

TEAM WORK WINNER



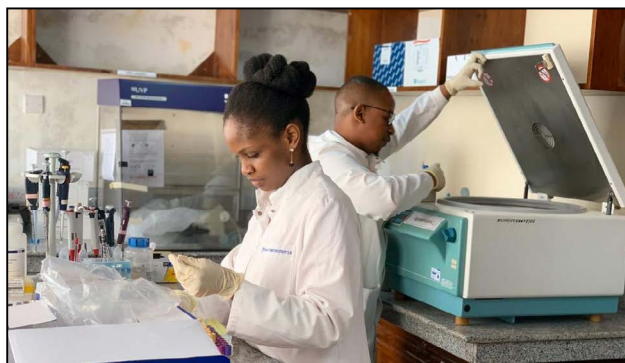
SEREN: A Social Enterprise to deliver DNA-based diagnostics that improves outcomes of children and young adults with blood diseases in sub-Saharan Africa

Dr Anna Schuh (Department of Oncology), **Dr Siana Nkya**, **Dr Clara Chamba** and **Dr Ahlam Nasser** (Muhimbili University for Health and Allied Sciences)

SEREN is a social enterprise based at the Muhimbili University for Health and Allied Sciences (MUHAS) in Dar-es-Salaam, Tanzania that aims to build local capacity for precise, low-cost, low-maintenance, patient-near DNA diagnostics solutions to prevent the needless deaths of thousands of children and young adults with blood diseases in Sub-Saharan Africa.

Blood diseases are a major health problem in the region. Up to 30% of its population carry inherited anaemia genes, and 90% of all childhood blood cancers world-wide occur in Sub-Saharan Africa because of their association to infections that are common in this region (EBV, HIV, malaria). Together, these two disease groups alone account for 420,000 childhood deaths each year (or over 10% of the children who die under the age of 5).

Importantly, effective and affordable therapies are available and funded by sub-Saharan governments, however, affordable diagnostics are not, because current diagnostics require highly skilled multidisciplinary staff and equipment and methodologies that cannot easily be maintained.



Thanks to the initial MLSTF and SE2020 funding, the team were able to leverage £4.3m of NIHR Global Health funding and in-kind contributions from Illumina and ONT. In close collaboration with MUHAS, the Muhimbili National Hospital and the patient charity Tumaina la Maisha, they have put in place the required infrastructure to facilitate national patient referrals, local sequencing, joint cloud-based data analysis and clinical data collection for the WHO Cancer Registry.

They have employed 12 FTE members of staff and provided good clinical and laboratory practice training for laboratory technicians, senior scientists/bioinformaticians, nurses and clinicians (n=45; locally and in Oxford) from 5 different hospitals in Tanzania and Uganda (public and private).

Together with their African collaborators, they have put in place frameworks to consent parents/patients for DNA analysis and to provide diagnostic-grade DNA testing for as low as \$10/test. As of January 2020, 222 children and young adults have undergone testing, and Muhimbili National Hospital has already adopted one of the tests to provide government-funded diagnosis of chronic myeloid leukaemia.

Their next steps will be to make a convincing case to investors and to continue discussions with representatives from the Ministry of Health and all other stakeholders to secure sustainability for genetic diagnostics that will save the lives of thousands of children and young adults in the region.

TEAM WORK HIGHLY COMMENDED

The Circularity of Plastics

Professor Peter Edwards Dr Xiangyu Jie, Dr Tiancun Xiao, (Department of Chemistry)
Dr Jamie Ferguson, Dr Jane Jin (Oxford University Innovation)

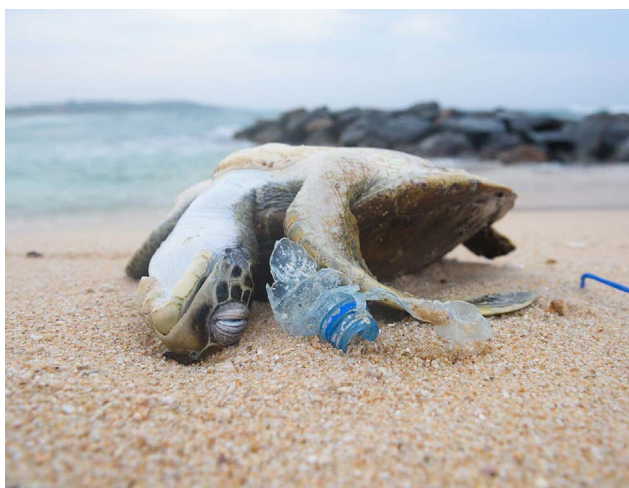
Plastics are polymers made up of repeating units of individual small organic molecules joined together by chemical bonds. Since their discovery only some 70 years ago, they have become ubiquitous and integral in our society.

