Philanthropy Report 2020/21

UNIVERSITY OF OXFORD

Welcome

Philanthropy makes a vital difference to the life and work of the University, benefiting people and communities across the world. The generosity of our donors is truly inspiring, and this support has continued to make a tremendous impact across the institution. Much has been achieved by the Oxford community over the past year including, of course, crucial contributions in response to COVID-19.

This year's philanthropy report casts a light upon the significance of your donations across a wide range of subjects. This includes the outcomes of a study exploring the toll of the pandemic on children's mental health, the importance of graduate scholarships in enabling young academic talent to flourish, and the role of philanthropy in boosting innovation and entrepreneurship at the University.

With the new academic year underway, we can feel reassured that investment in academic excellence and the future of teaching and research puts us in a stronger position to prepare effectively for the challenges of the future. I hope you enjoy the report.

Thank you for your support.

Liesl Elder
Chief Development Officer
University of Oxford

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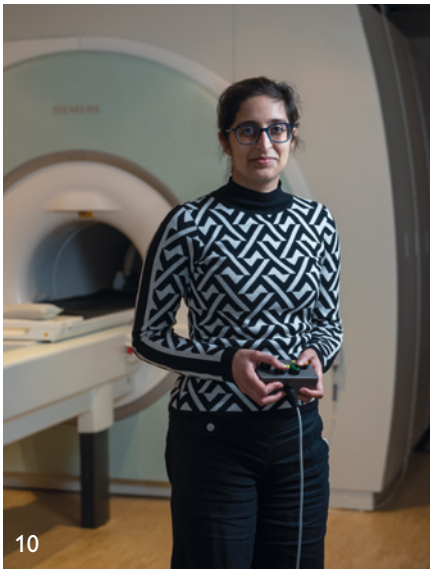
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Right, from top: Artwork from the Ashmolean Museum's *TOKYO: Art and Photography* exhibition; Professor Chas Bountra, Pro-Vice Chancellor for Innovation, at the University's Old Road Campus; Dr Jasleen Jolly at the Wellcome Centre for Integrative Neuroimaging; Sophie Forst, Lidl Graduate Scholar for 2020–21, at Balliol College

News highlights

Above: Artist's rendering of the University's new Life and Mind Building, where part of the Ineos–Oxford Institute for AMR Research will be based

Addressing the challenge of antimicrobial resistance

Antimicrobial resistance (AMR) is one of the greatest challenges facing the world. It is currently estimated that 1.5 million excess deaths each year are caused by AMR. Startlingly, this number could increase to 10 million by 2050.

Fuelled by the misuse and overuse of antibiotics in both human populations and agriculture, bacteria are continuing to develop resistance to existing treatments. Furthermore, in recent years, work to discover new drugs in this field has not attracted sufficient attention or funding, reflected in the fact that no new antibiotics have been developed since the 1980s.

Thanks to a £100 million gift from INEOS, the issue of AMR has been put firmly back into the spotlight. With this support, Oxford is establishing the Ineos-Oxford Institute for AMR Research to tackle this growing threat. Recognising that the majority of global antibiotic consumption by volume takes place in agriculture, one of the key focuses for the institute will be designing novel antimicrobials specifically for animals. In addition, work will take place exploring new drugs for humans.

The institute will also partner with other international leaders in the field of AMR to raise awareness and promote responsible use of antimicrobial drugs.

> The rapid and relentless growth of antimicrobial resistance poses one of the most serious threats to human life worldwide
>
> Professor Tim Walsh

Alongside contributing to research on the type and extent of drug resistant microbes, the institute will also attract and train the brightest early-career researchers to facilitate the growth of knowledge in this crucial area of study.

Tim Walsh, Professor of Medical Microbiology at Oxford, says: 'Just as the discovery of penicillin and subsequent antibiotics transformed modern medicine, the rapid and relentless growth of antimicrobial resistance poses one of the most serious threats to human life worldwide. Modern agriculture and healthcare are both heavily reliant on antibiotics, which is why it is vital to address this issue as a humanitarian emergency and to bring together national and international expertise across scientific disciplines to develop new drugs and policies to tackle this global problem.'

The Regius Professorship in Mathematics is secured for the future

The prestigious Regius Professorship in Mathematics, which was awarded to the University as part of the Queen's 90th birthday celebrations in 2016, has now been endowed thanks to the generosity of Merton College alumni. Donations from individuals including Sir Howard Stringer, Dr Andrew Robertson, Dr Peter Braam, and Mr Charles Manby played a pivotal role in securing this post, boosted by support from MC3, the Merton College Charitable Corporation, and from University matched funding.

The first incumbent of the Regius Professorship of Mathematics is Professor Sir Andrew Wiles, a fellow at Merton College. Professor Wiles famously proved Fermat's last theorem (a 350-year-old conjecture) almost 30 years ago and is widely recognised as one of the world's leading mathematicians. In 2013 the new home of the Mathematical Institute, the Andrew Wiles Building, was opened, named in recognition of his contributions to the subject.

Regius professorships are rare, sovereign-granted titles that recognise the most outstanding levels of research in their fields. As well as acknowledging Oxford's pre-eminence in research and teaching in mathematics, the award highlights the many benefits that flow to society from a deeper understanding and appreciation of mathematical science.

Right: Regius Professor of Mathematics Sir Andrew Wiles outside the Mathematical Institute

Together, Merton alumni raised £2.25 million towards the endowment, which was matched with over £1 million from the University's Endowment Challenge Fund.

Professor Irene Tracey, Warden of Merton College, says: 'Merton has been the spine of mathematics at Oxford, pure or applied, since the 14th century. The Merton Calculators are the bedrock of mathematics in Oxford, after whom a golden age followed, and the college's contribution has continued until the present day. We are enormously grateful to our alumni for securing this important position, which will inspire future teaching and research not only at Merton, but at the Mathematical Institute and beyond.'

Celebrating Japanese art and culture at the Ashmolean Museum

A major exhibition looking at Tokyo through a variety of artforms, from its beginnings over 400 years ago to the current-day 21st-century metropolis, opened at the Ashmolean at the end of July. Incorporating iconic works from artists such as Hokusai and Hiroshige, as well as recent photography by Moriyama Daido and Ninagawa Mika, *TOKYO: Art and Photography* details the city's history of destruction and renewal over four centuries. The exhibition begins with an immersive installation by Ninagawa Mika, created especially for the museum.

