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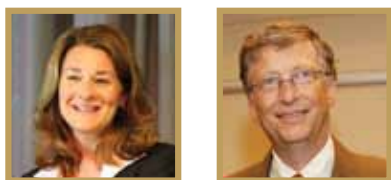
YEARBOOK **2019**

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UNIVERSITY OF  
CAMBRIDGE

## PATRONS



In 2012, Bill and Melinda Gates generously agreed to become patrons of the Gates Cambridge Trust. The Trust is delighted to reinforce a direct link between the Gates Cambridge Scholarships and the Gates family and the Foundation.

## ABOUT THE SCHOLARSHIPS

The Gates Cambridge Scholarship programme aims to build a global network of future leaders committed to improving the lives of others.

Gates Cambridge Scholarships are one of the most prestigious international scholarships in the world. The programme was established in October 2000 by a donation of US\$210m from the Bill and Melinda Gates Foundation to the University of Cambridge; this is the largest ever single donation to a UK university.

Scholarships are awarded to outstanding applicants from countries outside the UK to pursue a full-time postgraduate degree in any subject available at the University of Cambridge.

Scholars are selected on the basis of their outstanding intellectual ability, leadership potential, commitment to improving the lives of others and a good fit between their qualifications and aspirations and the postgraduate programme at Cambridge for which they are applying.

The Gates Cambridge Trust administers all aspects of the programme, including supporting the important work of the Scholars' Council and Alumni Association.

The first class of Scholars came in to residence in October 2001; since then the Trust has awarded 1,865 scholarships to citizens of 111 countries. There are usually 225 scholars in residence at any one time.

The class of 2019 consists of 90 outstanding Scholars from 30 countries who will be widely distributed amongst Cambridge's Colleges and Departments. The following pages highlight their achievements, activities and aspirations.

Full details about the Gates Cambridge Scholarships are available from [www.gatescambridge.org](http://www.gatescambridge.org).

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# FOREWORD

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Welcome to Cambridge and to the Gates Scholar community and my sincere congratulations on your success in an intensely competitive selection process. You will now begin what I very much hope will be a memorable period of postgraduate study that sets you firmly on the path to your future careers.

Cambridge University has had over 800 years to become an extraordinarily complex environment and one that you will perhaps not implicitly understand, but you will soon be able to navigate it. You have joined at least three communities: first, the vibrant community of Gates Cambridge Scholars; second, your University Department, Faculty, or Institute and, if you are a research Masters or Ph.D. student, your supervisor's Research Group where you will conduct the majority of your original work; third, you are also members of thriving graduate communities (Middle Combination Rooms, or MCRs) in your Colleges. The latter, I suspect, will be the most difficult to understand aspect of your lives here, since the collegiate system in Cambridge, along with that in Oxford, is unique.

You should not feel that you are expected to know and understand everything immediately, far from it. But you should know that I, together with the staff of the Trust, as well as current Scholars, will do everything possible to help you to do so and to make the most of your hard won opportunity to be a graduate student in Cambridge. You will also find your College Graduate Tutors to be rich sources of advice and support.

The Gates Cambridge Guidelines for Scholars will provide you with much of the information you will need to guide you through your arrival here and will help to answer some of your administrative and financial questions. Do not hesitate to contact the staff of the Trust if you have any specific queries that are not addressed in the web pages. I also urge you, Ph.D. students especially, to read the University's Code of Practice for Research Students issued by the University and updated each year. In that document, the expectations and responsibilities of your Supervisor, Adviser and you as a graduate student are set out and it's important that you know what they are.

You will attend many events during the year, some organised by the Trust, but the great majority organised by the Scholars' Council and Scholars. Some will be focused on your professional development (the excellent Learning for Purpose programme) and an increasing number will bring you into contact with the Gates Cambridge Alumni Association and many alumni. While you should always place your academic research and study at the top of the list of your priorities, not least since the qualification you will gain in Cambridge is the passport to the next phase of your careers, you will also be able to take full advantage of these other opportunities and this, I am sure, will enrich your time in Cambridge.

The wonderful generosity of the gift to the University from the Bill and Melinda Gates Foundation in 2000 (we are close to our 20th anniversary year) has provided the Gates Cambridge Trust with an endowment, the income from which has provided you with a unique opportunity to study in Cambridge – but it is your achievements and excellence that have enabled you to grasp it. Eventually and all too quickly, you the Gates Cambridge Scholars of 2019 will graduate and join a growing and ambitious global network of leaders, having the responsibility and privilege to shape the future and fulfil your commitment to improving the lives of others. I wish you every success in doing so and welcome you most warmly to Cambridge.

Professor Barry Everitt ScD FMed Sci FRS  
Provost

# PEOPLE

## TRUSTEES



**Professor Stephen Toope**  
Vice-Chancellor of the University  
of Cambridge (Chair)



**Mr Timothy Harvey-Samuel**  
Bursar of Corpus Christi College,  
Cambridge (Honorary Treasurer)



**Amy K Carter**  
Deputy Director, Family Interest Grants,  
Bill & Melinda Gates Foundation



**Professor Mary Sue Coleman**  
President of the Association of American  
Universities and Former President of the  
University of Michigan



**Dr Mimi Gates**  
Former Director of the Seattle Art Museum  
and Yale University Art Gallery



**Dr Julia Li**  
Senior Vice President Commercial  
Operations & Head of UK, Seven Bridges  
Genomics; UK-China AMR Research and  
Innovation Collaboration Advisory Panel  
and Gates Cambridge Scholar (2008)



**Professor David Runciman**  
Head of the Department of Political  
Science and International Studies at  
the University of Cambridge and  
Fellow of Trinity Hall, Cambridge



**Professor Susan Smith FBA**  
Honorary Professor of Social and  
Economic Geography at the University  
of Cambridge and Mistress of Girton  
College, Cambridge



**Dame Barbara Stocking DBE**  
President of Murray Edwards College,  
Cambridge and former Chief Executive  
of Oxfam GB

## STAFF



**Professor Barry Everitt FRS FMedSci**  
Provost  
Professor of Behavioural Neuroscience at  
the University of Cambridge and former  
Master of Downing College, Cambridge



**Dr Regina Sachers**  
Secretary  
Head of the Registry's Office,  
University of Cambridge



**Dr Jade Tran**  
Director of Finance



**Jim Smith**  
Programme Director  
Senior Member, Wolfson College, Cambridge



**Celine Ophelders**  
Alumni & Events Officer



**Luisa Clarke**  
Programme Manager



**Dr Carlos Podadera**  
Programme Officer



**Usha Virdee**  
Accounts Officer



**Mandy Garner**  
Communications Officer

# GATES CAMBRIDGE SCHOLARS' COUNCIL 2019–2020

The Gates Cambridge Scholars' Council supports the aims of the Gates Cambridge Scholarship to create a network of responsible global leaders.



**Miss Marina Velickovic**  
President

The President/Chair of the Scholars' Council oversees its activities and liaises with the Trust on behalf of Scholars.



**Kevin Chew**  
Vice-President

The Vice President works with the President to coordinate the Council's activities and to liaise with the Trust.



**Ben Geytenbeek**  
Treasurer

The Treasurer oversees the finances of the Council.



**Jacqueline Siu**  
Communications Officer

The Communications Officer is the conduit for assembling and distributing information to and about the Scholar community.



**Miss Nora Martin**  
Alumni Officer

The Alumni Officer works closely with the Gates Cambridge Alumni Association to connect the Scholar and Alumni communities.



**Ms Ria Roy**  
Editor-in-Chief

The Editor-in-Chief is responsible for the production of the annual *The Scholar* magazine.



**Miss Andrea Kusec**  
Internal Officer

The Internal Officer oversees the Scholars' Common Room and organises Internal Symposia each term.



**Miss Wanyi (Jennifer) Jia**  
External Community Officer

The External Community Officer promotes scholar involvement in the wider community.



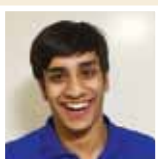
**Miss Jingwen (Alice) Fan**  
Outreach Officer

The Outreach Officer facilitates the scholar community's engagement with alumni, the wider Cambridge network, the public, and potential new applicants.



**Miss Alexandra Grieve**  
Gates Community Officer

The Community Officer solicits ongoing feedback from Scholars and coordinates community service programming.



**Mr Ayan Mandal**  
Social Officer

The Social Officers plan a variety of events in Cambridge and trips further afield throughout the year.



**Mr Grant Simpson**  
Social Officer

The Social Officers plan a variety of events in Cambridge and trips further afield throughout the year.



**Dr Ethan Dutcher**  
Technology Officer

The Technology Officer is responsible for maintaining the electronic hardware and software in the Scholars' Common Room.



**Ms June Park**  
Technology Officer

The Technology Officer is responsible for maintaining the electronic hardware and software in the Scholars' Common Room.



**Dr Maša Josipović**  
Learning for Purpose Co-Director

The Learning for Purpose Directors lead and organise a series of workshops aimed at skills development for Scholars.



**Ms Kim Van Daalen**  
Learning for Purpose Co-Director

The Learning for Purpose Directors lead and organise a series of workshops aimed at skills development for Scholars.



**Miss Melisa Basol**  
Orientation Co-Director

The Orientation Directors lead the Orientation committee, which organises Induction and Orientation activities for the new Scholars.



**Mr Dorian Minors**  
Orientation Co-Director

The Orientation Directors lead the Orientation committee, which organises Induction and Orientation activities for the new Scholars.