Humankind produces over 320 million tons every year and that figure is ever-growing. Their safe disposal or recycling is recognised, world-wide, as a monumental challenge. Astonishingly, only 9% of the 8.3 billion tons ever produced has been recycled, the rest being incinerated, sent to landfill or worst of all, dumped into the oceans. Plastic waste is now one of the most urgent environmental issues of our time.

The Oxford team have taken a new approach, viewing plastic waste as an untapped resource and have discovered a range of innovative solutions to converting plastics into fuels, and hydrogen. Most recently the team has developed a novel and sustainable catalytic system and process to deconstruct – or depolymerize – plastics into their basic constituents with extremely high efficiency, ready for conversion

back into new polymers. Their patented process – rapid and highly effective – has been demonstrated on real-world plastic waste which contains, inevitably, numerous contaminants. Importantly, the novel Oxford catalysts are abundant and inexpensive and can be easily recycled and re-used without any noticeable changes in their activity, making this process much more efficient than current “Recycling-from-plastic-waste processes”.

This innovative science and technology heralds an exciting new era of applications for the responsible and sustainable recycling of plastic waste, in which plastic polymers are efficiently converted back to their original high-value constituents. This now allows an inspiring vision of a truly Circular Economy for plastics. The Oxford advances not only minimize environmental pollution but also reduce our dependence on non-renewable petrochemicals for plastics production. With the help of [Oxford University Innovation](#), this work is now being progressed commercially via the spin out company [Oxford Sustainable Fuels](#).



TEAM WORK HIGHLY COMMENDED

The Quill Project's Approach to Constitutional History: Archives, Computer Models, and Unconventional Partnerships

Dr Nicolas Cole (Faculty of History)

Constitutional law underpins the notion of a free and democratic state, holding politicians to account and guaranteeing the rights of citizens. Quill focuses on the drafting of these legal texts, helping both scholars and non-expert users to understand the process and context in which wording was agreed, combining traditional approaches to the editing of manuscript material with a digital model of formal negotiations built from a study of parliamentary manuals, and bespoke visualizations designed to aid both research and education.

The range of material studied by the Quill project runs from a study of the 1787 Constitutional Convention, through the evolution of state constitutional law in the American west, to recent Parliamentary debates over Brexit. In the case of the 1787 Convention, the Quill edition has challenged traditional assumptions around the role of particular individuals and delegations and the nature of the records. In the case of state constitutions and the study of later federal constitutional amendments, the contribution is even more ground-breaking, as the work of these constitutional conventions is often being collated and made public for the first time.

Aside from contributing to understanding of constitutional law, one of Quill's key innovations has been around teamwork and multi-user editing. Dr Cole has created an environment in which undergraduate students are able to collaborate with each other and academic mentors on substantive research questions and the production of the digital edition, most notably through a partnership with the Center for Constitutional Studies at Utah Valley University (UVU), an open-enrolment university in Provo, Utah, although the model is now being rolled out more widely.

The partnership with UVU originated as a small-scale project, using students to test and evaluate an early version of the 1787 project and help with bug-testing and other menial tasks. Within months, however, they had proved that they could be trusted with a more substantive contribution, and began to take a leading role in designing workflows and conducting archival research – in fact enabling sustained, years-long archival projects that would have been impossible to organize from Oxford in any other way.

Funders: Partnership agreement with Utah Valley University; National Endowment for the Humanities; Private donations.



BUILDING CAPACITY WINNER



I.Sicily and enabling access to ancient Sicilian inscriptions

Professor Jonathan Prag (Faculty of Classics)

Texts inscribed on stone (tombstones, public documents and much more) are one of our primary sources of evidence for the ancient world.

Such texts are difficult to understand, to curate, and to make accessible, because they are written in ancient languages and scripts, frequently damaged, and often physically hard to move. The inscribed texts from ancient Sicily exemplify all these problems.

Professor Jonathan Prag has been studying the history of ancient Sicily for twenty years: the culture of engraving texts in public in the ancient Mediterranean is a fascinating area of study, and multi-lingual, multi-cultural ancient Sicily offers an excellent case-study. Over that time he has developed a digital, online, open access corpus (I.Sicily) of most of these texts (c.3,300), firstly as a research tool, but since 2016 as the foundation for an innovative series of collaborations to make the material accessible to a much wider public.