Dr Xa Sturgis, Director of the Ashmolean Museum, says: 'With its tumultuous history and extraordinarily rich and diverse artistic output, Tokyo is one of the most exciting cultural hotspots on the globe. In showcasing this exceptional range of artworks from the 17th century right up to pieces made in 2021, and precious works on loan from Japan, the exhibition is providing a thrilling and unusual insight into one of the most interesting cities in the world.'

The exhibition was made possible thanks to numerous donations, most notably a lead donation from Mr Hiroaki and Mrs Atsuko Shikanai and the Shikanai Foundation. Mr and Mrs Shikanai are also supporting the endowment of the Japanese Collection and the Shikanai Galleries. This includes the ongoing care and management of the collections, ensuring they are shared with the widest possible audience through a strong public programme.

The Shikanai Galleries cover the arts of Japan in the Edo period (1603–1867) and the Meiji era (1868–1912) when the country was opened up to the West after 250 years of self-imposed isolation. The first gallery features key artistic developments in the period including porcelain production, painting and woodblock printing, with a suit of Samurai armour enjoying pride of place. The later gallery houses two aspects of traditional Japanese culture: Buddhism and the tea ceremony. A tea house, constructed by master carpenter Amakasu Eiichiro, is built into one end of the gallery and regular demonstrations of the tea ceremony are held there.

TOKYO: Art and Photography is open until 3 January 2022.

Above: The Reconstruction of the Imperial Capital and Tokyo Subway by Sugiura Hisui, 1929 © The National Museum of Modern Art, Tokyo

Helping families cope during the COVID-19 crisis

Support from the Westminster Foundation is enabling critical research into the impact of the pandemic on parents, children and young people's mental health.

Alarm bells began ringing for Cathy Creswell, Professor of Developmental Clinical Psychology, in early March 2020. 'It suddenly became clear that there were going to be huge restrictions on children and families' lives,' she reflects. 'And because we know about the association between social interactions, play, being outside, physical activity, and children and young people's mental health, we felt it was really critical to keep a close eye on what was going on.'

As the UK entered its first lockdown, Professor Creswell and her colleague in the Department of Experimental Psychology, Dr Polly Waite, launched Co-SPACE: a study aimed at understanding how families are coping, as well as what parents and carers can do to support their children's mental health. Through a monthly survey and interviews with participants, the team has been able to build a clear picture of how children, young people and their families have been getting on.

'I think the main takeaway message is that there's been a huge variety in people's experiences,' says Professor Creswell. 'What we've been able to see is that many children, around 50–60%, have been really fine all the way through. Then there is a small group who struggled at the beginning and carried on struggling throughout, others for whom life was maybe a bit tricky at the start and then got a bit easier, and some for whom things just got harder.'

Armed with data from over 8,000 participants, the Co-SPACE team has been able to see whether any particular factors are associated with these differing trajectories. It has become clear that age is one, with primary school children among the Co-SPACE sample undergoing greater changes to their mental health than those at secondary school.

Children from low-income families and those with special educational needs have also been more vulnerable to elevated mental health symptoms. 'Children from these groups have definitely had a harder time,' notes Dr Waite, 'and that's essentially because they're experiencing adversity to such a greater level constantly throughout the pandemic.'

Overlaid on these findings are further pronounced patterns. Emotional and behavioural difficulties increased during periods of the greatest restriction, with June 2020 and February 2021 singled out as particularly difficult months. The study has also revealed the same pattern in parental depression and stress.

To ensure that the study's findings have a positive, real-world impact, the team has worked closely with practitioners and policymakers to help them consider how best to respond to the mental health needs of children and young people during the pandemic. Co-SPACE findings have also been disseminated to parents and carers, widely reported in the media, and

Right: Professor Cathy Creswell in central Oxford

used extensively by the voluntary and community sector.

'It's been really important that we've had data that has enabled us to contribute to the national conversation about children and young people, and how they have been affected,' says Professor Creswell.

The study's findings have also been used to instigate and inform further academic research. After seeing an increase in emotional symptoms among primary-aged children, Professor Creswell, Dr Waite and colleagues at King's College London set up SPARKLE: a randomised control trial evaluating the effectiveness of an app-based parenting intervention in helping Co-SPACE parents manage their children's behavioural problems.

Co-SPACE data has also underpinned the development of Professor Creswell's Co-CAT study, which provides and evaluates an online parent-led therapy programme for children with anxiety problems.

More than 1,000 families have received online support across both studies, including through child and adolescent mental health services. 'Co-CAT and SPARKLE are very large, ambitious trials that we felt were really important to do to respond to the current situation,' explains Professor Creswell. 'But I think the implication is that, if successful, those are interventions that we would be able to continue to use beyond the pandemic context.'

> "There's a lot of different work taking place around what children and young people will need in the future, and our data is definitely contributing to some of that planning"
>
> Professor Cathy Creswell

Professor Creswell sees the Westminster Foundation's support for Co-SPACE as a critical factor in enabling the study's success, and in laying the groundwork for these additional projects. 'They've very much come about because we were able to get that initial support from the foundation,' she explains.

That support meant that a postdoctoral researcher could be recruited to the Co-SPACE team early on, something that enabled them to become 'much more responsive to the data, and responsive to the questions that policymakers want answers to.' It has also opened up opportunities for Professor Creswell and Dr Waite to work with international partners who have been running parallel studies during the pandemic, including in Iran, Australia, Denmark and the United States.

For Professor Creswell, the insight they've gained through Co-SPACE has been invaluable, and not only in the context of the current crisis. 'What we've got from our data is a better understanding of who's been particularly hard hit, and it means the next time around, we would be in a position to target support to make sure those most in need really get what they need.'

Dr Waite agrees, and says that the challenge now is to dig deep into the mountain of data they've gathered to see what further conclusions can be drawn. 'There are so many interesting questions still to understand, like what are the resilience factors? What happened over the course of the last year?' she says. 'We've just touched the tip of the iceberg.'

