford achieve that impact.



Beyond energy production, electric motor spinout YASA Motors recently teamed with Ferrari to help the Italian supercar manufacturer deliver its first e-supercar and has been acquired by Mercedes Benz.



YASA's proprietary axial-flux electric motor

# The Academic Consultant



**One of the rare upsides of the past 18 months has been the gift of time, particularly in a professional context. The hours saved on commuting to work, travelling to meetings and a more flexible schedule have translated into opportunities to explore new projects, work and passions. It has been a different story however for Consulting Services at OUI, which has been inundated under lockdown with a massive spike in interest in consulting from Oxford's academic body, translating to its busiest period on record.**

Demand for the team's services, which include contract negotiation, admin and financial support for consulting, has not only increased because of academics having more free time, but recognition from Oxford's academic base of the quality of Consulting Services.

"The team are outstandingly professional," said Simon Marginson, Professor of Higher Education at Oxford University. "Consulting Services is a well-oiled machine, is always open to us, and is pushing us all to think broadly about the possibilities. In my opinion, it is one of the best parts of Oxford."

Prof Marginson has been consulting throughout his career in higher education, which spans three decades, and utilising Consulting Services since arriving at Oxford in 2018.

"Many of my recent consultancies have been with Irish Higher Education institutions. In particular, I've been advising institutes of technology on how they can upgrade to university status through specialising in research and technology areas, bolstering their relationships with research users and building out their student bodies."

Simon has been working with both the Athlone Institute of Technology and the Limerick Institute of Technology, which announced a merger in 2021 supported by consultancy Simon provided. The merger has allowed the two to reach university status, an achievement for which both institutions have personally thanked Simon.

Beyond Athlone and Limerick, Simon has also provided advice to Sligo, Carlow, and Galway Mayo institutes of technology, as well as providing consultancy to Monash University in his home country of Australia on strategies to capitalise on the rapidly changing global environment.

"When I come across an empirical case like Ireland, it informs me as an expert and I stand to learn a lot from every instance. The more you learn, the better, and how much you learn about how things vary, the better," said Prof Marginson. "Consultancy gives me a certain inspiration where I'm confronted with unique, interesting problems."



I previously did some work with the Satellite Applications Catapult identifying kilns in India, and we were able to use that to identify crops in areas that had been flooded and would be in need of assistance.



Those problems in turn give me incentive to expand my own thinking, and that fundamental work then helps inform and develop my public work.”

Another academic leveraging impact from his consultancy work is Steven Reece, a Senior Research Fellow at Oxford University’s Pattern Analysis and Machine Learning Research Group. Dr Reece’s primary focus is the use of satellite imagery in disaster response, and consults in related fields as well as the wider area of applied statistics and machine learning.

Some of Steven’s research has been taken into the field thanks to funding from the Alan Turing Institute and Ministry of Defence, which in turn led to him picking up more consultancy in nature recovery, his latest being with HR Wallingford, a non-profit research and consultancy group aimed at resolving water-related challenges.

“They [HR Wallingford] wanted to identify the damage to settlements from flooding in India using satellite imagery. I previously did some work with the Satellite Applications Catapult identifying kilns in India, and we were able to use that to identify crops in areas that had been flooded and would be in need of assistance.”

“What’s novel about consultancy is that there’s a lot of short term funding sloshing about for universities that can cover some work for less than a year, but typically isn’t enough for a post-doc,” said Steven. “Consultancy can help us make that work for us.”

In turn, Steven’s expertise has assisted his clients in building up their own capabilities.

“HR Wallingford has some great in-house geospatial experts, and I’ve worked with them to help develop their machine learning capabilities. Meanwhile with the Catapults, we’re developing R&D capabilities for AI and satellite imagery to be used around the planet.”

Steven notes that it’s also been a two-way street. His relationship with the Catapult has allowed him to access resources from Google X, Google’s “moonshot factory”, which he’s been using to train his neural nets on. Previously, Steven would develop code for them and spend all night getting through one and a half training cycles. With Google’s support, he can get through 100 cycles in 20 minutes.

“It’s actually all been a bit ironic as I voted against Brexit, yet over the past year, I ended up getting loads out of it,” said Steven. “The Government has been throwing money at satellites and AI, which has led to problems I can solve. I’ve had four consultancies in 2021, and three last year.”