The corpus is based upon the direct study of each inscribed stone, which requires close collaboration with the regional and local museums of Sicily. These curate most of the material, which is a key part of their local heritage, but currently lack the resources either to study it or to develop accessible displays. I.Sicily enables the creation of online catalogues of each museum's collection.

In order to undertake this work for such a large and dispersed body of material (4000+ texts across 100+ collections), the project has developed innovative new collaborations with museums, schools and other bodies. Principal among these was a collaborative project at Catania with the civic museum, a local state school and the CNR Institute of Cognitive Sciences and Technologies. The project worked with over 100 school children to locate, record, and photograph over 500 inscriptions, and to transfer those records into digital format. The same school children then participated in the selection and conservation of material, and the design and construction of a new permanent exhibition. The project was rewarded by the Italian Ministry of Education and additional projects have followed.

Funded by: John Fell Fund, University of Oxford; TORCH, University of Oxford; Merton College, Oxford



BUILDING CAPACITY HIGHLY COMMENDED

10 years of Medical Sciences Business Development

Dr Maxine Allen (Medical Sciences)

Over the last 10 years, the Business Partnerships Office within the Medical Sciences Division at Oxford has grown to 13 members and secured over £73M in industry investment through strategic partnerships.

The team build and manage multi-year alliances with 14 companies; support major co-location initiatives with key strategic partners; foster a live pipeline of ~70 mature project development discussions, involving 35 companies, and provide dedicated management of industry engagement for the NHS through close association with Oxford's Biomedical Research Centre (BRC).

Some of the key relationships that the team have built, supported and enabled are with Bristol Myers Squibb, Bayer HealthCare, Pfizer, Novo Nordisk and Elysium Health. Recently the introduction of a dedicated team member to develop their SME engagement strategy has been pivotal in utilising and creating new models to engage effectively with this set of unique companies.



The team develop Fellowship schemes as a model for sustaining long-term engagement with international companies including UCB, Bristol Myers Squibb and Elysium, and have shared their experiences at international conferences. Additionally, to drive KE and networking they set up an Oxford Industry Fellows Network (over 70 Industry-sponsored Fellows and postdoctoral researchers) to offer opportunities for industry to train fellows and for fellows to build their networks.

Their Experts in Residence scheme has driven KE in digital health (iWantGreatCare, IBM, Frog Design), surgical technologies (Koli Inc), medical tech regulation (OrganOx), drug discovery and development (Evotech, GSK) and continues to grow.

As a large and dispersed division with 1000s of researchers, size doesn't always work to their advantage and can be a barrier to industry interaction. The team successfully helps companies navigate the division and they have also found the balance between being visible, but also prioritising relationships where they can add most value.



BUILDING CAPACITY HIGHLY COMMENDED

Enabling Research in Low-Income Settings During Disease Outbreaks: Implementing, Learning and Preparing

Dr Trudie Lang (Tropical Medicine, Nuffield Department of Medicine)

In disease outbreaks, such as Ebola, Zika and now COVID-19 it is essential that research is undertaken and that this is equitable across the globe. The difficulty is that many nations do not have the capabilities to initiate and support research within their healthcare settings.

Professor Lang's team have taken the best digital technology and combined this with community of practice theory and created a novel and highly innovative platform through which they work with research teams and health workers in the most challenging situations across the globe. This is entirely underpinned by their comprehensive research into the barriers and enablers to research in vulnerable populations. This Bill and Melinda Gates-funded work informs them of the knowledge, skills and disease area research priorities. Using these data, they can work with teams to embed research that tackles

everyday diseases of poverty that impact their communities and then they adapt this in response to outbreaks. They keep working with these teams to share what they have learnt and together have put new resources, technology and plans in place to prepare for the next outbreak.

This is precisely what they are now putting into action with COVID-19. Here they are pulling together a global research implementation community through several mechanisms such as virtual workshops and developing observational study and clinical trial implementation tools. They are galvanising the international cooperation between research teams, as WHO requested when this was declared a public health emergency. The impact from Zika and Ebola was faster and better evidence put rapidly into practice.

They have strong impact data from these outbreaks where hundreds of thousands of research protocols, standard templates and data capture forms were downloaded and used in research. They have had over 1 million research skills training courses taken and the platform has been accessed over 30 million times. With this COVID-19 outbreak, they are supporting the preparation for a response in the most challenging settings to gather data, with teams who otherwise would not have the capacity to engage. They are also making sure they learn as they go to further mitigate impact within the next outbreak.