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## GATES CAMBRIDGE ALUMNI ASSOCIATION (GCAA)

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The Gates Cambridge Alumni Association (GCAA) aims to develop an international network of Gates Cambridge Scholars, to promote the Gates Cambridge Scholarship and to engage Alumni through the exchange of knowledge, academic ideas, and professional development. For details about the full Board and its work see [www.gatescambridge.org](http://www.gatescambridge.org)



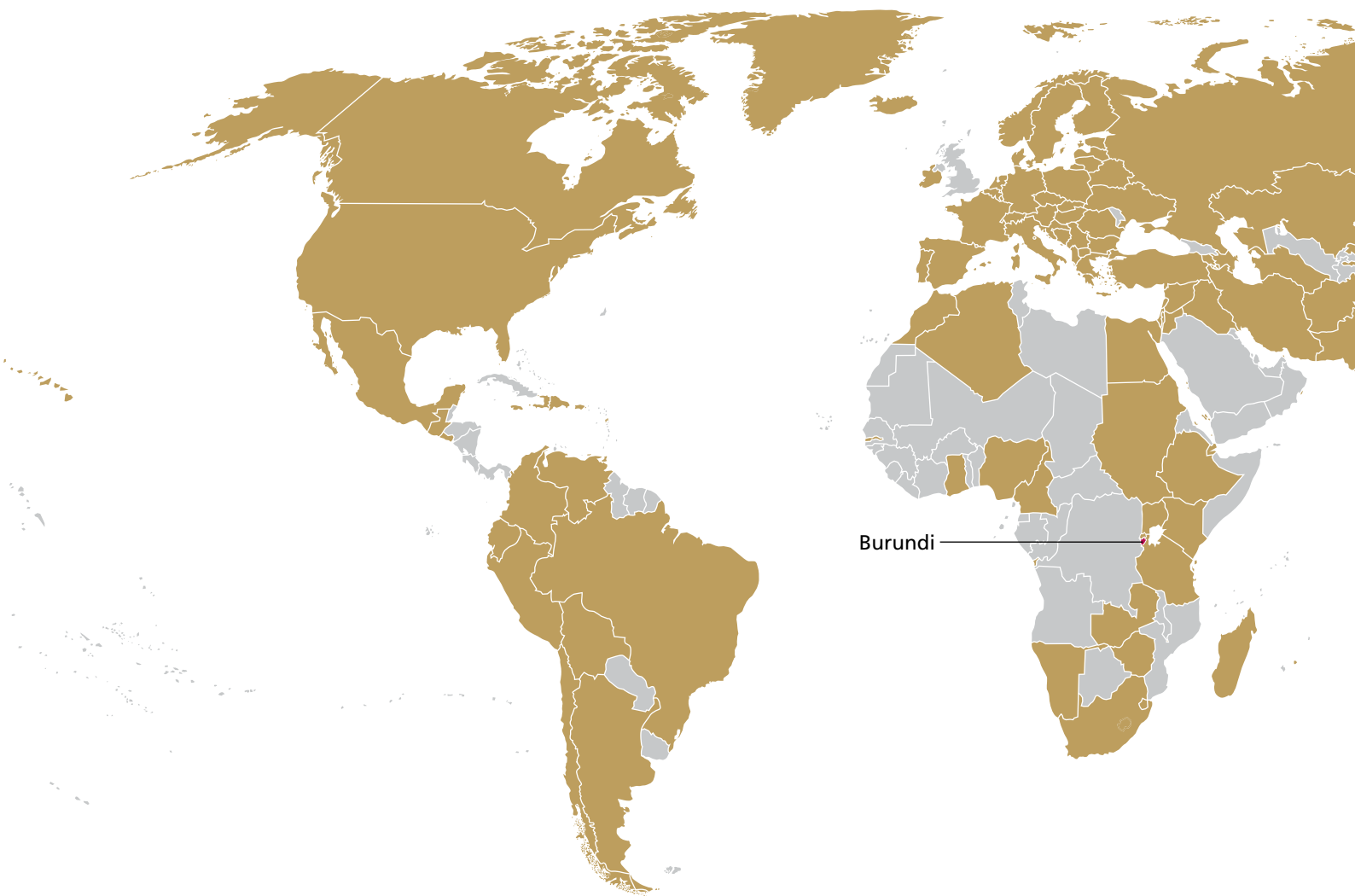
**Anna Kendrick (2011)**  
Co-Chair



**Devinn Lambert (2013)**  
Co-Chair

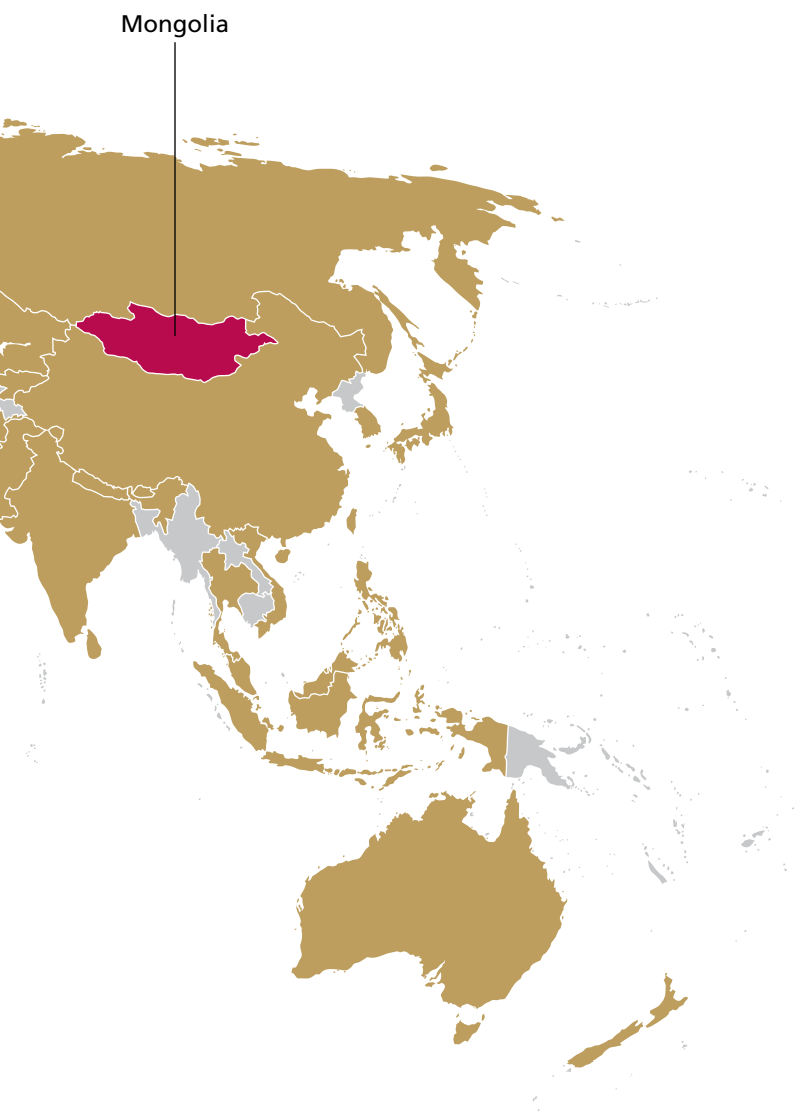
# BUILDING A GLOBAL NETWORK

This year we welcome our first Scholars from Burundi and Mongolia, which expands the global reach of the Gates Cambridge programme to 111 countries.



## Class of 2019 by Primary Citizenship

Australia . . . . .	4	Denmark . . . . .	1	Ireland . . . . .	1	Russian Federation . . . . .	1
Bolivia . . . . .	2	Egypt . . . . .	1	Italy . . . . .	3	South Africa . . . . .	1
Brazil . . . . .	1	France . . . . .	1	Mongolia . . . . .	1	Spain . . . . .	1
Burundi . . . . .	1	Germany . . . . .	4	Netherlands . . . . .	1	Switzerland . . . . .	1
Canada . . . . .	5	Greece . . . . .	1	Nigeria . . . . .	4	United States . . . . .	38
Chile . . . . .	1	Hong Kong . . . . .	2	Pakistan . . . . .	2	Zimbabwe . . . . .	1
China . . . . .	1	India . . . . .	5	Poland . . . . .	1		
Cyprus . . . . .	1	Indonesia . . . . .	2	Romania . . . . .	1		



- KEY**
- Countries represented to date
  - Countries not yet represented
  - New countries in class of 2019



**Burundi**  
**Etienne Mashuli**  
 PhD Politics and International Studies  
 Clare Hall

My heart is full of joy for being selected as a Gates Scholar for 2019. Being the first from Burundi only further contextualizes how much gratitude I feel. With privilege comes responsibility, and I look forward to utilizing my precious time at the University of Cambridge to strengthen my research and analytical tools in a way that could be beneficial for my home region. Burundi is rarely discussed in international forums and when referenced, the picture is often that of doom and gloom. Yet, despite the many hardships, Burundi has a lot to offer and I hope my inclusion into the fellowship further illustrates that. My research will focus on indigenous rights and in particular, the rights of the Batwa people who are pejoratively referred to as “Pygmies.” I am interested in how colonial-era representations continue to have such massive impacts on Burundian and Rwandan societies. Again, very honored to be part of this esteemed fellowship!