# Startup Oxford



**To foster the culture required for a world-leading innovation ecosystem, a critical component of our work is building the entrepreneurial infrastructure that allow innovative ideas to flourish.**

To stimulate this culture, OUI created the Startup Incubator, which celebrated its 10th anniversary this year. Over that period the incubator has aided the creation of 57 startups and is continuing to build up momentum. At present, the incubator has seen a year-on-year increase in enquiries and received over 150 applications with 100 active projects currently on its books.

The current cohort range from companies like Ujji, which is developing an app for personal development, through to Debug, a cleantech company examining how insect protein can be used in animal feed and petfood, and Polymaths, an AI-driven drug discovery company.

## Support for Startups

Startups joining the incubator go through a three-phase process of support.

"Phase I is essentially a six-month accelerator," explained Cath Spence, Deputy Head of Physical Sciences at OUI. "Over the first three months, we train teams on design thinking, competitive analysis, customer discovery, lean canvas, prototyping and basic financials, with the later three months working on pitch crafting ahead of an investor demo day that the incubator organises."

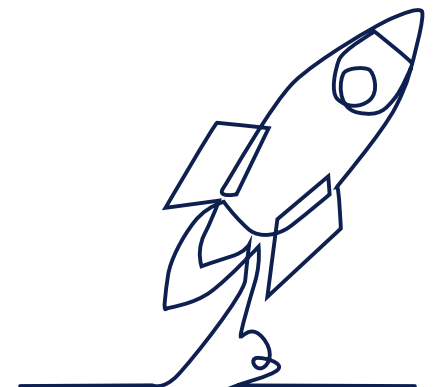
"The purpose is to make or break an idea," added Cath. "We give the incubatees training and support, go through step-by-step with them and pull their idea apart. Then we see what's left and agree how to turn that into a real company."

Once the projects have cleared the demo day, startups move onto the mentorship stage. This programme gives access to support from OUI's extended network of entrepreneurs, previous incubatees who have graduated, and partners in the ecosystem such as the Oxfordshire Business Network, the Bioescalator, the Oxford Foundry and Oxford Science Enterprises. Together, individuals from this group will provide advice and guidance to the incubatees. The Incubator team is currently working on adding a board-shadowing pilot programme to the mix, allowing early career researchers to get hands-on with entrepreneurship, and opening up its mentorship programme so it can be an asset for the whole Oxford ecosystem.

Typically, following a first round of investment, Incubator companies will be assigned an OUI investment manager to help them build the corporate structure and operations of an active business. That investment manager will be available to them until a successful exit.



OUI created the OUI Incubator, which is now celebrating its 10th year in business. In that time, the incubator has aided the creation of 57 startups, and is continuing to build up momentum.



The Incubator is currently gearing up to welcoming its latest cohort, as well as the return of the popular Student Entrepreneur Programme (StEP).

"We had to close off the last StEP virtually under the first lockdown but decided to hold off a new iteration until COVID passed," said Cath. "This sort of hands-on entrepreneurship is very much a contact sport."

The new StEP will begin in October, and will offer teams the opportunity to commercialise intellectual property from OUI, training and mentorship from the Foundry, a £1,500 stipend, and a chance at receiving investment from OSE.

Another critical part of this infrastructure is the Oxford Foundry which is also playing a leading role in stimulating startups. The Foundry has now had three cohorts pass through its doors, supporting 32 ventures in total. Collectively, those companies have raised over £43m, are valued at over £150m, have created over 170 jobs, and 86% are revenue generating.

"The last twelve months have been both chaotic and devastating, but a result of that has been to push forward entrepreneurship and innovation," said Ana Bakshi, Director at the Foundry. "Events over the last year – climate change, Black Lives Matter, COVID – led us to review ourselves and our purpose. Last year has taught us that we need change, that entrepreneurship can be that force for change, and the Foundry can be the enablers for that change."

Within three weeks of the first lockdown, The Foundry launched its Pandemic Response Programme, which included a COVID startup grant. It aimed to be a rapid solutions builder, received 200 signups from the Oxford community and raised £200,000 in two weeks.

Looking forward, The Foundry and the OUI Incubator will be working with other partners to develop further support for entrepreneurship and increase Oxford's presence as a startup hub. For this to be a success, we are actively searching for and looking to partner investors excited about early-stage companies to get involved in the wider Oxford ecosystem, as well as corporates interested in building relationships with our startup portfolio by providing mentorship, resources and access to markets.



The Incubator team is currently working on adding board shadowing pilots to the mix, allowing early career researchers to get hands-on with entrepreneurship, and opening up its mentorship programme so it can be an asset for the whole Oxford Cluster.