Funded by the Bill and Melinda Gates Foundation



BUILDING CAPACITY HIGHLY COMMENDED

Enabling Research in Low-Income Settings During Disease Outbreaks: Implementing, Learning and Preparing

July 2020 UPDATE

The team have been working flat out as they have been overwhelmed by the level of response and demand from the research community across some of the most resource-limited places in the world. They report that it has been very moving to hear the experiences of their partners working in extraordinary settings and working to provide the support their partners have requested has been difficult, but rewarding.

The team's platform is now being used by the WHO, Gates, international research consortia and many other major organisations as a mechanism for engaging with researchers in Low- and Middle-Income Countries (LMICs). The knowledge hub has been accessed over 320,000 times from over 98 countries. They are providing a range of research methods, protocol, training and support systems and these are being taken up and implemented.

The uptake has been so strong that, in May 2020, the team were asked by the global body of health research funders to determine the current research priorities because the WHO research priority roadmap did not include LMICs. They undertook this work and their findings

were simultaneously released as a report, all the data and a paper in June 2020. For further information, [a workshop recorded in June 2020 features the views of researchers around the globe who contributed to these findings.](#)

All this work with COVID-19 draws on the innovative approach of The Global Health Network which works in this way to support research in diseases of poverty and build on the team's work in previous outbreaks. In order to enable a sustainable income to secure access to these resources for researchers and health workers in LMICS a social enterprise has been set up. The company was formed on 12 June 2020. This is the first social enterprise to be set up through [Oxford University Innovation](#) and the University of Oxford's Medical Sciences division and creates a mechanism to secure funding sources not previously available to the team. The goal is to ensure free and open access to health workers and researchers across the globe who cannot afford to pay and would never otherwise be able to access the University of Oxford's quality support, training and learning opportunities.



POLICY ENGAGEMENT WINNER



Global policy on typhoid vaccines through research at Oxford

Professor Andrew Pollard (Department of Paediatrics), **Dr Mila Shakya** (St Cross College), **Dr Merryn Voysey**, **Dr Katherine Theiss-Nyland**, **Ms Susan Tonks**, **Dr Jennifer Hill**, **Dr Malick Gibani**, **Mr Simon Kerridge**, **Dr James Meiring**, **Ms Elizabeth Jones**, **Ms Maria Moore**, **Dr Parvinder Aley**, **Dr Celina Jin**, **Ms Rachel Colin-Jones** and **Ms Sarah Kelly** (Department of Paediatrics), **Dr Brian Angus** (Nuffield Department of Medicine)

Typhoid affects 14 million people each year, with the highest rates in children, and causes around 150,000 deaths. The disease, which is increasingly resistant to antibiotics, is spread through contaminated food and water in countries with lack of infrastructure but vaccines offer a potential rapid impact on this disease while definitive investment in infrastructure is awaited.

In order to accelerate vaccine introduction, the team led by Professor Andrew Pollard developed a model of human infection in Oxford in which volunteers drank a suspension of typhoid bacteria to deliberately get typhoid infection, so that they could test new vaccines. They studied the model carefully and made some important new observations about how the bacteria cause disease identified potential new approaches to diagnosis.

They tested a new generation typhoid vaccine using the Oxford model and showed that it worked. The data from this study supported World Health Organisation (WHO) global policy recommendations on use of the vaccine for all children from 9 months to 15 years of age in high burden areas, and release of \$85M funding by the Global Alliance for Vaccines

and Immunisation (Gavi) to help low income countries introduce the vaccine.

Data on disease burden is important for countries to decide whether to prioritise vaccine introduction. The team led studies in Nepal, Bangladesh and Malawi to provide burden data in field studies of 100,000 people in each country. These data were also considered by WHO in their deliberations on global policy and provided a base for large field trials which they have undertaken to evaluate implementation of typhoid vaccine funded by the Bill & Melinda Gates Foundation. In these trials they have vaccinated over 100,000 children against typhoid and found that the vaccine prevented 82% of infections. They also showed that the vaccine was safe, data used by WHO in their policy position paper on typhoid vaccine safety.

Vaccine roll out has begun and 10 million doses were deployed at the end of 2019 to control an outbreak of typhoid resistant to most antibiotics in Pakistan. Many countries are now planning introduction of the vaccine as global roll out begins, with the next deployments being in Zimbabwe and Liberia.