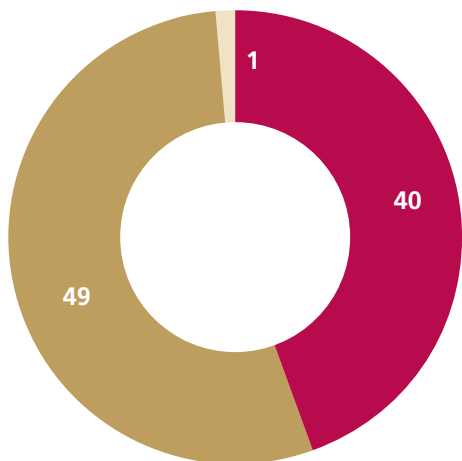
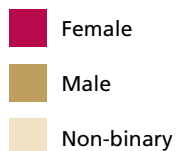
**Mongolia**  
**Onon Bayasgalan**  
 MPhil Conservation Leadership  
 Newnham College

Sain bainuu (greetings) to everyone from the most sparsely populated country in Asia! It is a real honor to be selected as the first Gates Cambridge Scholar from Mongolia – a responsibility which I do not take lightly. In Mongolia, we say ‘amnii bilgees ashdiin bileg’ which is an age-old adage that states that we attract what we say and think. With our harsh and extreme climate conditions that can wipe out people’s herds in a day, it is extremely important for Mongolians to maintain their composure. At Cambridge, I hope to bring along this spirit of optimism and good will, especially since my field does not always engender hope. As a Gates Scholar, I am committed to sharing my learnings and experiences with the vibrant and inquisitive youth in Mongolia, many of whom have a thirst and drive for education and social change.

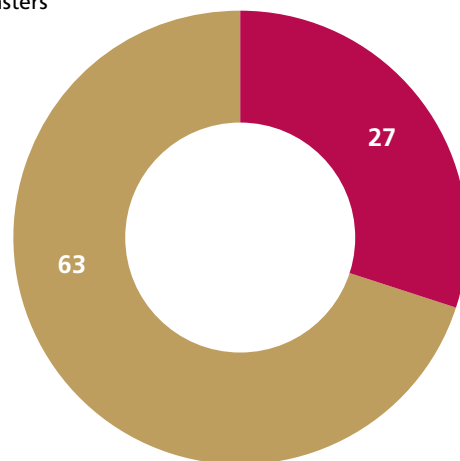
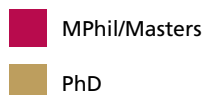


# STATISTICAL SUMMARY: CLASS OF 2019

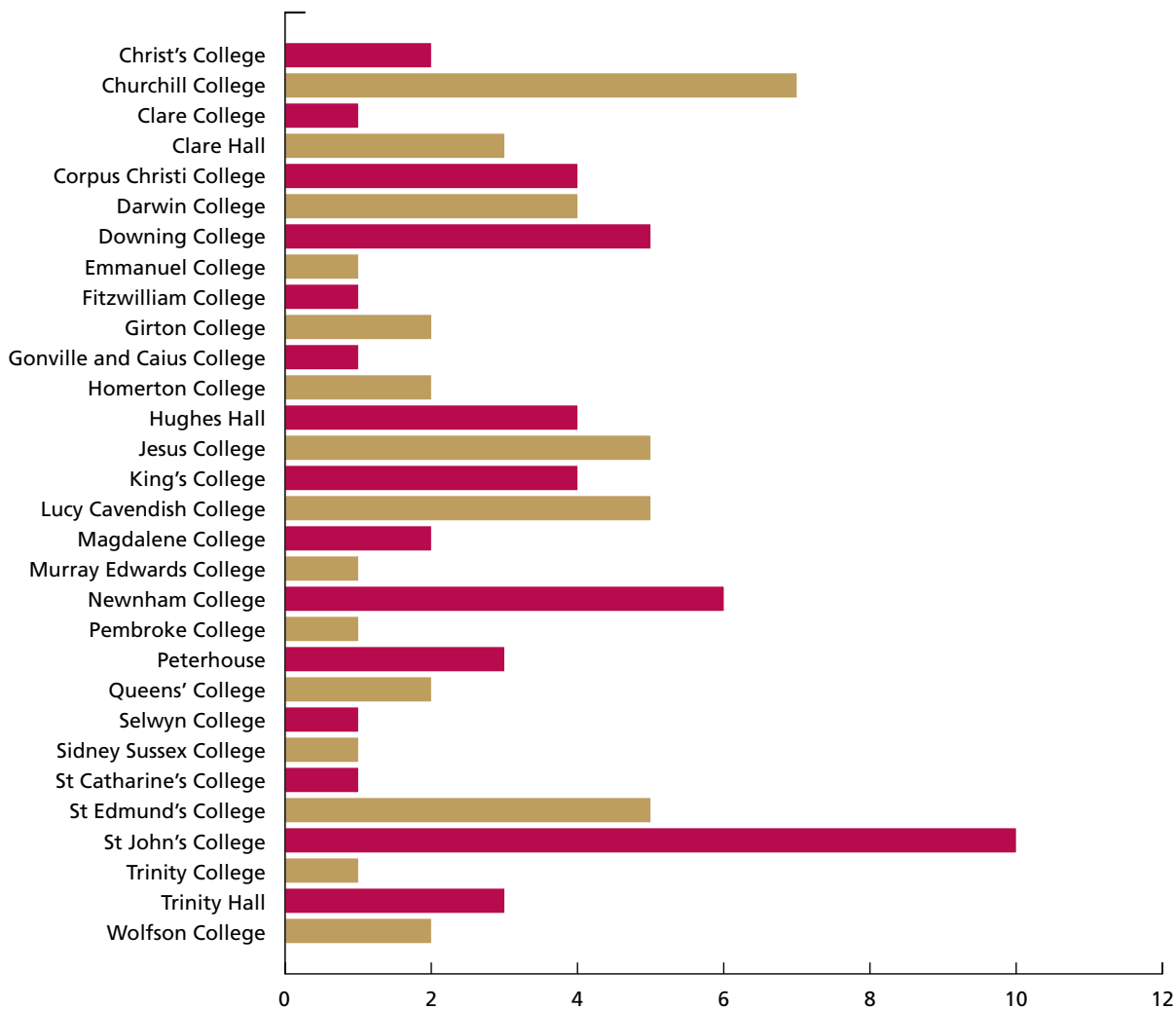
## Gender



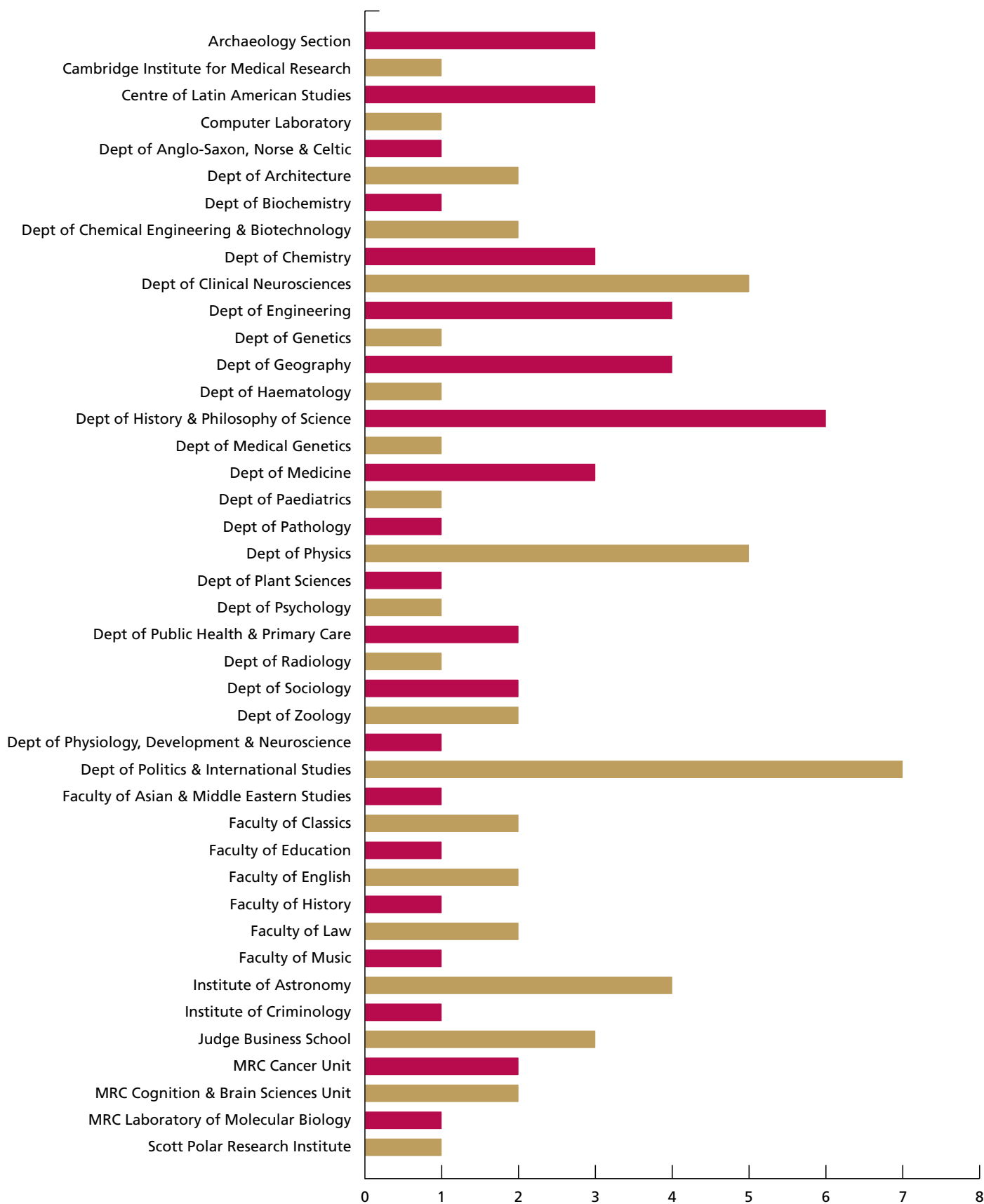
## Degree type



## College



**Department**



**Ibrahim Abdou**

Egypt

PhD Architecture  
Darwin College



As a younger student and architect, the paradox that is Cairene Urbanism had me spellbound. Cairo is a thrilling yet frustrating megacity of endless contradictions that malfunctions beautifully. Throughout studying and later teaching Architecture and Urban Design at the German University in

Cairo, I derived immense gratification from trying to untangle the complexity of the city. I have been specifically interested in questions of housing, its provision, use and perception. Alongside, I was exposed to on-ground parallel participatory initiatives and urban research offices which tackle urgent issues in the city. In my PhD, I aim to question the condition of housing vacancy, its differentiated categories, and varied underlying reasons and mechanisms of occurrence. As I continue to be exposed to further research on Cairo within a vibrant network of mentors and colleagues, my thirst for learning keeps increasing with a growing commitment in me to treat my education as a life-long endeavor. Yet, I believe research must be consistently geared to have meaningful impact on people's lives.