Co-SPACE was funded by the Westminster Foundation and the UK Research and Innovation Council. The Westminster Foundation has also provided generous support for Professor Creswell's Co-RAY project, which is enabling young people to develop evidence-based mental health resources during the pandemic.

Training the next generation of heritage horticulturalists

Below left and right:
Laura Quinlan at the Oxford Botanic Garden

As the Oxford Botanic Garden celebrates its 400th anniversary this year, a new generation of plant-lovers is learning the art of caring for its precious botanical collections.

Apprentices have long played an important role at the Oxford Botanic Garden – the oldest in the UK and the birthplace of botanical sciences at Oxford. In recent years, this tradition has led to the creation of a hugely successful training programme for future heritage horticulturalists and arborists.

Established at the Oxford Botanic Garden and Arboretum (OBGA) in 2016, the Horticulturalist and Arborist Training Programme equips participants with specialist knowledge of historic and botanic gardens. The two-year apprenticeships offered through the programme play a crucial role in enabling young people to take their first steps into a career in either horticulture or arboriculture, while also contributing to the future preservation of heritage landscapes, gardens and collections.

Laura Quinlan decided to apply to the programme after realising that she was not well suited to sitting at a desk all day. 'I really wanted to get outside and do something more physical,' she reflects. 'I love plants and have experience in environmental science and plant identification, so when the opportunity came up, I couldn't say no; I had to go for it.'

Laura joined the OBGA as a horticultural apprentice in September 2019, and spent the following two years developing a comprehensive range of specialist horticultural skills and

knowledge. She worked on rotation between the glasshouses and outside in the garden, as well as undertaking training at the arboretum: a 130-acre site containing a world-class collection of trees and wildflower meadows.

'The all-round experience has been impressive,' says Laura, who relished the opportunity to undertake a variety of horticultural tasks in a range of different environments. 'I've helped to cut back the Merton Borders in the Lower Garden, dig up and replant the Autumn Border, and weave willow path edges. I've also gained experience in tying epiphytes to trees in the Water Lily House, and, at the beginning of this year, I helped with the pond clean, which was certainly quite a different job to do!'

In addition to developing skills through hands-on work, the garden's horticultural apprentices are taught about plant ecology and conservation, including how to identify over 500 plants and their families. 'We have a lot of different plants being used for scientific research that we need to make sure are kept healthy,' says Laura. 'Learning how to care for them has been really eye opening… and it's certainly helped me keep my house plants alive a lot longer than before!'

Both the horticultural and arborist apprenticeships are part of the wider University of Oxford Apprenticeship Programme, meaning that the trainees also work towards completing industry-standard qualifications while in post. This aspect of the programme plays a crucial role in addressing the skills gap faced by the horticultural sector, currently manifested in an ageing workforce, difficulties in filling skilled vacancies and a general shortage of labour.

'I think people have gone away from horticulture because of the perception that it is for unskilled labourers, but that's not the case at all,' says Laura, who now holds a Level 2 Horticulture Operative Apprenticeship. 'The horticulturalists I've met here are vastly knowledgeable, which is why it's so important to keep training like this going; as soon as that top level of staff start to retire, you begin to lose the skill set that they have built up over many years. And, really, you want those people to pass on their knowledge to the younger generation.'

Five trainees and three apprentices have successfully completed the Horticulturalist and Arborist Training Programme since 2016 – an outcome that simply would not have been possible without the generosity of many donors, including the Mila Charitable Organisation and the Peter Sowerby Foundation.

To ensure that future generations can continue to take advantage of the opportunities the programme provides, the OBGA is now seeking to raise an endowment fund for it. This will secure not only the apprenticeships, but also enable the creation of several early-career horticulturalist and arborist posts, thereby providing critical support to newly qualified apprentices.

> It's been a pleasure to learn from people who are so experienced in the world of horticulture – the knowledge here is phenomenal
>
> Laura Quinlan

For Laura, the past two years have been exceptionally rewarding, but also challenging. The COVID-19 pandemic hit just six months after she began her training, forcing the garden to briefly close and her college classes to be temporarily halted. It was her colleagues, she says, who got her through it: 'Even though we've had this troubling time, they have been really supportive and have helped me to grow in the position and gain more confidence.'

By supporting the garden's upkeep, Laura also feels that she has been able to play a positive role throughout the pandemic. 'When we were going through the second lockdown, we had quite a few visitors stop to say how beautiful the garden was,' she says. 'It has been really nice to be able to chat to people at a time when many have felt quite lonely, and to see how people have enjoyed the space.'

With her two years as a horticultural trainee now at a close, Laura is feeling positive about her future. 'I do feel well set up to move forward and hopefully get a good job,' she says. 'Personally, the training has really built my confidence about what I can physically do, and also what I can manage mentally, such as learning all of the different plants and understanding how they grow. It's been a great experience that has been made by my colleagues; them being so knowledgeable has helped to give me the best start in horticulture I could've wished for.'

A powerhouse of innovation

From student entrepreneurs and dynamic spin-outs, to cutting-edge facilities and pioneering research, philanthropy is helping to break new ground across all disciplines at Oxford.

As Pro-Vice-Chancellor for Innovation, Professor Chas Bountra is a passionate advocate of Oxford's ability to change the world for the better. His positivity is infectious as he champions Oxford's many achievements, capabilities and ambitions for the future. At the same time, he is keenly aware of what's at stake. 'Across the world, we're facing some massive problems: climate change, pollution, energy, food, water,' says Professor Bountra. 'We are faced with unprecedented challenges. But if anywhere can rise to these challenges, Oxford can.'

Innovation is a cornerstone of Oxford's strategic plan. The University has committed to increase collaborative research with business and industry, and has enhanced support for its own spin-outs and start-ups. So far, it's going well. 'A few years ago in Oxford, we were creating about five companies a year; now we're creating 25 companies a year,' says Professor Bountra. 'And I think this year it's going to be well over 30. Frankly, we could double that, but we're not trying just to create companies; we want to create companies that are worth £1 billion and then £10 billion, and then £100 billion. That's when they start to create thousands of jobs.'