Funded by the Bill and Melinda Gates Foundation



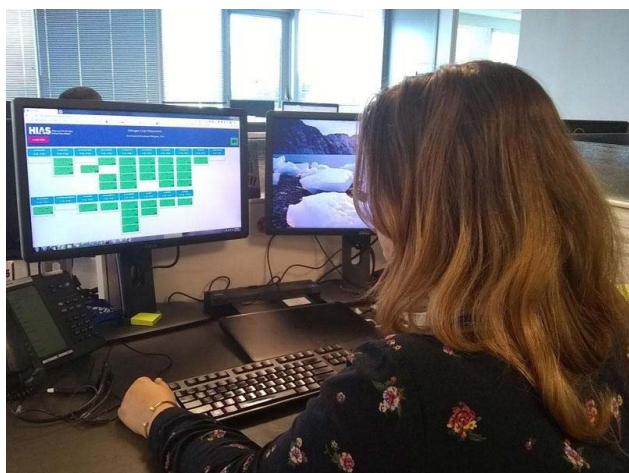
POLICY ENGAGEMENT HIGHLY COMMENDED

Annie MOORE: Increasing Employment of Resettled Refugees using Machine Learning and Optimisation

Dr Alexander Teytelboym (Department of Economics), Professor Andrew Trapp (Worcester Polytechnic Institute), Mrs Alicia Wrenn (HIAS)

Tens of thousands of refugees are permanently resettled to the United States, the United Kingdom, and other countries each year. There is ample evidence that the initial community to which refugees are resettled dramatically affects their lifetime outcomes. This project shows that if refugees are resettled to the communities that are best suited to their needs and aspirations, both refugees and communities can thrive.

The project's pioneering software, Annie™ MOORE (Matching and Outcome Optimization for Refugee Empowerment), suggests placements of refugees in order to maximise their employment chances. Annie™ also ensures that the needs of the refugees (e.g., childcare or language support) are met and the service capacities (e.g., housing or places in training programmes) of hosting communities around the United States are not exceeded. To make placement suggestions, Annie™ uses advanced machine learning and state-of-the-art integer optimization methods.



HIAS, one of nine US refugee resettlement agencies, has been using Annie™ since 2018. Annie™ has thus far matched over 1,100 refugees resettled by HIAS. The project team estimate that Annie™ has obtained over 30 percent boost in the number of employed refugees (taking the employment rate from 30 to 40 percent) (Trapp et al., 2018). Annie™ has also reduced the fraction of refugee families who are placed in communities which cannot provide services to support them from around 20 percent to essentially zero. This has dramatically improved the quality of refugee integration in communities.

Finally, Annie™ has empowered HIAS staff. Karen Monken, HIAS arrivals director says: "The effectiveness of my operations has increased dramatically. I now spend 80 percent less time on routine matching, and can focus my time and energy on the more difficult cases such as those with significant medical conditions, ensuring that their placement is as good as possible."

The development of the optimisation and matching techniques was based on the research funded by Dr Teytelboym's ESRC New Investigator Grant. The project was also supported by the National Science Foundation, Jan Wallander and Tom Hedelius Foundation, the Ragnar Söderberg Foundation, and Skoll Centre for Social Entrepreneurship Research Accelerator Grant.



POLICY ENGAGEMENT HIGHLY COMMENDED

Driving policy change to prevent maternal deaths

Professor Marian Knight, Professor Jennifer Kurinczuk, Mr Thomas Boby, Mrs Sarah Chamberlain (Nuffield Department of Population Health)

In 2009–12, 7.2 per 100,000 women died during or in the six weeks after pregnancy from medical and mental health causes compared with 3.5 women per 100,000 from obstetric causes.

The MBRRACE-UK maternal mortality surveillance and confidential enquiry programme, led by Professors Marian Knight and Jennifer Kurinczuk, has consistently shown that most women who die during or after pregnancy in the UK die from medical and mental health problems, not from pregnancy-specific complications such as haemorrhage.

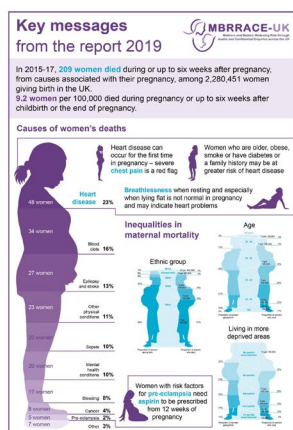
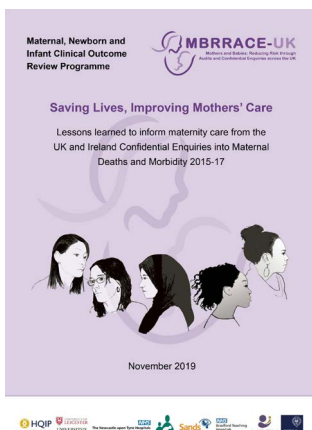
The research identified key areas where improved provision of obstetric medical care could prevent future maternal deaths and showed that 66% of the population attributable risk fraction of maternal death can be attributed to co-existing medical problems. Importantly, the research team also identified major inequalities in maternal mortality rates, such that black women were five times more likely, and Asian women two times more likely to die than white women.