**Jascha Achterberg**

Germany

PhD Medical Science (MRC Cognition and Brain Sciences Unit), St John's College



In my PhD I want to explore the neuronal dynamics and information processing mechanisms underlying intelligent and structured behaviour. I have always been interested in understanding the complex systems of everyday life from a quantitative point of view and hence decided to study

the psychology of markets when doing my undergraduate in Osnabrück, Germany. It was at that time that I developed a fascination for human decision making and behavioural economics which lead me to join the Policy Research Group at Cambridge's Department of Psychology. Even though I enjoyed using behavioural research methods to design evidence based policy interventions, I started to be more interested in the neuronal mechanisms behind human decision making. Therefore I joined the MRC Cognition and Brain Science Unit towards the end of my undergraduate. Here I remained ever since and explored how one can understand high level phenomena (decision making / intelligence) and their underlying neural code. Outside the lab I enjoy making music (being a trumpeter and guitarist myself) as well as long distance running. I also co-founded and serve on the board of several organisations fostering sustainable community development in South African townships.

**Ololade Aliyu Siyonbola**

Nigeria

PhD Sociology  
Wolfson College



I became passionate about cultural displacement among African immigrants while an undergraduate in Computer Science at the University of Missouri. I subsequently moved to New York where I created cultural programming for the African Diaspora while working as a technologist. I decided then to

pursue full-time this passion to serve the culturally displaced, and I enrolled in a Master's in African Studies at Yale. There, I researched Nigerian immigrant identity in New York, Tokyo and Mumbai under the tutelage of renowned Sociologist, Dr. Elijah Anderson. I seek to build upon this work through my PhD at Cambridge, where I will continue to investigate the assimilation trajectories of second-generation Nigerian immigrants, one of the most educated immigrant groups in the US and UK. My research will measure how their cultural identification patterns influence their assimilation into their host societies and/or Nigeria, particularly through the creation of Black cultural capital. With this research, I hope to ultimately leverage the talents of the highly-educated, resource-rich Diaspora to help increase access to innovative technical and creative education in Nigeria, particularly for the girl child, who is much less likely to receive an education than her male counterpart.

**Oliver Antczak**

Poland / Venezuela

PhD Archaeology  
Downing College



Being born in a turbulent Venezuela to a family of Polish immigrants, the intricacies of identity were an important topic of my everyday life. With parents and a brother all archaeologists, I grew up excavating every summer on the sunny islands of the Venezuelan Caribbean.

For my undergraduate thesis at Leiden University College, I merged both these experiences working with the Guaiqueries indigenous group on Margarita island, Venezuela. There I attempted to understand how the Guaiqueries have maintained their strong identity though five centuries of colonialism. At the University of Cambridge, I decided to continue working on the topic with the Caquetio on Bonaire, who maintain a strong indigenous identity despite most locals believing they no longer exist. For my PhD, I will work with more case-studies of indigenous identity in the Caribbean to deliver data on how identity and heritage are managed and maintained in these (post)colonial contexts. Misunderstood identity processes are an important part of many problems facing the region, including the current situation in Venezuela. I envision that my research can help both the communities I work with as well as academia and heritage institutions.

**Christina Antoniou**

Cyprus

PhD Clinical Neurosciences  
Corpus Christi College



During my undergraduate studies in Biomedical Sciences at the University of Edinburgh, I was exposed to a range of disciplines spanning biochemistry, genetics, and physiology through to higher cognitive brain functions. Whilst specialising in Neuroscience, I realised how fascinating the nervous system is, as well as the fact that such an elaborate neuronal connectivity does not come without a cost, since subtle perturbations can lead to devastating disease. Captivated by the elegance of the brain, I continued with a Masters in Clinical Neurosciences at the University of Cambridge. This fuelled my desire to pursue a future in research. During my PhD in Clinical Neurosciences, I seek to explore the mechanisms by which some viruses and inflammatory stimuli promote axon degeneration and neuronal death. The ultimate goal of my research is to contribute to the development of novel therapeutic strategies for viral and inflammatory neuropathies. It is an absolute honour to be part of the Gates Cambridge community and I am looking forward to working and learning with inspiring individuals from all around the world.

**Jeanne-Rose Arn**

Switzerland

PhD Legal Studies  
King's College



I obtained advanced degrees both in law and in philosophy (studying at the University of Geneva and at Harvard Law School). In philosophy, my courses focused on analytic philosophy and philosophy of mind. This is where I first encountered the topic of self-deception which has become the focus of my proposed research. After my studies, I practiced law at a leading law firm in Switzerland where I handled a high-profile case of "conscious negligence", that diminishes responsibility under Swiss Criminal Law. This experience triggered my interest in the fundamental conditions of moral and legal responsibility as well as the limits of responsibility in law. For my PhD, I intend to address the question of self-deception in morality and law. Minimally, self-deception denotes a phenomenon that occurs when a person acquires and maintains a false belief despite possessing evidence to the contrary. Self-deception may lead to acts or behaviour that result in wrongdoings and harm others and is therefore a critical topic for both morality and the law. Despite this, the significance of self-deception in law remains largely unexplored.

**Carlota Armillas Mateos**

Spain

MPhil Engineering for Sustainable Development  
Peterhouse



The tales about great engineers my mom used to tell me when I was a little girl growing up in El Puerto de Santa María made me want to become an engineer and invent things to help others. During my double degree in Mechanical and Industrial Design & Product Development Engineering in Cádiz University, I developed an interest in sustainability, regarding my future responsibility on consumer products whose manufacturing, usage and end-of-life will impact our ecosystem. For this reason, I use eco-design techniques in my projects, like the design of an ergonomic infant radiant warmer, a ship bulbous bow for Navantia Shipyards or technical help for the blind (national runner up in the James Dyson Award). My work experience in INNANOMAT R&D group has taught me how difficult it is to implement eco-design strategies, as economic profitability often seems to be the only concern. However, I believe it is my duty as an engineer to use my creativity to find solutions that take into consideration present needs and problems in addition to economic profitability.

**Arjun Ashoka**

India

PhD Physics  
Trinity Hall



Having grown up in sunny, dry India I was exposed early on to issues of sustainability due to severe water shortages in the area. The capacity of science to systematically develop sustainable and renewable technologies has become apparent to me through my BSc in Physics at St. Xavier's College, Mumbai and my MAST in Physics at Cambridge. One of the most exciting areas of development is that of photovoltaics. We have so far been limited in our capacity to harness energy from the sun due to our inability to control sunlight – solar panels require direct sunlight. Harvesting diffuse light – the kind that bounces off buildings and clouds – is in some sense 'forbidden' due to the Second Law of Thermodynamics. I plan to spend my PhD in the optoelectronics group at the Cavendish exploring ways around this limitation. In order to effectively study these systems and tweak their entropy management, I will explore the fundamental processes of thermalisation and localisation. Through my PhD in Physics I will strive to develop an understanding of the fundamental physics of these systems in order to eventually make a pass at efficient harvesting of diffuse light.

# THE IMPACT OF EXTREME CLIMATE ON FORESTS

ALAND CHAN

Aland Chan has been fascinated by plants since childhood, when he spent his weekends hiking in Hong Kong, taking photographs of wildlife.



His parents encouraged that passion, sending him to a school that did the International Baccalaureate and set less homework than the average school precisely so that he could develop his outside interests.

That curiosity about plants has fuelled Aland's academic studies ever since and for his PhD he will use remote sensing tools to study forests at large scale. He is interested to explore the impact of climate change on forests and forest resilience against wind damage and landslide. It is partly inspired by a walk through Hong Kong's forests after a typhoon. He noticed that late-successional species of trees [species that persist in the forest after the forest has been initially established] in mature forests were less badly hit than urban ones and Pioneer species – hardy species which are the first to colonise previously biodiverse steady-state ecosystems.

Aland will use huge geospatial datasets obtained from satellites and aircraft to track where wind and landslides cause more severe damage and how environmental factors affect different sites' recovery rates.

He was born and grew up in Hong Kong. His father liked to take photographs of insects and had a number of insect guides which Aland would read. He started hiking in Hong Kong's

country parks with his parents as a young child. Some 40% of Hong Kong's territory is protected from development. Later Aland would go hiking with his friends and through reading books on insects he moved on to a keen interest in plants. By the time he went to secondary school he was going on hikes every weekend, taking photographs of the plants he found and, as he became more knowledgeable, identifying them.

He did his extended essay for International Baccalaureate on shrubs and how their features change with exposure to sunlight. While he was at school he also went on a trip to Ecuador with ecologists from Hong Kong to do some survey work and meet conservationists in the Amazon region.