## Scaling the Spires



**The vision of Oxford University Innovation is a world-leading ecosystem with the University at its heart. And, with the help of our regional partners, we are closer to achieving this goal than ever before. While there is plenty of road left yet to travel, Oxford is rapidly developing the infrastructure, companies and network to support such an endeavour.**

To date, OUI has supported the creation of 270 companies, 95 of which have been created in the past five years. This makes Oxford University one of the most prolific creators of spinout companies worldwide, and in our portfolio are companies at all stages of their evolution. As the number and size of our portfolio of companies grows, more companies are attracting more investors and professionals. As more support and talent arrives in Oxford to enable the creation and growth of companies and those companies scale up, the resulting positive feedback loop is driving forward the innovation culture around Oxford.

This entrepreneur-friendly culture blossoming around Oxford has been met with support from inside the University, with Oxford taking a hands-on approach to support academic ambitions, make changes to catalyse more innovation, and showcase the successes we're collectively achieving.

"We're certainly making great strides. But for us to achieve OUI's vision of creating a world-leading innovation ecosystem with the University at its heart, we need to do more," said Matt Perkins, CEO at Oxford University Innovation. "We need to ensure a solid pipeline of ideas by attracting more world-leading academics while looking after those already here. We need to create innovation districts to transition those ideas into rapidly-scaling companies. We need to do more to attract the investment community see the opportunity here and realise that although it's already strong, it has the potential to grow much further."

### Space for Innovation

The purpose of the innovation districts will be to provide both the space for high tech companies and proximity for our innovation community, which in turn will foster collaboration, support and inspiration. The Oxfordshire Local Enterprise Partnership (OxLEP) has been working with partners including OUI and the University to define the innovation districts around Oxford. Together, we are transforming the Osney Mead site to accommodate the growing demand for space from spinouts, as well as further development of the University's Begbroke site outside Oxford. In addition, a new site which will combine housing with space for companies in Oxford North has officially broken ground. Additional sites, including former retail locations in the centre of the city, are also currently under consideration.



Oxford is moving from its boom-stage of recent years to a more mature ecosystem. With a partnership with Cambridge along the proposed Innovation Arc offering more sustained growth in the decades to come.



Another key objective of building the space for innovation is to attract big industry and tech names to Oxford. Making Oxford an appealing expansion territory for big players that can help us bolster our ecosystem is a priority for both the University and OUI.

"Whilst many of our brilliant academics end up working for them, and many of our spinout community do business with them, there still remains though, the question of how we get those big names and other players engaged in what we're doing here in Oxford," said Matt Perkins. "We need to identify what the missing pieces are and get them put in place for what we're building here to continue to grow."

Industrial support, not just for research but for the wider community, is seen as essential. The talent, resources and know-how that industry can bring to bear can be transformative – ideas can be commercialised faster, investment can be easier to attract, and companies can find partners to collaborate with as they grow.

Similarly, another area which requires imminent solutions is infrastructure around Oxford, a beautiful medieval city that wasn't built with modern transportation or a large population in mind. As a result, addressing issues with transport, house prices, rent and real estate for expansion while helping Oxford transition into a greener future is a fine balancing act. The Innovation Districts will help address some of these requirements, and finding additional solutions for those either living in or traveling to Oxford for work is a focus for many around the city.

Opportunities within our ecosystem is attracting people from all walks of life to become involved with our ecosystem, and those will only continue to grow as our companies blossom. However, it is critical that we can not only bring that top international talent in but keep it within the ecosystem. A recycling of entrepreneurs and staff is beneficial to our companies, allowing ideas and ways of working to spread across the ecosystem. By tackling the infrastructure question, it is our combined aspiration that we make Oxford an easy choice for those settling in for the long-haul.

## Addressing the funding drought

Our biggest immediate hurdle though is addressing the scale up funding drought in the UK. Over the past few years, gaps in funding at the proof-of-concept, seed and startup stages have been plugged by investors such as Oxford Science Enterprises and others moving in. However, for our companies to scale to a level where they can have the societal and economic impact we're aiming for, we need scale up funding that can help our companies grow between series B/C rounds and exits. Increasingly, we are seeing international investors move into Oxford to assist with this growth. There still remains, however, a gap in the market for substantial UK-based investment which share our aspiration of creating and retaining the next Google within the UK.