The research team have introduced innovations throughout the programme to allow for the research to be translated more rapidly and effectively into policy change. These include development of a secure online reporting and assessment system, enabling expert health professionals from a wider range of specialties to identify improvements in care in parallel over a shorter time period than previously.

Working closely with the design team within the National Perinatal Epidemiology Unit, Professor Knight introduced infographic summaries of the research findings, aimed towards policymakers, women, families and support organisations as well as health professionals. These infographics are highly valued and have resulted in important policy impacts of the research, including the introduction of new maternal medicine networks in England, announced in November 2017.

The work is cited as evidence underlying the national maternity strategy, including expanding access to specialist perinatal mental health services in the NHS England long-term plan published in January 2019, and new funding of £50 million for perinatal mental health services in Scotland, announced in March 2019.

The infographic in 2018 highlighting the ethnic disparities in mortality has completely changed the conversation around maternal health in the UK, sparking a widespread focus on addressing ethnic inequalities, including the 'Five-times more' campaign.



POLICY ENGAGEMENT HIGHLY COMMENDED

Putting Out Digital Wildfires Before They Take Hold

Professor Marina Jirotko, Dr Helena Webb (Department of Computer Science), **Professor Rob Proctor** (Warwick University), **Professor Matthew Williams**, **Professor Pete Burnap, Professor Omer Rana, Professor William Housley**, **Dr Adam Edwards** (Cardiff University), **Professor Berndt Stahl** (De Montfort University)

Social media platforms such as Facebook, Instagram, Snapchat and Twitter are a hugely popular feature of modern life as they enable users to share content, news and ideas with many others around the world.

Unfortunately, these same capabilities allow the spread of 'digital wildfires' in which harmful content spreads rapidly online and damages individuals, groups and even entire communities. Digital wildfire events are becoming more and more common; for instance, we are all familiar with malicious campaigns against individuals, hate speech against demographic groups, and worries over the spread of fake news and conspiracy theories online.

The team, including Dr Helena Webb, conducted a research project to investigate how digital wildfires spread on social media, what kinds of harm they cause, and what actions can be taken to limit or even prevent their damage. During the project, they conducted a range of activities that included:

- Examining different opportunities for the regulation of social media;
- Observing how key organisations and institutions such as the police, regulators, anti-harassment groups and schools deal with harmful social media content;
- Soliciting views of different groups on the appropriate ways to manage online content;
- Creating resources for education and reflection on what it means to be a responsible digital citizen.

Their project has had many positive outcomes. The team have used their findings to support academic knowledge and have created a wider public legacy through their education and reflection materials. They have particularly had an influence on policy in relation to the themes of their project. As a result of their work, they contributed to a government inquiry into children and the Internet. This led to the publication of the report 'Growing up with the Internet', which was debated in the House of Lords, and which has also contributed to current government inquiries into the development of an age-appropriate design code for online platforms.

The research has also shaped debates in the academic community and research ethics boards – in particular about appropriate method through which to conduct research about social media and to publish findings in an ethical manner.

Research funded by: ESRC with additional sponsorship from Santander Universities.



EARLY CAREER HIGHLY COMMENDED

New modelling tools to help governments and decision makers minimise the risks from infrastructure failures

Dr Raghav Pant (School of Geography and the Environment)

We live in an increasingly interconnected world supported by infrastructure networks, including energy, telecommunications, transport, water and waste.

When these networks fail, for example during climate-related extreme events, the impacts can propagate across society and the economy, and around the world. While policy makers in the UK and worldwide have highlighted the need for systems approaches to enhance infrastructure resilience, they have struggled to grasp the interactions between infrastructures, people and economy. Given scarce resources to invest in resilience of infrastructure networks, decision makers often struggle to know which are the points of greatest vulnerability and how they should prioritise investments.

A research team at Oxford has, over the last eight years, transformed the theory and practice of infrastructure systems analysis by creating methodologies and tools that provide evidence of the interconnected impacts of infrastructure network failures. Led by Prof. Jim Hall's multiple EPSRC-funded projects Infrastructure Transitions Research Consortium (ITRC) and Multi-Scale Infrastructure Systems Analytics (MISTRAL), the risk team at the University of Oxford has created some of the world's first data-driven models of interconnected infrastructure networks and their socio-economic risks from external hazard events.