When it came to deciding what to study at university, Aland was sure that he wanted to study ecology. The final-year project of his degree at Cambridge was on root herbivory. Aland's focus was on how plant roots are eaten by beetle larvae and how that affects the growth of herbs in the UK. "Root ecology is understudied because it is difficult to do so since roots cannot be seen," says Aland. To get around this Aland designed pots with windows in them so he could see the roots as they grew. During this time, he also spent a month in Indonesia working with Operation Wallacea, quantifying carbon stocks and surveying wildlife in forests where no Westerner had stepped foot.

He has just completed a research-based masters in ecology at Cambridge. For this he is using remote sensors and aerial photographs to monitor and detect ash dieback – a chronic fungal disease – in ash trees in the UK.

The disease was first described in Poland in 1992 and has since swept westwards throughout Europe. Young trees are particularly vulnerable and die quickly once they succumb. Older trees can be slowly killed by a yearly cycle of infection.

Aland says sensors allow researchers to classify the tree species remotely and identify which ones are diseased based on an analysis of the aerial photos.

He is very happy to have been selected to be a Gates Cambridge Scholar. He is interested in scientific research, but also in influencing policy decisions. "I want to give back to and change society," he says.

**Yu Bai**

USA

MPhil Architecture and Urban Studies  
Hughes Hall



I'm a biologist with a deep affinity for design. Growing up in Zhengzhou and Los Angeles, both cities plagued by smog, I became keenly concerned about climate change and those who suffer its numerous consequences. As a student of biology at Georgetown University, I've witnessed

unprecedented melting of the Greenlandic Ice Sheet and studied thriving microbial communities in the extreme cold of Antarctica. In this era of climate urgency, I'm convinced that knowledge of biology can help us build diverse, productive, and resilient human habitats. I bring this conviction to Cambridge, where I will study how people interact with bio-designed technologies, architecture, and landscapes in order to understand how designers, architects, and planners can create truly sustainable – and dignified – cities.

**Aaron Bernstein**

USA / Canada

PhD Public Health and Primary Care  
Darwin College



Oncology research has always been a passion of mine. Throughout my undergraduate study at Penn State, I made a point of exploring the full spectrum of biomedical research, from basic gene regulation work to clinical studies of chemotherapeutic toxicity. While I began in

wet-bench basic and translational science, intending to work as close to the fundamental mechanisms of cancer as possible, I ultimately found that I preferred the research methodology and the universal applicability of epidemiology and biostatistics. To me, cancer risk prediction and risk stratification is the ideal fusion of genetics, clinical significance, and statistical methodology, allowing me to utilize my broad skillset to assist patients through cancer prevention, when interventions are by far the most effective. My ultimate goal is to become a physician-scientist with a specialty in oncology and a research focus on cancer epidemiology. To me, a PhD in Cambridge's Department of Public Health and Primary Care is the perfect complement to my medical ambitions, allowing me to integrate my research directly into the clinic and help inform patient treatment around the world.

**Onon Bayasgalan**

Mongolia

MPhil Conservation Leadership  
Newnham College



I was born in Mongolia, a country that is the most sparsely populated and has the coldest capital in the world. I studied Environmental Economics and later Environmental Policy at Whitman College and Yale University, respectively. During my years of study, I was fascinated by

how the valuation of environmental services can be used as a powerful tool to influence policies. More recently, I managed a market-based conservation project called the Sustainable Cashmere Project while at the Wildlife Conservation Society Mongolia program. I am very interested in further exploring ways to incorporate sustainable practices and standards into supply chains. I believe that forging strong relations with committed industries is one of the key solutions to expanding the impact and influence of conservation principles around the world. I am also passionate about further supporting young environmentalists, which will build on the Environmental Fellowship Program that I initiated while working for the Zorig Foundation. As a Gates Cambridge Scholar, I am very excited to be a part of a dynamic network of bright minds around the world that can cross-fertilize a rich array of ideas and experiences on innovative and pressing topics.

**Alette Blom**

Netherlands

PhD Archaeology  
Newnham College



I have always been mesmerized by the world around me and by how everything seems to fit so perfectly together. Close to the registration deadline for universities, I was introduced to archaeology and fell instantly in love. Studying archaeology has enabled me to learn a lot about subjects

ranging from ecology to geology, from history to biomolecular sciences and from arts to evolutionary processes. After a BA in archaeology at Leiden University, I continued to do a Research Master in Bioarchaeology, focusing on human skeletal remains. I have found the field I belong in and that aims to understand how all sciences interplay with each other. I am therefore thrilled to be starting my PhD in Archaeology, researching how leprosy sufferers in medieval England have experienced living with their disease, both socially and biologically. I will do so by taking a multidisciplinary approach combining archaeology, osteology, paleopathology, isotope research, biomolecular approaches and historical sources.

**Janine Brandes**

Germany

PhD Clinical Neurosciences  
St Edmund's College



With the average life expectancy increasing worldwide, the prevalence of neurodegenerative disorders such as Parkinson's disease is predicted to double within the next generation. Despite this rising challenge to public health and numerous clinical trials, there is still no

cure for this debilitating disease. This motivated me to join efforts unravelling the underlying molecular mechanisms of Parkinson's during my Master's thesis in Molecular Medicine at the University of Tübingen. To enable my research to bridge the gap from bench to bedside, I subsequently collaborated with AstraZeneca as a research assistant at the University of Oxford where I established a drug screening pipeline on patient derived cells and succeeded in identifying new drug candidates. For my PhD I will employ a cellular 3D model of Parkinson's disease involving human neurons and glia to continue deciphering the mechanisms driving disease in patient brains. I am deeply honoured to have been selected for a Gates Cambridge scholarship and am looking forward to joining a community of scholars who aspire to use their academic abilities to improve the lives of others.

**Emiliano Cabrera Rocha**

Bolivia / Mexico

MPhil Latin-American Studies  
Darwin College



Growing up during the rapid development in Bolivia in the 90s, I witnessed the construction of many new roads and other infrastructure projects. I was struck to see how the benefits and burdens of these new projects were distributed differentially across the population. These observations

sparked my interest in the politics of the built environment. I moved to Mexico to pursue a BA in Industrial Design, a training that left me well attuned to the effects that material cultures have upon our everyday lives. At Cambridge, I will research how different human communities assemble themselves with non-human actors to gain political agency. I will focus on the current mobilizations around the construction of a highway slated to cut through the Territorio Indígena Parque Nacional Isiboro-Sécure (TIPNIS) in the Bolivian Amazon. I am interested in understanding how the highway infrastructure of the TIPNIS project enables (and disables) specific discourses and modes of mobilization. In parallel with my research, I am currently developing an educational program that will bring together youth from across the Americas to study climate justice, land defence and indigenous rights in the context of the Amazon ([catalyst-catalizador.org](http://catalyst-catalizador.org)).

**Hei Yeung (Aland) Chan**

Hong Kong

PhD Plant Sciences  
Downing College



Growing up in Hong Kong, I enjoy trekking through the city's subtropical countryside. From a young age, I developed a passion to study and protect the wildlife I encounter. I completed my undergraduate studies and started my MPhil project at the Department of Plant Sciences, University of Cambridge.

At Cambridge, I realized how climate change, habitat degradation, and forest loss are not only threatening millions of species living in natural systems, but also destabilizing the environmental conditions that human civilization is built on. New technologies in remote sensing are starting to revolutionize our understanding of large scale patterns in forest ecology. During my PhD, I wish to utilize these newly available remote sensing datasets to study how forests resist and recover from extreme weather events, which are made more frequent by climate change. My hope is that such research will allow us to more efficiently manage natural systems and better control carbon emissions from tropical forests.

**John Clark**

Australia

PhD Paediatrics  
Corpus Christi College



Before I undertook my medical undergraduate and masters degrees at Monash University I lived in Donald, a small rural farming community in Australia. I am driven by a desire to provide exceptional evidence-based care to children regardless of location.

My career as a paediatric doctor began over 4 years ago at the Royal Children's Hospital Melbourne, but last year I journeyed across the world to become a clinical fellow in paediatric intensive care in Edinburgh, Scotland. One of the overwhelming causes of death in children aged less than 5 years old is infection. We use antibiotics heavily in critically ill children as a lifesaving measure, but unfortunately are in an age in which treatment is failing due to bacteria acquiring resistant genes. With the support of the Gates-Cambridge scholarship I will undertake a PhD in Paediatrics exploring how we can prevent antibiotic resistance and hospital acquired infection in our most vulnerable patients. As a paediatrician, intensivist, and scientist I hope to shape a brighter future in which we can prevent these life-threatening infections.

# DECOLONISING AFRICA'S BORDERS

RUMBIDZAI DUBE

Rumbidzai Dube has had over a decade of experience as a human rights lawyer, promoting women's rights, defending fundamental freedoms, observing elections, monitoring gender-based violence, advocating state accountability and facilitating law reform across the African continent. Through her work, she has lived in Egypt, Ethiopia, South Africa, the Gambia and Zimbabwe, her home country.



Her career laid the groundwork for her PhD in Politics and International Studies which will examine the legacy of colonial boundaries in Africa and how the African Union can navigate the complexities of the international legal order to prevent conflict.

Rumbidzai, who was born in Kadoma in central Zimbabwe, did a law degree at the University of Zimbabwe before working at the Research and Advocacy Unit-Institute for Democracy

in Africa (RAU-IDASA) office. Her work involved documenting cases of violence against women human rights defenders in the lead-up to Zimbabwe's 2008 general elections. She also worked as an election observer.

RAU later partnered with the International Centre for Transitional Justice and the IDASA office in South Africa to help women who had fled Zimbabwe due to the violence and document their views on transitional justice.