This ambition is built on an impressive track record of success. 'In my own space of medical sciences there is a phenomenal amount to celebrate,' says Professor Bountra, who is also Professor of Translational Medicine in the Nuffield Department of Clinical Medicine and Associate Member of the Department

of Pharmacology. 'For example, the impact of Professor Dame Sarah Gilbert's vaccine; Professor Sir Martin Landray's RECOVERY trial, and its finding that dexamethasone is beneficial to COVID-19 patients; and Professor Adrian Hill's malaria vaccine research, which now boasts almost 80% efficacy. All saving many lives.'

It is precisely this renown for excellence that compels philanthropists to approach Oxford University for solutions to global problems. Professor Bountra continues: 'Philanthropists give money to Oxford because the University has such an amazing reputation: great people, the ability to leverage other resources, the power to convene. And a reputation for actually delivering – creating the kind of impact that benefits patients or society. It's a gift, and they're saying: "You guys, go away and do whatever you feel is necessary to sort out this problem."'

There are many examples of gifts enabling innovation at Oxford: INEOS recently donated £100 million for research into antimicrobial resistance. The Big Data Institute sits within the Li Ka Shing Centre for Health Information and Discovery at Oxford's Old Road Campus, and is now helping research into the causes, prevention and treatment of disease. A dozen companies have spun out of Oxford's Institute of Biomedical Engineering, including – in partnership with Nuffield Department of Surgical Sciences – OrganOx, which was supported by Oxford Innovation and the University Challenge Seed Fund. OrganOx is now changing the way donor organs are preserved in the critical time between donation and transplantation. In addition, in the Department of Chemistry – which boasts a state-of-the-art Chemistry Research Laboratory that benefited from philanthropic funding – 400 patent applications have been granted and spin-out companies have received over £750 million in follow-on funding as of 2020. One of these is Oxford Nanopore Technologies, which has developed a new generation of DNA/RNA sequencing technology. At the time of writing, the company has an estimated value of more than £2 billion and is expected to be listed on the London stock market imminently.

Pro-Vice Chancellor for Development and External Affairs at Oxford and author of *Philanthropy, Innovation and Entrepreneurship* is Professor David Gann CBE. Professor Gann was previously Vice President (Innovation) at Imperial College London and boasts extensive international experience in innovation strategy and technology management. He says: 'Philanthropy, innovation and entrepreneurship are increasingly intertwined. More entrepreneurs are making their fortunes from the commercialisation of innovative technologies, originally with deep roots in academic research. They understand the sense of purpose and desire to advance the creation of knowledge that will lead to future societal benefits. Oxford has the capability and ambition to join these dots, building a platform from which to help solve pressing challenges such as with climate change, environment, energy and health.'

Philanthropists play a pivotal role in the ecosystem of innovation at Oxford, but brilliant minds are at its heart. 'People make Oxford what it is,' Professor Bountra says. 'We attract and invest in students and researchers who are among the best in the world. One individual can make such a difference: setting the direction, enthusing, inspiring.

'Let's take the example of Professor Sarah Gilbert,' he continues. 'In January 2020, when the sequence of the COVID-19 virus was published, Sarah had a lot of the know-how already. She had done clinical trials in another disease with this particular vaccine technology. So, she could move on it very quickly.

'Actually, the beauty of funding early research is that we can be opportunistic, as it can reap many benefits at a later stage or have utility in a number of areas that were not expected at the outset. We just need to be open-minded to that.'

Students and alumni at the University are positively encouraged to nurture their entrepreneurial spirit through the Oxford Foundry, which was established in 2017. Its mission is to give students and alumni the entrepreneurial and technology skills they need to succeed and to build sustainable ventures, whatever their specialism. Donors have supported a number of initiatives to allow them to flourish, from Santander, which is kick-starting the Foundry's Diversity in Entrepreneurship fellowship scheme, to FMDQ Private Markets Ltd, who recently donated £150,000 to create the Foundry's first global partnership. The latter will facilitate the growth of Nigeria's venture ecosystem through the OXFO–FMDQ Young Entrepreneurial Leaders programme.

Professor Bountra sees the incredible potential in philanthropic support of all shapes and sizes, but make no mistake: Oxford's ultimate ambition is to be genuinely transformative. 'On the west coast of the USA, they have trillion-dollar companies. We don't have that – yet. I believe the government is looking to Oxford to innovate in the same way that has happened in the USA. We have all the ingredients and we just need to harness them. I'm very excited about what's happening at the moment.'

> It's up to us to come up with big ideas, bold ideas, transformative ideas. And it's up to us to create networks of people to tackle those ideas
>
> Professor Chas Bountra

Left and below: Professor Chas Bountra, Pro-Vice-Chancellor for Innovation, at the University's Old Road Campus

Sight matters

This page and opposite:
Dr Jasleen Jolly in an MRI scanner control room at the Wellcome Centre for Integrative Neuroimaging, a multi-disciplinary neuroimaging research facility at the University of Oxford

A legacy gift is helping to drive forward vital research into the UK's biggest cause of sight loss: macular disease.

Just 5mm across, the macula is a tiny but critically important part of the retina, responsible for all of our central vision, most of our colour vision and our ability to see in fine detail. Damage to this area of the eye can have a dramatic impact on sight, leaving those affected unable to read, drive and recognise faces.

Nearly 1.5 million people in the UK have a condition that affects the macula, known more broadly as macular disease. The most common form is age-related macular degeneration, but there are also a large number of rare, inherited conditions called macular dystrophies. It is this latter category that particularly interests Dr Jasleen Jolly, Senior Clinical Research Fellow in the Nuffield Department of Clinical Neurosciences (NDCN).

Two years ago, Dr Jolly launched a study to investigate the structure and function of the brain's response to Stargardt disease, the most common form of juvenile macular dystrophy. Through the study she hopes to determine how the visual brain of patients with this genetic disease differs from people with healthy visual systems, as well as those with an inherited retinal condition that spares the macula, called Choroideremia.

'Traditionally we've thought that the retina impacts the retina and then that's it. But actually, everything is interconnected,' says Dr Jolly. 'To see, you need not only the eye to work, but you also need those signals to be processed properly in the brain. The question is: when you get changes in the input to the brain, does that change the way that the brain actually processes that information?'