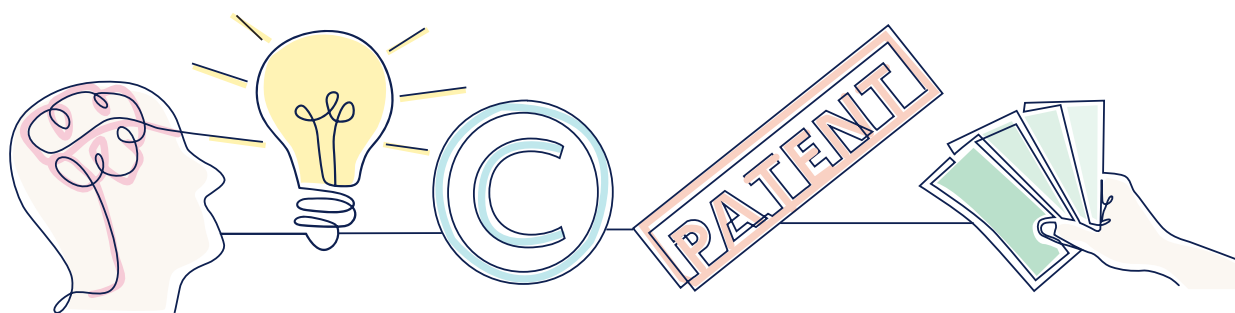
Oxford is moving from its boom-stage of recent years to a more mature ecosystem. With a partnership with Cambridge along the proposed Innovation Arc offering more sustained growth in the decades to come, there is plenty of opportunity ahead of us. An IPO boom alongside major exits like Mercedes Benz's acquisition of YASA are demonstrating that many of our firms are moving from startup to established company – with Oxford Nanopore's £3.4bn IPO taking place the same day this review went live. Developments such as Oxford North, the regeneration of Osney Mead, the growth of Begbroke Science Park, and other new initiatives offer new fertile ground for our companies to take hold in. Talent and investors from around the world are moving into Oxford, with a record-breaking £1.1bn invested into our companies over the past year. However, the difference between Oxford being a good place for innovation and being a world-leading centre for innovation is still dependent on overcoming the barriers we presently face and pushing for further growth and partnerships.

OUI fully believes in the potential of Oxford ideas to profoundly change the world for the better and the companies we create to drive forward that change. Our door is open to anyone who can help us realise that potential.



We need to create innovation districts to transition those ideas into rapidly-scaling companies. We need to do more to attract the investment community see the opportunity here and realise that although it's already strong, it has the potential to grow much further.

## From Idea to IPO



**Quite often when people consider the process of invention, the image that springs to mind is the romantic idea of a lone innovator. They imagine a Nikola Tesla-type of character, spurned by society for the disruptive nature of their ideas, toiling away at all hours alone in an underground laboratory until that magical eureka moment appears which transforms society overnight.**

While this concept has its innate charm, the actual process is somewhat more collaborative. The time between an Oxford academic publishing a paper to the research having impact in the world can stretch to years, and require hundreds if not thousands of people with all manner of backgrounds and disciplines.

### So how does research become reality?

Let's take a modern-day Tesla and drop him into Oxford University. This hypothetical Tesla-of-Tomorrow cares less for electricity, and more for new therapeutics. To begin with, his laboratory would be much less glamorous. Gone are the tesla coils and stylish Victorian attire, replaced with a chaotic mash of pipettes, plastic boxes and sterile white machines. It would also likely be staffed not only by Tesla, but other professors, postdocs and DPhil students as well. He wouldn't be reliant on rich benefactors, but would receive funding largely from the state and also perhaps corporates and charities focused on research.

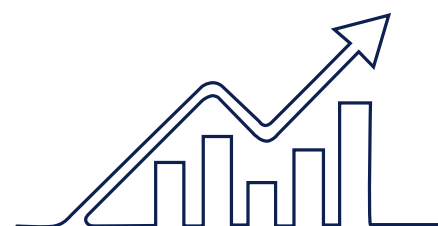
When our modern-day Tesla develops a therapeutic, it would not be presented at a World's Fair, but instead would come to Oxford University Innovation. Here at OUI we would protect his idea and work with him to identify the best way to take it forward. If he opted to go down the spinout route, we'd assist the founders to set up the company, identifying talent and investors to work with early on, build out a plan, and arrange any consulting into the spinout that they require.

At this point, Tesla's idea may already be several years from its original publication date, and would have drawn on academic colleagues, support from his department, licensing and ventures managers, OUI operations staff, Research Services, investors, lawyers, patent attorneys, mentors, business professionals and more.