The risk research team, led by Dr. Raghav Pant, has produced a suite of computer codes and visualisations with real-world data to identify, quantify and assess interdependencies and risks in Britain's infrastructure networks. They

have provided evidence to, among others, Infrastructure UK, National Infrastructure Commission, Department for Transport, Environmental Agency and High Speed 2. Similar modelling capabilities have been developed to identify interconnected infrastructure vulnerabilities in New Zealand and China. Further World Bank funded studies on multi-modal transport networks in Vietnam, Tanzania and Argentina have resulted in creating novel data and tools for informing governments on how to quantify systemic network risks and prioritise investments towards enhancing the climate resilience of key transport lifelines in these countries.

The cutting-edge data analytics and innovative methodologies of their research are now catering to the growing global need for data-driven models and tools for infrastructure risk and resilience assessment, which is an ever-increasing concern for policy makers and planners who face growing challenges from a changing climate and uncertain world.

The ITRC/MISTRAL program is funded by the EPSRC, with several smaller projects funded by National Infrastructure Commission, HS2, Department for Transport and World Bank.



EARLY CAREER HIGHLY COMMENDED

Maternal and perinatal Health Research collaboration, India (MaatHRI)

Dr Manisha Nair (Nuffield Department of Population Health)

Maternal and perinatal Health Research collaboration, India (MaatHRI) is an equitable partnership between the University of Oxford and 15 hospitals across five states in India. MaatHRI (means Mother in Sanskrit) is the largest collaboration for maternal and perinatal health research in India, established to improve the health and outcomes for mothers and babies in the country that has the highest burden of maternal and child deaths. It is the first prototype of obstetric research platforms in Europe and Australia in a low-and-middle income country (LMIC), and within this, it covers the most deprived and vulnerable population.

Although inspired by models in high-income countries, it is more advanced in terms of standardisation of data and laboratory parameters, participant safety, and secure storage and transfer of data within and between countries. The pilot work for MaatHRI was conducted in 2014-15, funded by the University's John Fell Fund, to collaborate with two hospitals in India, and today, the MaatHRI collaboration includes 15 hospitals across five states, conducting multiple large-scale studies to reduce preventable deaths.

Along with research, capacity building and strengthening in India and the UK, is a key objective of MaatHRI. For example, in the past two years they have conducted two large training workshops in which more than 100 clinicians from 14 institutions were trained to improve their clinical and research skills. Following the trainings, ten hospitals in India have one or more obstetricians (a total of 24 across these hospitals) trained in acquiring echocardiography images using hand-held (bedside) machines that can be interpreted remotely by experts. As well as a research tool, bedside echocardiography is providing essential diagnostic capacity as heart failure in late pregnancy is an important cause of maternal death in India. At Oxford, MaatHRI has an ongoing DPhil student, a post-doctoral fellow, and has facilitated multiple MSc research projects.

MaatHRI has a current funding of more than £1.15 million, 19 research staff, and 30 collaborators in India. It is funded by an MRC Career Development Fellowship for Manisha Nair (under Global Challenges Research Fund (GCRF)), and has received further funding from NDPH-Pump-priming award, Ultromics Ltd, and the India Alliance (DBT-Wellcome Trust).



INSPIRING LEADER WINNER



Creation and spinout of Nightstar, a retinal gene therapy company

Professor Robert Maclaren (Nuffield Department of Clinical Neurosciences)

Most incurable forms of blindness are due to genetic diseases caused by faulty genes in the cells in the light-sensitive region of the eye, known as the retina. These defective genes eventually lead to the dysfunction and death of the affected cells. The progressive death of these cells causes a gradual degeneration of the retina, resulting in sight loss and ultimately blindness.