Dr Jolly is working with patients from across the disease spectrum to find out. Participants undergo five different types of brain imaging during their visits to her research clinic, as well as hearing tests, retinal scans and visual function tests. It is the first time in the world a study has combined – in the same individuals – data from vision, the retina and the visual pathway in the brain.

This novel approach will allow Dr Jolly to model how the visual system alters in response to disease – information that will play a crucial role in the development of treatments. 'Gene therapy is complicated in Stargardt disease; because it's such a big gene, it doesn't fit into the mechanism that we usually use,' she explains. 'That's why it's so important to understand as much as we can about the disease now,

> By putting all of the information we're gathering together, we can delve in a lot deeper than anyone else has done
>
> Dr Jasleen Jolly

so that when we get to the clinical trials, we're able to use the most appropriate measures.'

Eventually, Dr Jolly hopes her work will contribute towards the development of a therapy that does not depend on the underlying cause of vision loss and can complement treatment of the retina. 'The brain is constantly making new connections or changing its connections depending on what we're doing. When we learn a new language, for example, we're making new connections,' she explains. 'So, if we can harness the power of the brain, we could potentially help people to make the most of the vision they've got left.'

Dr Jolly's is one of four cutting-edge studies taking place in the NDCN thanks to a legacy gift left by Jean Williams, who died in 2017 at the age of 96. Jean was diagnosed with inherited macular dystrophy as a child and chose to leave a portion of her estate to fund research into macular disease.

Postdoctoral scientist Dr Jing Yu is leading another of these studies. Working alongside Professor of Ophthalmology Susan Downes, he is hoping to identify genetic variants that may predispose individuals to hydroxychloroquine (HCQ) macular retinal toxicity.

HCQ is a drug widely used for inflammatory conditions, however in some patients its use can result in irreversible central vision loss. 'Because the drug is so good it's the first line of treatment for many conditions, and apart from the retinal toxicity it doesn't have many bad side effects,' explains Dr Yu. 'But once the toxicity is there, it can't be cured.'

To minimise the risk, regular retinal screening is recommended in the UK, however, this is expensive – costing approximately £10 million per year – and can only identify toxicity after it has started. If Dr Yu is able to find genetic markers linked to an increased risk of developing the condition, HCQ use can be avoided in that group, protecting their vision and reducing the need for regular screening.

Boosted by Jean Williams' gift, Dr Yu is on track to enrol over 600 participants in the study, making it the largest of its kind in the world. 'We want as many HCQ users to benefit as possible,' he says. 'And then people who use the drug will be reassured that their risk of developing this kind of sight problem is very low.'

Improving the outcome for patients is also what drives Dr Jolly forward. 'Because Stargardt disease starts quite early on in life, it has a big impact – a lifelong impact,' she says. 'It's good to be able to give people hope, to let them know that we are thinking about them and trying to support them.'

Providing this support is not without challenges though. Vision currently accounts for just 1% of the UK's research budget, and it is decreasing due to the pandemic. 'If you wanted to reflect how much of the NHS's work is devoted to sight, we should be around 20% of funding,' says Dr Jolly. 'It's a really exciting time for vision because there have been so many advancements in therapies, but if we don't do the background work, we can't move forward with them.

'That's really why gifts like this are so critical.'

Unlocking the secrets of glacial dynamics

DPhil scholar Gonzalo González de Diego is using his expertise to better understand and predict the dynamics of glaciers.

Advancing scientific methods to further understand the Earth's climate is a key objective of DPhil scholar Gonzalo González de Diego's work. However, perhaps surprisingly, Gonzalo is not an environmental specialist: he's a mathematician.

'Understanding the evolution of the line where ice, continent and ocean meet – known as the grounding line – is a critical factor when making any sort of prediction on sea level rise and the melting of ice sheets. Subglacial cavitation – a phenomenon whereby the ice of a glacier detaches from the bedrock on the lee (sloping) side – is a much smaller-scale, quite niche problem. But it's a fundamental mechanism in understanding how glaciers slide,' says Gonzalo.

The dynamics of glaciers are poorly understood, but tools and concepts from mathematical and numerical analysis are capable of providing valuable insights into their behaviour. Gonzalo sees his doctoral research as a numerical and glaciological investigation of 'contact problems' – a set of mathematical equations designed to address the possibility of contact and detachment – specifically relating to subglacial cavitation and grounding line dynamics.

He says: 'Although it's mostly glaciologists who are looking at these problems, these mathematical structures have a great deal to offer. Grounding lines and subglacial cavitation are very different physically, but very similar mathematically, and both are incredibly important. We believe that there is a great deal of scope for using the mathematical applications that we're exploring. I'm at a relatively early stage of my research, but the mathematical structure I'm working on is fundamental to correct simulations. This is something that we can exploit to get more accurate and robust 'solvers' – computer-generated approximate solutions to complex problems – for systems of equations that model glacial detachment.'

A number of issues can complicate these calculations from a mathematical point of view, rendering the solvers extremely unstable. For example, one small parameter in a simulation might change, such as the temperature, and that can have a big impact. 'My aim is to look at the possibilities and increase the robustness, the stability and accuracy of the modelling,' says Gonzalo.

Originally an engineering student in Spain, Gonzalo subsequently took up a research role in Germany, conducting numerical analysis from

> Studying subglacial cavitation is looking at some of the most fundamental mechanisms involved in glacial sliding. I think it's almost on par with grounding dynamics: it's actually something very important

Gonzalo González de Diego

Above: DPhil scholar Gonzalo González de Diego at the Mathematical Institute in Oxford

an engineering perspective. He was 'attracted by the elegance and exactness of the mathematics', which then led him to study for a master's degree in mathematics at Oxford. He moved on to a DPhil in 2019 thanks to funding from the Oxford Mathematical Institute Fund (OMIF).

OMIF provides scholarships and flexible financial support to graduate students from around the world, and is supported by donations. 'Removing financial barriers for our graduate students is of utmost importance,' says Sam Howison, Professor of Applied Mathematics in the Mathematical Institute. 'Through OMIF, we are able to nurture the next generation of mathematicians and give them the freedom to explore today's most intriguing and important mathematical questions. We are grateful to all those who have supported OMIF to date.'