A new therapeutic patented today could require several billion dollars in support to get it through development before it becomes a product that can be sold. In order to accelerate this process, it's absolutely essential that a life sciences company establishes firm foundations in terms of early-stage funding and a team who can get the job done.



In order to progress a company from the proof-of-concept and seed stage through clinical trials requires backers with deeper pockets. OUI, OSI and other partners around Oxford will facilitate this by attracting pharma, corporates and more mature venture capitalists to the Oxfordshire region and introducing them to our growing companies.



Continued...



This has been the primary focus of Theolytics, a company using viruses to battle cancer, since its formation at the end of 2017. After leaving OUI the company built up a team (currently standing at 28) while in stealth mode, emerging in 2019 with £2.5m in seed funding. It used the money to set up in the University's life sciences incubator, the Bioescalator, and to create its library of viral variants. It has since raised a further £5m in Series A funding, which will be used to progress its candidates towards clinical trials.

Beyond this point, our spinouts enter scale-up mode. In order to progress a company from the proof-of-concept and seed stage through clinical trials, backers with deeper pockets are required. OUI, Oxford Science Enterprises and other partners around Oxford will try to facilitate this by attracting pharma, corporates and more mature venture capitalists to the Oxfordshire region and introducing them to our growing companies.

Two companies at this stage come from the real-life version of our fictional modern-day Tesla, Professor Matthew Wood, Deputy Head of the Medical Sciences Division at Oxford University and a serial academic entrepreneur. The first, PepGen, is using enhanced delivery cell-penetrating peptide technology to develop treatments for Duchenne Muscle Dystrophy and related conditions. The company recently attracted £45m at Series A – one of the largest rounds at this stage on our books – to accelerate their development. Meanwhile Evox Therapeutics, a company working on using exosomes to develop a new class of therapeutics, closed its Series C at £69.2m, to further develop its DeliverEX platform and significantly boost its intellectual property portfolio and R&D capabilities. It has also signed partnership deals with Eli Lilly and Takeda to accelerate its progress.

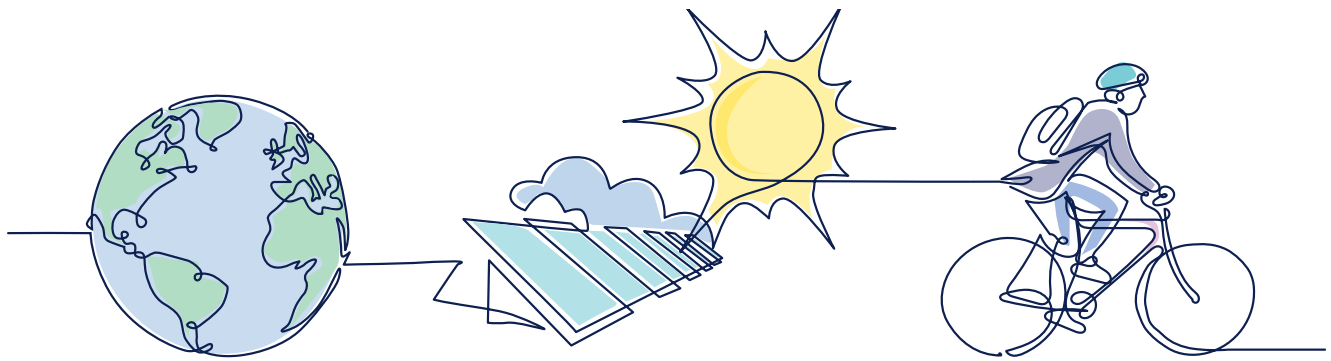
Other academic entrepreneurs, such as Dame Carol Robinson, founder of the rapidly growing structural mass spectrometry spinout OMass Therapeutics, and Professor Kylie Vincent and Dr Holly Reeve, co-founders of recent spinout HydRegen, are following in Wood's footsteps.

Once a company achieves several milestones and progresses through trials, the next logical step is often to consider an exit strategy. This could be through a sale of the company to a bigger firm, typically one of the pharmaceutical firms it partnered with earlier in its journey, or an initial public offering (IPO). At this stage, it could well be employing several hundred people and have a well-established operating base, as well as proven technologies in its portfolio.

Immunocore, a spinout using immunotherapy to tackle cancer, recently opted for the IPO route. Holding its flotation in the US, the company raised \$297m to continue its advancement of T cell receptor (TCR) therapeutics. Alongside its main product Tebentafusp, which is demonstrating good results in Phase III trials and receiving Breakthrough Therapy (BT) designation from the US FDA, it is also launching new candidates into trials. The cash raised through the IPO will ensure Immunocore has the financial firepower to continue its growth and bring its cancer-targeting therapeutics to market in the near-future.