In 2009 Rumbidzai embarked on a master's in international law at the University of Pretoria, specialising in human rights and democratisation in Africa. As part of the course she was posted to Ethiopia where she completed an internship in the Department of Political Affairs of the African Union and wrote her thesis on the African Union's response to unconstitutional changes of government in Africa.

After her master's Rumbidzai received a financial award to do an internship at the Cairo Institute for Human Rights Studies in Egypt.

She then returned to Zimbabwe to the RAU where she established the Parliamentary Performance Evaluation Programme to assess the effectiveness of Parliament at holding the state accountable to voters. That work exposed examples of corruption including vote-buying tactics, leading to an onslaught of threats over RAU's work.

Rumbidzai also continued her work of seeking redress for women victims/survivors of politically motivated violence and to bring perpetrators to justice. Because of the lack of political will to prosecute these cases in Zimbabwe, RAU sought prosecution of the cases in South Africa through its partners in order to curb their right to freedom of movement.

Rumbidzai left RAU in 2015 and moved to Banjul in the Gambia to work for the African Commission on Human and People's Rights as a legal expert on a communications programme before returning home to work for UN Women as coordinator of a multi-agency programme which aimed to end gender-based violence among adolescent girls and young women. After that she worked for GIZ as national coordinator for programmes for civil society and civic participation and enhancing the capacity of independent national human rights institutions. There she supported government law reform procedures, helping civil society organisations facilitating access to justice for vulnerable populations and creating the procedures and documentation necessary for facilitating the work of the Zimbabwe Gender Commission and the Zimbabwe Human Rights Commission.

After having to defer her master's in Cambridge, she accepted a one-year contract as a senior programme officer-law on children's rights by the African Child Policy Forum in Addis Ababa, Ethiopia working with African governments on legal reform. The following year she started her master's in African Studies at Cambridge on a Chevening Scholarship. Her thesis tackled the problem of the tensions between African nationalism and self-determination in post-colonial Africa, drawing on an in-depth study of Zambia and the relationship between its first president Kenneth Kaunda's leadership and Barotseland's self-determination claims. Her PhD follows on from this work.



**Rodrigo Córdova Rosado**

USA

MPhil Archaeology  
Sidney Sussex College



I grew up in San Juan, Puerto Rico, spending my weekends camping on mountaintops and coastlines, with my amazing parents, little brother, and friends, staring up at the starry night next to a warm fire. I always yearned to learn more about the night sky, a path that eventually led me to my undergraduate study of Astrophysics at Harvard University. I have researched several aspects of observational cosmology, the study and measurement of the earliest signals from the universe, and what they tell us about how the universe began, and its eventual fate. At the same time, I strove to understand humanity's more immediate past by completing a secondary field in Archaeology, inspired by the questions I held concerning who had previously stared at the stars from those same coastlines in Puerto Rico. Embarking on an MPhil in Archeology of the Americas, with a focus on Archoastronomy, I hope to illuminate the deep astronomical traditions of Ancient American peoples, and how these help inform our own conception of the universe, our history, and ourselves.

**Anna Corrigan**

USA

PhD Latin American Studies  
St Edmund's College



I became interested in studying the relationship between politics and photography while living in Buenos Aires in 2008. As a Comparative Literature major at Cornell University, I studied photography in both fine-art classes and as a mode of literary, political, and historical analysis. In 2012, I travelled to Argentina, Chile and Uruguay to research the repurposed family photo album in the context of historical memory in these countries. Between 2014 and 2016, I studied between Spain, Portugal and Scotland for the Erasmus Mundus Master's course Crossways in Cultural Narratives. My MA dissertation analysed the photomontages of German-born Argentine artist Grete Stern. With Dr. Joanna Page at the Centre for Latin American Studies, I will investigate the history of photomontage in Argentina and shed light on this technique's prevalence in contemporary visual culture of the Southern Cone.

**David (Gil) Damon**

USA

MPhil Public Policy  
St John's College



Growing up along the rural coastline of Northwest Florida, my community was often shaped by exchanges between science and government. To explore the complex interactions between scientific and political entities, I interned for a bipartisan pair of US senators, with a Florida representative, in the Obama White House, and twice for NASA. At Florida State University, I majored in political science and psychology to study both civic institutions and the minds influencing them. There, I conducted psychological research on science communications and developed a program to encourage understanding among strangers with opposing political beliefs. I worked concurrently as a park ranger at Wakulla Springs State Park, where I narrated riverboat tours through a wildlife sanctuary, before serving its parent environmental agency as a Florida Gubernatorial Fellow. Prior to graduation, I defended a psychology thesis and received the Thomas R. Dye Award, my university's top undergraduate honor for political science. Through my MPhil I'm eager to further investigate the fusion of communications, science, and politics.

**Theo Di Castri**

Canada

PhD History and Philosophy of Science  
King's College



Growing up in Canada, I received a prohibitionist "just-say-no" drug education. It wasn't until I began exploring the history and politics of drug policy that I started to understand how drastic and unevenly distributed the social costs of prohibitionist drug policies actually are. Living in New York and Mexico City over the past decade has further exposed me to the transnational complexity of the War on Drugs. These experiences prompted me to co-found a cross-border initiative to rethink drug education and foster transnational solidarity within the fight for more socially just drug policies (catalyst-catalizador.org). My PhD project builds on this work by tracing the genealogy of "prevention science," a methodology that grows out of 20th century attempts to curb drug addiction and that is increasingly being applied to a wider range of problems. I am specifically interested in understanding how prevention science took shape in and between the US, Mexico and Colombia in the contexts of the Cold War, the War on Drugs, and the countercultural movements of the era. My ultimate goal is to reserve a space for a more pluralistic participation in the production of knowledge and decision-making about our collective futures.

**Rumbidzai Dube**

Zimbabwe

PhD Politics and International Studies  
Lucy Cavendish College



I am a pan-African feminist lawyer, born and raised in Zimbabwe. I studied law at the University of Zimbabwe (LLB) and the University of Pretoria (LLM) as a tool for confronting injustice. Before coming to Cambridge, I had over a decade of professional experience working in the development sector in Zimbabwe, South Africa, The Gambia, Ethiopia and Egypt with various NGOs, INGOs and IGOs, including the AU and UN. My experiences stoked a desire to not only deconstruct the context in which Africa's challenges persist but to find solutions to these challenges. For my PhD I will interrogate the politics of the international law on state boundaries historically, but also in its contemporary forms. The thesis will explore how historical trajectories of international law shape contemporary realities, by examining the legacy of colonial boundaries and how the AU can navigate the complexities of this international legal order in its conflict prevention efforts. My goal is to bridge the gap between academic research and practical policy and provide key insights on how the AU can increase its efficiency, leading a decolonial agenda in which it counterbalances citizens' and states' interests to prevent conflict.

**Elizabeth Duncan**

Canada

MPhil English Studies  
Lucy Cavendish College



I grew up in British Columbia, Canada and completed my BA in History & Literature at Harvard University. During my undergraduate degree I studied women's writing and depictions of women in English literature of the long eighteenth century, writing my honours thesis on the Restoration con artist and author Mary Carleton. For my MPhil in Eighteenth Century and Romantic Studies I seek to explore the relationship between early eighteenth century 'proto-feminist' philosophical writing and depictions of women in fiction and drama, focusing on how rhetoric that likened white women's plight to slavery became associated with subversive and sexually transgressive female characters. I am pursuing the MPhil with an eye to working toward a legal career protecting women's rights. The eighteenth century interest in the degree of autonomy women should have in determining their lives has much bearing on our current moment, where debates over reproductive rights and increasing awareness of sexual harassment and assault represent a similar concern with women's ability to exercise control over their own persons.

**Collin Edouard**

USA

MMus Music  
Wolfson College



As a first generation born American, I have always been between two cultures. Music is a large part of my cultural identity and I have always been proud of being a Caribbean man, however, music in the mainstream will often make people like me feel less American which can create a shameful attitude towards our own culture. My passion for choral music is greater than simply singing in an ensemble because when we explore music from other cultures and sing their songs after learning about the song's history, we can get a glimpse into a culture that is not our own. When we have performances highlighting Traditional Folk music from various countries and Classical music on the same stage we begin to bridge the chasm of the hidden curriculum perpetuated by many of our music educators. Each voice in a chorus has an important role and each person's identity and experiences add to the importance of music making. I want to help acknowledge composers, musicians, and lyricists who might not have had their work circulated through the mainstream as often and use those voices to break down those walls of prejudice in music education.

**Charles (Carl) Emogor**

Nigeria

PhD Zoology  
St Edmund's College



Growing up in a rural community in Nigeria, I had the first-hand opportunity to interact with nature. Unfortunately, during my early teenage years, these places were fast disappearing. This was my motivation to study Forestry and Wildlife Management for my bachelor's degree. After my degree in Nigeria, I completed the Durrell Endangered Species Management Graduate Certificate at the Durrell Wildlife Academy in Jersey, UK (validated by the University of Kent), and an MSc in Biodiversity, Conservation and Management at the University of Oxford. Focused on Cross River gorilla conservation in the Cross River rainforest, I worked for the Wildlife Conservation Society, Nigeria for about two years prior to my MSc. During my PhD in Zoology, I seek to understand the population dynamics and ecology of three pangolin species in Nigeria. My research also aims to understand the role Nigeria plays in the trade of pangolins which are currently the most illegally traded mammals. This study will shed important new light on the drivers and characteristics of the trade in pangolins in Nigeria which will be useful in implementing behavioural change interventions and enforcement actions against the trade.