'I feel very lucky to be in Oxford, for sure,' says Gonzalo. 'I'm pretty much given absolute freedom by my supervisors.' He views his DPhil very much as a collaboration: Gonzalo works with Professor Patrick Farrell – 'he does scientific computing and numerical analysis to make computations possible,' says Gonzalo – and Professor Ian Hewitt – 'an applied mathematician who is very focused on glaciology,' he adds.

Gonzalo is learning as much as possible about the challenges that the glaciologist community is currently facing, so that his research is impactful. The freedom that his DPhil affords him means that, at the time of writing, Gonzalo is planning to join a summer school visiting a glacier in the Alps in Italy with environmental scientists. 'It feels quite incredible that I can do analytical work like that,' he says.

There are a number of options open to Gonzalo in terms of next steps, including a career in academia or education, ecological consulting, or contributing to the kinds of intergovernmental reports that he himself has drawn upon in the course of his work to date. As he weighs up the options, Gonzalo says that he is sure of one thing: 'I have become quite serious about the broader landscape into which my work fits, especially from a moral and ethical point of view. There's so much we can do. I'm extremely happy with my current project and the situation I'm in. Definitely.'

Aligning global finance and the environment

Sustainable finance has an important part to play in addressing the environmental challenges that we face. With no script yet written, there's much ground-breaking work to be done.

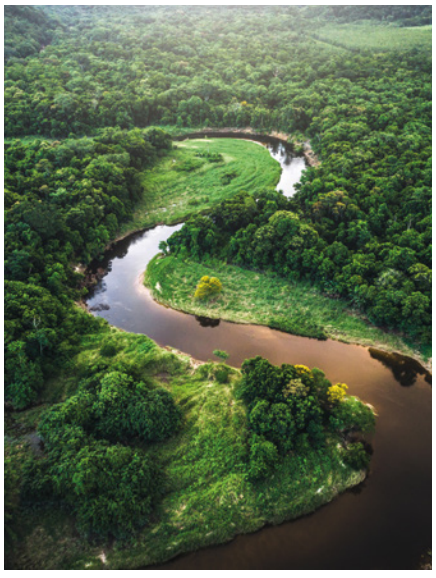
The world has finally woken up to the urgency of climate change and biodiversity loss. Financial institutions and their supervisors increasingly worry about environment-related risks and resulting stranded assets that could affect the solvency of individual firms and the stability of the financial system as a whole. Around the world, pension funds, banks, insurers and asset managers with trillions of dollars of assets are pledging to help tackle these interlocking environmental crises.

Yet more pledges and promises are no longer enough: these commitments must now be honoured. Moreover, there's a need for data, analytics and expertise from a range of disciplines to measure and manage the risk of stranded assets, and to provide the financial products and services required for the real economy to reach net zero and become nature positive. There's no quick fix – but who can help define best practice and socialise its adoption and implementation in this critically important topic?

The Oxford Sustainable Finance Group exists specifically to take on these challenges. It was set up to try to align the global financial system with environmental sustainability by, firstly, helping to mobilise investment into solutions to environmental problems; and, secondly, to improve the resilience of the financial system and of individual financial institutions by measuring and managing these environment-related risks.

'We are one of the largest research groups focused on these topics,' says Dr Ben Caldecott, Director of the group and the inaugural Lombard Odier Associate Professor of Sustainable Finance. 'I really do believe that Oxford is the most exciting place in the world to be working on sustainability topics, in large part because of the interdisciplinarity. We have a deep strength in sustainable finance, but we can also bring to bear world-leading expertise in other areas from across Oxford on particular questions, and help to translate that in a way that's useful for financial institutions, regulators and policymakers.'

> "A lot of the big innovations in finance and investment are actually being developed in response to environment and climate concerns"
>
> Dr Ben Caldecott



Interest in this area has grown significantly over the last decade, as central banks and supervisors have seen the urgent need for firms to think about these issues systematically – 95 have signed up to the Central Banks and Supervisors Network for Greening the Financial System, thereby committing to doing further work in this area.

Dr Caldecott is clear that reaching net zero is the only way to tackle climate change and stabilise global temperatures, and the roles that finance and investment play really do matter. 'Every sector of the global economy has to go through a profound transformation,' he says. 'This will require investment in new business models, new technologies, new infrastructure and new skills. The availability of capital and financial services is absolutely essential to support and enable transformational change, sector by sector.'

Measuring risk requires the use of new technologies and methods. Earth observation, using satellite imagery and other sensors, and artificial intelligence (AI) are key tools to help reveal the pollution and the environment-related risks that exist in investment portfolios. 'We are working to improve transparency and it's currently very patchy,' says Dr Caldecott. 'When you can process the observational data using AI, you arrive at insights based on real data that are current and up to date. Instead of relying on the disclosure of information, you can see how companies are performing on sustainability.'

These issues have now reached the public consciousness, with questions about whether investments are environmentally sustainable. 'How do we make sure that the preferences of retail investors with a pension and some savings are reflected to make their money matter?' asks Dr Caldecott. 'We are doing more work on what we call 'transition

finance', and we're also working with organisations to ensure that their clients and investee companies become more sustainable.'

Education is an imperative, so teaching and capacity building have been prioritised. Expertise in sustainable finance is now being securely embedded for the future – from undergraduate and master's students to a sizeable DPhil cohort. A range of executive education courses, delivered in person or online, or in some combination, is also available; and there's a new Public and Third Sector Academy for Sustainable Finance to provide free or heavily discounted capacity building and training for central and local government, regulators, supervisory authorities, multilateral institutions, NGOs and philanthropy – constituencies that are often underserved, especially in emerging and developing countries. All the courses offered are devised working closely with end users and practitioners. No other research group internationally offers this breadth, depth and quality of teaching on sustainable finance and investment.

Oxford is also using its considerable convening power to bring relevant parties together in high-trust spaces through a range of conferences, forums and symposia, and the Oxford Sustainable Finance Group creates public datasets

> It's a pleasure and a privilege to be able to work on this with financial practitioners and other stakeholders
>
> Dr Ben Caldecott

Above: Dr Ben Caldecott at Oriel College, Oxford

to help improve decision-making across the financial system, including new open-source global asset-level datasets for the most polluting sectors of the global economy. Dr Caldecott's group is also helping to 'grow the pie' – for example, by conceiving and founding the Global Research Alliance for Sustainable Finance and Investment, which now has 29 member universities collaborating to turn sustainable finance into a more mature academic field.