This is the path innovation takes – not one set of hands working overnight, but many hundreds over a period of a decade or more.

# A Sustainable Future



**In 2018, the United Nations laid out its Sustainable Development Goals (SDGs), a set of 17 goals that it described as a “blueprint for peace and prosperity for people and the planet, now and into the future”. Ever since, the SDGs have become guiding principles in innovation (and not just because innovation forms part of goal 9).**

University innovation has historically already been tackling some areas of the SDGs. At Oxford, spinout companies are tackling the goal of affordable and clean energy, with solar panel firm Oxford PV leading the next generation of perovskite technology and First Light Fusion moving us closer to the promise of fusion energy. Similarly, Oxford’s ground-breaking research in the life sciences has translated into countless spinout companies, many of which have long-since graduated from concept stage to publicly listed companies creating impact and improving lives in the UK and beyond.

However, there are goals in the SDGs, such as eliminating poverty and hunger, where the profit-centric model of the traditional spinout is not appropriate. To address these goals, the University is increasingly turning to purpose-driven companies, social ventures, to translate its ideas into impact.

## Social Ventures

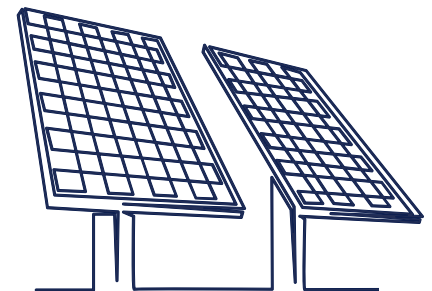
Since we began creating social ventures at the end of 2018, OUI has started 11 new companies that are tackling five of the SDGs.

One such company is the Global Health Network (GHN), a social venture which is aiming to improve research outcomes for diseases and regions where evidence and data is lacking. It does this by enabling an open movement of research information, data and know-how between organisations and communities in these areas through its eponymous digital platform. The GHN aims to be an “open online science park”, with organisations and networks owning their own hubs on the Network, providing them with workspaces that allow for both the amassing of data and documents by individual hubs and the seamless sharing with other hubs. Ultimately, GHN aims to catalyse safe, ethical and robust research in areas where this is currently lacking, laying the framework for health research that can positively impact some of the most deprived regions of the world.

The mission to help the most vulnerable in our society is also carried forward by two social ventures tackling poverty in two different ways: Greater Change and sOPHla. The former is focused on helping the homeless in the UK by enabling secure, cashless donations from the public which assist them to raise funds to move away from destitution. Greater Change partners with local homeless charities to find out what’s needed to help individuals get back on their feet – for example, cash for ID or deposit on a rental property.



Spinout companies are already tackling the goal of affordable and clean energy, such as cleantech firm Oxford PV leading development of next-generation solar panel technology.



It then works with the individual and the charity to create a narrative and a fundraising page which passers-by can interact with and donate to. Meanwhile, sOPHla is working with companies in Latin America to identify policies and practices which keep people in poverty and collaborates with them to find solutions which can lift them out of it.

One of our social ventures, Skylark Works, exists primarily to help other social ventures and charities thrive. The consultancy company works with nonprofit organisations to help them define the impact they aim to achieve, as well as working with them to develop the agility and sustainability required to ensure the impact they generate is long-lasting. The company draws from its commercial work with socially-minded corporates, as well as philanthropic donations and sponsorship, to be able to offer this support to non-profits on a pro bono basis. This allows Skylark to bring its network of associates linked to Oxford University to help nonprofits achieve their goals.

Finding new ways to help social ventures achieve their potential is an aspiration OUI shares with Skylark. In order to do this, OUI has partnered with 11 other institutions, including the University of Cambridge, to launch Impact12.

Set up in May of this year, Impact12 is a fund offering bespoke investment support for social ventures. Initially raising £8m, Impact12 will be deployed across a region supported by 12 universities which encompasses Oxford, Cambridge and the Midlands. Our shared vision for the fund is that it can be used to combine the ideas, resources and gravitational mass of Oxbridge with the community-centric social expertise of other partners to unleash a tsunami of social ventures across England.

Together with our peers, we firmly believe that these companies have a critical role to play in addressing the toughest societal challenges. Through the creation, support and growth of social ventures, our social venture programme will help us achieve the goal of harnessing sustainable innovation emerging from Oxford and other universities to create positive societal change in the UK and beyond.



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