# TOWARDS GREATER INCLUSION IN MUSIC EDUCATION

COLLIN EDOUARD

Collin Edouard wants to change music education and make it more inclusive, to challenge the received idea that western classical music is the highest form of music and that other cultural forms are somehow of lesser value.

For his MMus he wants “to bridge the chasm between what we understand as musically relevant and what we see as secondary”. He says: “I want to break the hidden curriculum in music and music education that suggests western art forms are the most important forms of music we can teach.”

Music was very important to Collin as he grew up. Though he was born in Brooklyn, New York, he was raised in the Caribbean culture of his parents and developed a love for the music of Haiti, where his mother was from. The family moved around and Collin encountered intense racism at schools in California and Florida. He joined the choir in Florida because his mother couldn't afford clarinet payments and learned to sing by copying the technique of the singers he admired, such as Andrea Bocelli and Luciano Pavarotti. After getting a perfect score at a solo and ensemble singing competition he realised singing was for him and entered many competitions and sang with a range of ensembles.

When he left high school, Collin opted to go to his local Seminole State College of Florida to do a music major. He worked his way through college and later transferred

to The City College of New York. There he came under the wing of the head of choral activities Ira Spaulding.

He was the first black teacher Collin had been taught by and he spent the next two and a half years learning from him and observing him. Through him Collin developed a love of choral conducting. Spaulding also supported Collin's desire to set up his own ensemble. While doing his studies, Collin joined a respected ensemble outside school called the Canticum Novum in order to build his repertoire and develop his ideas for his own ensemble.

Gradually as his studies continued he began to understand frustrations he had never voiced before about not being represented in the music he was studying.

After completing his first degree, Collin moved to Galicia in Spain to teach English so he could get some international experience. There he started a choir at the school where he was working and auditioned for several choirs in Galicia which allowed him to perform around Spain and Portugal.

When he returned to the US to do a masters in music and music education at Teachers College at Columbia University he realised, however, that he had been perpetuating the very type of Eurocentric approach to music that he wanted to challenge, teaching his students with “the toxic elitist mindset of a conservatoire” “because that is what I had been taught”. He decided to go back to basics, to unpick the mindset that put western classical music on such a pedestal and to embrace the music of other cultures. He also started teaching music from the Caribbean.

Recently, he has been teaching music to Syrian refugees in Turkey and in Kampala where he started The Kampala Music Project. The campaign raised over 8.6m Ugandan Shillings for two Ugandan schools to pay for student tuition fees and musical instruments. He was shocked that students there undervalued their own music in comparison to classical Western music.

“When you think your own music is not good enough you think you are not good enough because music is tied to our cultural identity,” says Collin. “Classical music is beautiful, but so are other genres of music.”



DAN WRIGHT

**Isabella Ferreira**

South Africa

PhD Medicine  
Corpus Christi College

I grew up in KwaZulu-Natal, South Africa, the epicenter of the HIV epidemic. This greatly influenced my research interests. I pursued an undergraduate at the University of Cape Town, majoring in genetics and psychology, which gave me the ground tools to understand both the basic science research and the human side of HIV infection. During my Master's degree at the Africa Health Research Institute in Durban, I have been identifying the cellular HIV reservoir in lymph nodes from antiretroviral suppressed individuals. Whilst pursuing a PhD in Medicine at Cambridge, I will seek to understand how different cell types that make up the cellular HIV reservoir interact and become permissive to HIV infection. By understanding these interactions, I will be able to identify key pathways that can be manipulated therapeutically to reduce or eradicate the HIV reservoir, allowing for a functional cure. I am honoured to be a part of the Gates Cambridge community and look forward to working and collaborating with like-minded scholars who are committed to improving the lives of others.

**Stephen Gadomski**

USA

PhD Haematology  
Girton College

My goal as an aspiring physician-scientist is to harness the advances of scientific research to prevent and treat human disease. As an undergraduate at the University of Scranton, I became fascinated with the human body and, in particular, the idea of manipulating tissue-resident stem cells to aid in organ regeneration. At the National Institutes of Health, I was able to investigate several regenerative processes in the bone marrow, including blood and vascular regeneration. During my PhD training, I plan to study a different population in the bone marrow – the skeletal stem cell. Through identification and characterization of the pure skeletal stem cell and its interaction with neighboring cell populations, my hope is to improve stem cell therapies for skeletal disease. Outside of the lab, I will also continue to compete in the sport of powerlifting, and to partner with healthcare teams that provide medical services to the poor and underserved. I am sincerely grateful to be part of the Gates Scholar community and to work with this unique and vibrant community to improve global society.

**Anna Forringer-Beal**

USA

PhD Multi-disciplinary Gender Studies  
Jesus College

After seeing firsthand how the law impacted the daily lives of women through the Undocumented Migration Project or on the National Human Trafficking Hotline, I felt compelled to study the construction of laws and the cultural attitudes which influence them. Through an MPhil in Gender Studies at Cambridge, I was able to explore how stereotypes about immigrants and sex workers impacted data gathering, victim assistance, and ultimately limited the scope of the UK Modern Slavery Act of 2015. I am humbled to be returning to the Gates Scholar's Community to expand this project through a PhD in Gender Studies. By constructing a genealogy of anti-trafficking law stretching back to the White Slave Panics of the late 1800's, I aim to show that anti-trafficking laws are currently constrained by xenophobic thought. It is my hope that this work will refocus anti-trafficking policy to human rights and survivor support as the most effective tools in combating trafficking. When not writing about human trafficking, I can be found baking, boxing, or fastidiously reorganizing my to-do lists.

**Mikaela Gerwin**

USA

MPhil History and Philosophy of Science and Medicine  
King's College

Although I grew up in New York City, I spent two years in Jerusalem and a gap year in rural Peru before completing an undergraduate degree in History, and Global Health and Health Policy at Princeton University. As a History and Philosophy of Science and Medicine student at Cambridge, I am committed to the interdisciplinary mission of interrogating science and medicine through the lens of humanities. I will study fourteenth-century bureaucratic documents, using paleographic and digital humanities methods to explore the local effects of the plague on class relations and Jewish-Christian interactions. I seek to understand the public health issues facing our societies today in the context of experiences centuries ago. It is my goal to bring this unique medievalist perspective and training to the public policy sphere where I aspire to highlight voices often excluded from bureaucratic systems, and facilitate deep historical, culturally-specific approaches to public policy creation.

**Nishant Gokhale**

India

PhD Legal Studies  
St John's College



During law school at the National University of Juridical Sciences, Kolkata I met students from diverse backgrounds. Their encounters with the law were vastly different from my own and there existed little in Indian law libraries to contextualise their experiences. Despite several legal protections and living on richly resourced lands, many tribes remain the worst off amongst India's citizenry across various socio-economic indices. My PhD at Cambridge explores how colonial rule uniquely affected tribes in South Asia and also how tribes affected colonialism. It seeks to develop a "hybrid" legal history for tribes in India which views not only colonial law's perceptions of tribes but also tribal perceptions of law and government. This builds on my LLM at Harvard where I explored tribal property rights in Indian legal history. In looking back, I hope to find workable solutions for a more just future for tribal communities across South Asia. I am grateful to the Gates Cambridge Trust for providing a global platform to this underserved area of law.

**Maggie Goulden**

Ireland

PhD Astronomy  
Trinity College



In Cambridge I will be researching exoplanet-disc interactions. The field of exoplanet research is rapidly growing: 25 years ago we had no evidence for planets outside our solar system but today, over 3000 exoplanets have been discovered and recent images from ALMA have revealed detailed disc structures for the first time. My research aims to use computational simulations to delve deeply into the interaction between disc and planet(s), with the aim of answering the fundamental question regarding our own origins. Completing even a secondary-school level of education was not a given for me; in a family of six children, only three of us actually did, and I am the only one to have attended college. The fact that I maintained a love of science and of learning in general can be attributed directly to inspiring teachers that I was lucky to have. Those formative years of my life drive my passion for outreach today, and I strive for accessibility for all students, regardless of socioeconomic background. I hope to use my experience as the President of the Trinity Space Society to improve upon the already stellar outreach programme at the Institute of Astronomy.

**Dylan Griswold**

USA

PhD Clinical Neurosciences  
St John's College



I've wanted to become a doctor since third grade. Although I was pre-med at Williams, I was also playing baseball. I went to San Francisco after my sophomore year for a professional tryout, but I tore a ligament in my elbow. Unable to pitch, I began looking for volunteer work. A mentor pointed me to an AIDS hospice operated by Mother Teresa's order of nuns. There, I learned how to care for patients, my Catholic faith informing my love for the one who lay beside me. The following summer, I went to Haiti. I was struck by the almost non-existent access to neurosurgical care. After spending the following year in the neurosurgery lab at UCSF, my desire to become a neurosurgeon was born. I matriculated to Stanford for medical school and developed an interest in connecting clinical practice with research and policy, leading to summer research at WHO in 2017. This summer, at Cambridge, I focused on surgical management of neurotrauma in low-resource settings. I am grateful for the opportunity to continue working with this team to develop best-practice guidelines for neurotrauma in low-resource settings. I give thanks to God, abandoning myself to His plan for my life.

**Anna Guasco**

USA

PhD Geography  
Hughes Hall



While studying at Carleton College in Minnesota and working as a park ranger at my local national park in coastal California, I found myself drawn to the unexpected connections between storytelling, history, environment, and justice. I centred my undergraduate and postgraduate research around these interdisciplinary interests, obtaining a B.A. in American Studies at Carleton and an M.Sc. in Environment, Culture and Society as an Avangrid Scholar at the University of Edinburgh. In my doctoral research in Geography at the University of Cambridge, I will study geographies, histories, and narratives of grey whale migration and conservation along the North American Pacific Coast. Through this work, I aim to examine how stories affect perceptions of historical encounters and outcomes of contemporary encounters, and to assess how storytelling interacts with issues of justice. In addition, I am passionate about public engagement, access, and accessibility. As a Gates Cambridge Scholar, I hope to collaborate with other Scholars and Cambridge community members to promote equitable access to research, education, and storytelling.