Swiss private bank Lombard Odier is partnering with the Oxford team and – a move that underlines the value of this work – recently created the first endowed professorship of sustainable finance at any major global research university. The gift was organised through Swiss Friends of Oxford University, whose president is Howard Rosen CBE.

Dr Caldecott's expertise is in demand: in addition to leading the Oxford Sustainable Finance Group, he is also the COP26 Strategy Advisor for Finance in the UK Cabinet Office and is the Director and Principal Investigator for the new UK Centre for Greening Finance and Investment, established by UKRI and involving a consortium of leading UK research institutions. What keeps him motivated when there is so much to be done?

'This is a rapidly developing, fast-changing area, and one that has real impact,' Dr Caldecott says. 'We have the very real privilege, and I dare say responsibility, to develop and deploy the future of sustainable finance, which, in fact, will be the very future of finance. It's a very exciting time and we have no time to lose. Greening the global financial system is a necessary condition for tackling climate change, stopping biodiversity loss and addressing a whole host of other things we all care deeply about.'

Dr Caldecott and colleagues across the University are establishing a new Oxford Nature Finance Initiative to help mobilise capital at scale to protect and restore ecosystems and biodiversity around the world. To find out more, contact ben.caldecott@smithschool.ox.ac.uk

Advancing our understanding of German culture

This page and opposite: Sophie Forst, Lidl Graduate Scholar for 2020–21, at Balliol College

The study of German language, literature and culture is thriving at Oxford thanks to support from the Dieter Schwarz Foundation and Lidl GB.

As an undergraduate student at the University of Munich, Sophie Forst became fascinated with the Enlightenment: the period of rigorous scientific, political and philosophical discourse that characterised European culture in the late 17th and 18th centuries. As her course drew to a close, she knew she wanted to continue exploring the subject at graduate level and so applied to study for an MSt in Modern Languages (German) at Oxford.

'Central to the Enlightenment is the notion of reason, because, by its public use – as the philosopher Immanuel Kant argues – humanity can progress. It's the idea that humans can overcome errors in their thinking by identifying them, and by using reason in the right way,' explains native German speaker Sophie. 'It's a very inspiring epoch that led to major social innovations, and Oxford has a great European Enlightenment programme, so it just seemed like it fitted perfectly.'

Sophie took up her place in the Faculty of Medieval and Modern Languages in September 2020, and in doing so joined one of the world's leading centres for the study of German language, literature and culture. German studies have long been an important part of intellectual life at Oxford, with the language first taught at the University more than 100 years ago. Today, the sub-faculty of German provides students with an extensive grounding in German culture, covering medieval writing through to contemporary literature, language and film.

Over the past year, Sophie has chosen to focus her own research on the aesthetic theory of the European Enlightenment, which she describes as 'a philosophical reflection on literature'. This saw her primarily study dramatic texts from the period, including those of German playwright, poet and philosopher Friedrich Schiller (1759–1805). 'Schiller has an anthropological approach and asks what we can learn about human beings and their moral potentials. He looks closely at how people act and why, and reflects on it in his theoretical writings and in his dramatic *oeuvre*,' explains Sophie.

As well as being of great historical importance, Sophie says that the Enlightenment also has relevance in the present day. 'The claims that Enlightenment makes and the virtues it wants us to have, like to be moral according to universal norms, to be tolerant… we still have to live up to them today. Enlightenment hasn't stopped; it's a project that is not finished – including criticising its own limitations. Studying it has definitely taught me a lot about people, and made me more reflective in thinking about the core questions of the world.'

Thinking deeply about German language, literature and philosophy, and what it can tell us about German culture and its global impacts, is a core component of studying the subject at graduate level. However, German language studies are currently under threat in universities across Europe, with many departments having closed in the UK in the last ten years.

Recent philanthropic support has been crucial in enabling Oxford to work towards stemming this rapid decline, and in doing so, helping the discipline to thrive once again. Earlier this year, a donation from the Dieter Schwarz Foundation secured the future of the Taylor Chair of the German Language and Literature: a prestigious academic position that plays a leading role in international German studies.

Another significant source of support for German at Oxford has been Lidl GB. In 2018, to enhance German language teaching and provide opportunities for talented young linguists, the supermarket chain funded a series of scholarships and prizes for students studying German in the faculty. Sophie was awarded a fully-funded Lidl Graduate Scholarship for her master's degree, which she describes as 'essential' in enabling her to take up her place at the University.

> I'm so thankful to have had the opportunity to come here to pursue my master's degree. I wouldn't have wanted to miss it
>
> Sophie Forst

'Lidl's support is very important for the future of German studies,' says Sophie, who recently completed her MSt course with a Distinction. 'It's been a privilege to have had this scholarship and I'm incredibly thankful for it.'

Sophie's experience of studying German at Oxford has been eye opening. Particularly notable, she says, is the way in which she was encouraged to think more broadly about the subject she had come to love as an undergraduate. 'This is a great place to work in an interdisciplinary way. The professors encourage us to look beyond our subject. And they support us with our ideas, even if they are risky and we don't know if they will work out.'

Sophie also greatly valued the academic community she encountered at her college, Balliol, as well as the high level of interdisciplinary exchange between fellows and students there.

Studying German literature from the perspective of another language is something that Sophie relished, having not done it before coming to Oxford. 'I feel like it has made me more reflective,' she says. 'The structure of the English language is different from German, so I think it changes your argument. I think it even changes the structure of your thinking. It's very exciting, and I only discovered it when I got here.'

Sophie enjoyed her time as a master's student so much that she decided to apply for a DPhil in the faculty. She began her doctoral studies in October, focusing on moral and social progress in the philosophical, literary and aesthetic discourse of the Enlightenment. 'I think Oxford is the best place for this project so I'm very happy to be able to do it here,' she says. 'It's really inspiring: the people, the place and the institution. I'm so glad to have had the Lidl Graduate Scholarship, which has made everything possible.'