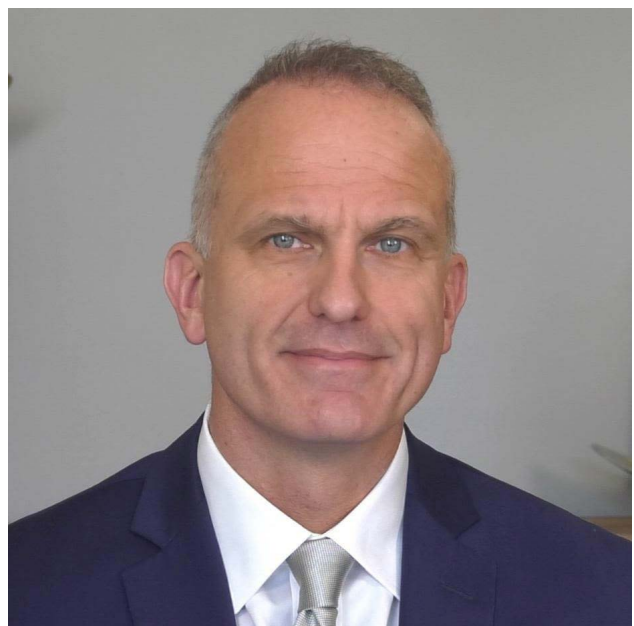
Until now, genetic eye diseases have been incurable. However, a new technique called gene therapy may help to slow or even stop the degeneration. This technique involves putting normal copies of the affected gene back into the cells of the retina to help them to function normally. This is achieved by using a harmless virus known as adeno-associated virus, or AAV, to carry normal genes into the retinal cells. In 2009, the team commenced the development of AAV gene therapies for treatment of choroideremia and X-linked retinitis pigmentosa (RP), incurable genetic diseases that cause blindness in men. Sight loss in choroideremia and X-linked RP begins with 'night blindness' in adolescence, followed by a gradual loss of peripheral vision which results in progressively worsening 'tunnel vision', and ultimately complete blindness.

The promising results from their initial research enabled the team to commence a Phase 1/2 clinical trial in 2011 to test their AAV gene therapy for choroideremia. Following the positive outcomes observed in many of the choroideremia patients following treatment with the gene therapy, a gene therapy company (Nightstar) was spun out of their research programme in 2014 to expedite clinical evaluation of the choroideremia gene

therapy and advance multiple gene therapies for inherited retinal disorders (all developed in the Maclaren laboratory) into human clinical trials. This enabled the team to commence a Phase 1/2 clinical trial in 2017 to test their AAV gene therapy for X-linked RP, followed by an international Phase 3 clinical trial of their choroideremia gene therapy in 2018.

On the back of this progress, Nightstar was acquired by Biogen for \$877 million in early 2019 – just five years after its founding. The deal ranks as the third most valuable British biotech exit in the last two decades.

Funded by: National Institute for Health Research, Wellcome Trust, Medical Research Council and Nightstar Therapeutics



INSPIRING LEADER HIGHLY COMMENDED

LitHits

Professor Kirsten Shepherd-Barr (Faculty of English)

LitHits is an app (for mobile devices and the web) that breaks down barriers to reading by providing short, unabridged excerpts of literature to the user based on how much time they have to read.

The unique feature of the app is its light-touch curation of each excerpt, a 2–3 sentence introduction that allows the reader to read the chosen excerpt without needing any knowledge of the full text from which it is taken. The reader can thus sample literary texts just as they would food or clothes.

LitHits is a trailblazing entrepreneurship project in the humanities and the first in English here at Oxford. It is modelling ways that a humanities subject can engage with business partners and transform its high-quality research into a cultural product that will serve public interest.

LitHits builds on the founders' professional expertise in researching and teaching literature over decades combined with research on digital reading, publishing technologies and innovations, and the potential for AI (specifically machine-learning and natural language processing) to help LitHits scale its library of excerpts and aid its human curation.

Our research has highlighted several key factors. One is that, far from being an endangered activity threatened by the rise of mobile phones and the Internet, reading is on the rise and is thriving, but people need more help in fitting it into their busy lives and in finding something good to read in the first place. Another factor is that, despite the proliferation of recommendation sites like Goodreads and Amazon, there is still no way to sample literature in an expertly guided way. A third finding is that,

although bibliotherapy is a fast-growing trend, reading is not just about soothing, calming, or 'fixing' a psychological problem, but can be most beneficial when most cognitively, imaginatively, and emotionally stimulating. Finally, our research indicates that while reading can be a solitary pastime, it can also be a highly social, interactive activity with tremendous mental health and wellbeing benefits, particularly for vulnerable or more isolated groups such as the elderly. LitHits can thus make a positive intervention in many ways.

LitHits is a social enterprise that has been funded by UCSF, BEP and the Van Houten Fund. It is currently seeking external investment.

The small and closely knit LitHits team consists of Professor Kirsten Shepherd-Barr (founder), Dr Alexandra Paddock (lead editor and curator), and David Gilbey (Project Manager), in collaboration with Oxford University Innovation (Chris Fellingham).



“As a University, we are committed to global leadership in knowledge exchange, innovation and entrepreneurship, ensuring our research, scholarship and teaching contribute to the good of the nation and the world.”

*Professor Louise Richardson
Vice-Chancellor, University of Oxford*