Thanks to your support…

…the Dean's Scholars Fund in law was successfully launched

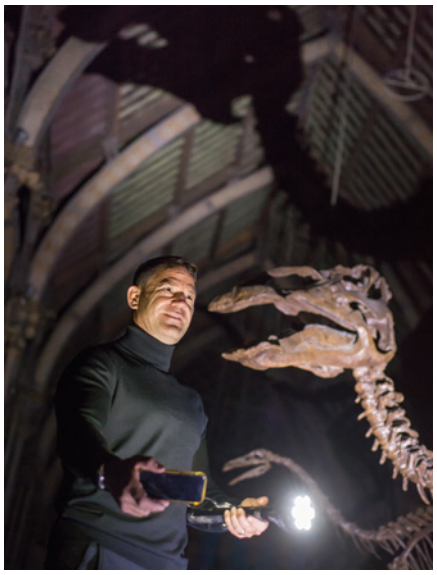
As one of the world's leading institutions for the teaching and study of law, the University's Faculty of Law has a strong track record in educating the leaders of tomorrow in the legal profession, policy-making and in other impactful roles. The distinctive combination of knowledge, leadership skills and intellectual confidence they gain during their time at Oxford equips students with the tools and the mindset to improve society by tackling the most important questions of the day.

At the graduate level, however, many gifted students are unable to pursue their academic and professional goals due to a lack of funding, meaning a loss of talent to the practice of law and to society more widely. To address this challenge, the faculty launched the Dean's Scholars Fund in June 2021 to provide financial support and opportunities to those students who have so much to offer, but who would otherwise not be able to take up their place due to financial barriers. By the end of August, almost £26,000 had been donated.

Dean of the Faculty of Law, Professor Mindy Chen-Wishart, said: 'As Dean, I want to ensure that the Faculty of Law is a place where people have a sense of community, common purpose and that we continue to support the brightest minds in achieving their academic and professional goals. This tremendous support will enable us to provide opportunities for the most diligent and promising students to develop their skills at Oxford, irrespective of their financial background. It will help shape the next generation of graduates and help to shape the future of law.'

Below: Graduate students in the Faculty of Law

…our appreciation of biodiversity has been boosted



With restricted access to 'in person' visits during the pandemic, the Oxford University Museum of Natural History (OUMNH) played virtual host to an online interactive puzzle challenge in December 2020 to raise funds for its HOPE for the Future project.

Wildlife presenter and explorer Steve Backshall took participants on an after-dark adventure through the neo-gothic splendour of the museum, with the public helping him solve clues as the mystery unfolded in real time. Viewers were able to witness a torchlit exploration of behind-the-scenes areas of the museum in pursuit of the sinister Miss Take, who represented the threat that the loss of biodiversity poses to the planet.

Left: Steve Backshall exploring OUMNH after dark

While the event was free to join, people were encouraged to donate to the HOPE for the Future project, which is seeking to preserve the 200-year-old Hope Entomological Collections held at the museum. The project, which has received support from the National Lottery Heritage Fund, aims to rehouse and document over one million British insects and deliver a learning and community programme to inspire lifelong interest in the natural world. The live event raised over £33,000 and clocked up 121,000 views, with over 16,000 people in 7,689 households actively taking part.

Janet Stott, Deputy Director and Head of Public Engagement at OUMNH, said: 'This was such a creative and engaging way of connecting with people during difficult times while visits to the museum were so limited. It is important that we do not lose sight of the challenges posed by the loss of biodiversity – a mission that lies at the heart of the HOPE project. We are enormously grateful to everyone for their involvement and generosity.'

…Oxford Sport has enhanced student and staff wellbeing

Building on clear evidence that exercise and activity provide real benefit to academic performance, as well as health prospects more generally, the University launched its Active at Oxford campaign in early 2020 to encourage participation in sporting activity, regardless of experience or ability. When lockdown hit just a few weeks later, Active at Oxford focused on promoting its Active Anywhere programme, making a wide range of sport and wellbeing advice and sessions available to members online.

The generosity of donors to the Active at Oxford appeal allowed the University to respond rapidly to the challenging circumstances faced by many students, either isolating in college rooms or in lockdown away from Oxford. As well as providing support for individual sports clubs, gifts to the appeal meant that all financial barriers to Active Anywhere were removed for students and staff throughout the pandemic. By summer 2021, more than 1,800 members had participated in almost 5,800 online classes, ranging from basic stretching sessions through to high-intensity circuits, boxercise and 18 other physical activity sessions, while also accessing nutrition workshops, healthy recipes and mindfulness activities.

> Thanks to you and your support we have been able to provide a vital lifeline to students and staff
>
> Jon Roycroft

Jon Roycroft, Director of Sport at Oxford, said: 'The past 18 months have underlined the powerful role that sport and physical activity have to play in supporting our physical and mental wellbeing and maintaining some level of positive social interaction, even under the most challenging of circumstances. Thanks to you and your support we have been able to provide a vital lifeline to students and staff with a broad range of offerings, from intense workouts to quick stretch classes. We have long understood how sport complements academic performance but never has it played such a vital role in supporting mental and physical wellbeing, when many of us were confined to our homes.'

Philanthropy statistics 2020/21

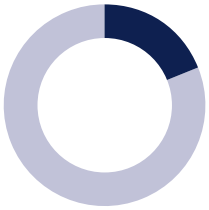
Amount raised this year
(University, colleges and the Rhodes Trust)

£369 million

1 August 2020 to 31 July 2021

Where donations come from
(University only)

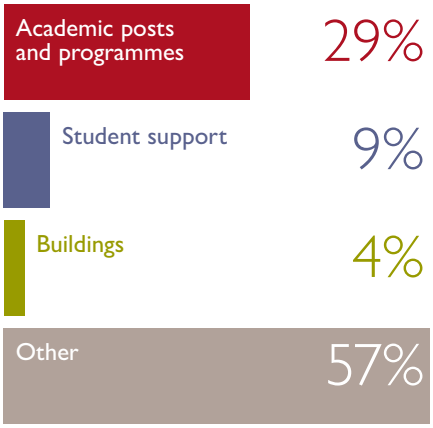
63%
United Kingdom



19%
North America

18%
Rest of the world

Destination of gifts by area
(University only)



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