# ELIMINATING THE HIV RESERVOIR

ISABELLA FERREIRA

When she was 16, Isabella Ferreira did some work experience on the paediatric ward of a local hospital in KwaZulu-Natal.

The experience of seeing young children with HIV had a huge impact on her and she wrote about one girl in a school essay soon afterwards, describing the pain she was in and the way the illness had affected her body. She wrote: "The experience of seeing one little girl with the effects of this deadly disease gave me a clear sense of the predicament we as a province, a nation, and even a continent are in."

The experience was to prove a turning point in her life. Isabella's PhD in Medicine will seek to understand the cell mechanisms that allow HIV to survive in patients who take anti-retroviral medication and aid progress towards developing a functional cure for HIV.

She will look at the two main cell types that make up what is known as the HIV reservoir – the places in the bodies of patients taking anti-retrovirals where HIV lies dormant – and will seek to understand their cell biology and what allows them to become infected. The ultimate aim is to develop targeted therapeutics which can reverse their latent state and kill them.

Isabella was born just outside Durban in KwaZulu-Natal. An only child, her father was an attorney and her mother a physiotherapist who worked mainly with disadvantaged children with disabilities. Seeing her mother working with children with mental and physical disabilities, Isabella developed an early interest in health and medicine.

She did a double degree in genetics and psychology at the University of Cape Town. The course was four years in total, but Isabella took a year off in 2015 to repeat one genetics course and became involved in literacy work. At school she had gone into preschools in disadvantaged areas to teach English and she felt that she had drifted away from the kind of community engagement she felt passionately about. She taught English literacy on a one-to-one basis to immigrant and non-English speaking communities.

Isabella chose to continue with genetics for her honours degree, but moved to the University of KwaZulu-Natal which she felt was more community-based. All the students had to tutor undergraduate students as part of their course and help them to make the transition from school to university.

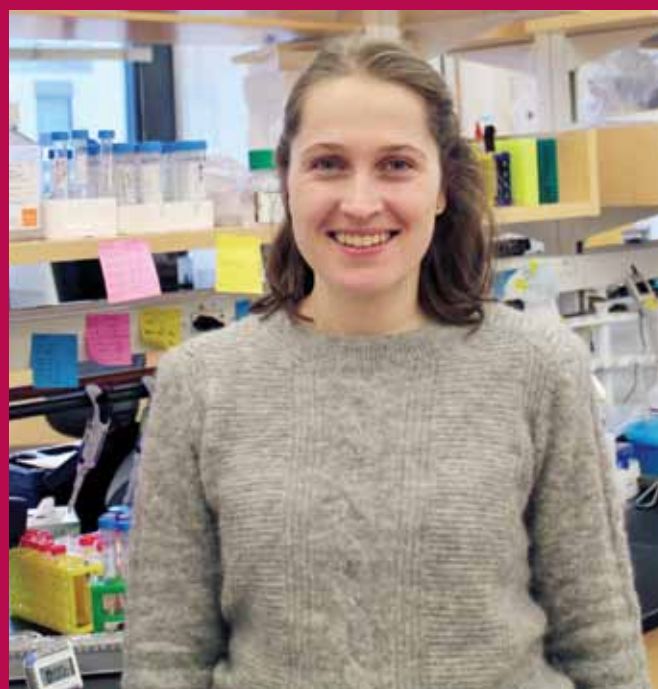
It became increasingly clear to Isabella that she wanted to focus on molecular biology. In 2017, she joined the multidisciplinary Wellcome Trust-funded Africa Health Research Institute for

her master's, funded by a fellowship from the Sub-Saharan African Network for TB/HIV Research Excellence. The Institute, an academic partner of University College London, has collaborations with several other research bodies, including MIT and Harvard.

Isabella's project focuses on the HIV reservoir, the sanctuary sites in the body such as the lymph nodes where HIV lies dormant and where it can rebound if resistance to the antiretroviral medication develops.

Isabella's laboratory works with a hospital in Durban to obtain samples from study participants. The Shalek laboratory at MIT has developed a platform which can do single-cell RNA sequencing on the subset of cells from the lymph nodes which are thought to form the HIV reservoir. This will allow researchers to see whether they are infected with HIV and how this may be preventing HIV from being cured.

Talking about her PhD, she says: "It will provide the proteomics and cell biology expertise I need to take the next step in my research. It will be a beautiful continuation from what I am doing now and I will continue to collaborate with my master's supervisor and be part of a wonderful network."



**Yazmin Guzman**

USA

MPhil Education  
Lucy Cavendish College



My parents immigrated to the United States from Yatzachi el Bajo, Mexico before I was born. I was 3 months old when my parents moved from Oxnard, California to Wichita, KS. As a low-income Latina student in Wichita, KS, I always noticed the disparities that existed for me and my siblings. This

frustration and desire for change is what has driven me to dedicate my life to eliminating these inequities. Eventually, I found my way to the Massachusetts Institute of Technology where I completed a Bachelors of Science in Urban Studies and Planning and a Masters in City Planning. My training at MIT has taught me how cities can support and hinder its residents, now I want to focus on how education specifically can be viewed as part of urban planning. At the University of Cambridge, I will complete a Masters in Educational Research, where I will focus on the interaction between the neighborhoods students live in and the schools they attend. With this research, I hope to address how we can view education more holistically and improve education equity through policy.

**Daniel Hanigan**

Australia

PhD Classics  
Corpus Christi College



Through a Bachelor of Arts and a Master of Philosophy at the University of Sydney I have pursued an eclectic range of topics in Classical Studies, spanning theatrical politics to ancient literary criticism. My MPhil thesis investigated the etymologies of divine names and epithets in Clement

of Alexandria's Protrepticus. Inspired by Clement's tactical depiction of himself as a truth-seeking traveller, my PhD will shift focus to the surviving corpus of ancient travel writing – specifically, it will constitute the first comprehensive study of the body of texts known as Periplus ("Circumnavigations"). In the most rudimentary sense, the Periplus are a species of nautical guidebooks designed to operate as navigational schematics for ancient sailors. On close inspection, however, it becomes clear they varyingly comprise ethnographic records of coastal communities, philosophical attempts to capture in words the scope of the known world, geopolitical dossiers written at the behest of emperors, and more. With the aid of the Gates Cambridge Scholarship, my thesis will analyse this multitude of functions with a view to understanding the way in which the Periplus text-type responded and adapted to distinct contexts over time.

**Muhamad Hartono**

Indonesia

MPhil Biotechnology  
Downing College



I grew up in a remote village on the southwest coast of Sumatra island, Indonesia. While my entire education has been based on scholarships, my humble beginning taught me that education creates countless opportunities to help others so I established initiatives such as a mentorship

program to assist students in my village. While studying chemical engineering at TU Delft and pursuing an Honours program in enzymology, I learned the possibilities of incorporating molecular chemistry in complex biological environments and their potential to address the challenges in biomedical field. For my internship, I prepared superparamagnetic nanoparticles and functionalized them with tumour-targeting moiety for their use as contrast agents in MRI tumour diagnostics. Building on these experiences, I would like to gain a deeper understanding of cancer biology and new avenues for treatment, from targeted drug delivery to genetic engineering. I will be working on engineering nanoparticles for early lung cancer detection. Developing diagnostic strategies that can target certain cells linked to the early stage of cancer could enable us to detect and remove these cells and potentially prevent cancer development before it is too late. My goal is to contribute to the development of more efficacious cancer treatment.

**Stefan Hosein\***

Trinidad and Tobago

PhD Computer Science  
St Catharine's College



I grew up in the small Caribbean island of Trinidad and Tobago, where I graduated with a BSc. in Computer Science. While studying my bachelors, I was unsure of my career path until my first Artificial Intelligence course. I became fascinated with the research area and upon graduation,

went to work as an intern in the Data Science Group at NASA Ames Research Center. Also during my bachelors, I volunteered with a group called Coder Dojo which taught programming to children. This experience encouraged me to co-found a non-profit organization called Escape Velocity, which seeks to inspire underprivileged children in Trinidad to learn about science. My PhD would marry these two areas, meaning that I would be able to help students using Artificial Intelligence methods, specifically Natural Language Processing. My work will help in question answering for online courses and improving the accuracy of different tasks (like named entity recognition, part-of-speech tagging etc.) across multiple different domains.

\*Deferred from previous year

**Thomas Imhoff**

USA

MPhil Engineering  
Churchill College

As a Midshipman at the United States Naval Academy working towards a Bachelor of Science in Mechanical Engineering, I quickly realized my passion for structures. Gridshell structures in particular piqued my interest because of their engineering attributes and aesthetics. Gridshells are a type of

shell structure formed from linear members assembled into a flat lattice and then bent on-site into a curved surface. This construction method allows for a relatively large span structure to be built from easily transportable linear members without the use of heavy machinery. The United States Navy is invested in worldwide disaster relief efforts, and in these situations there is a distinct need for shelters capable of accommodating large populations. I believe that gridshell structures can meet that need. At Cambridge I will pursue a Master of Philosophy in Engineering with the Advanced Structures Group. I plan on researching the impact on structural performance of non-ideal support conditions. This research will help establish practical design methods to bring gridshell structures closer to implementation in regions of need. I am honored to be selected as a Gates Cambridge Scholar.

**Mika Jain**

USA / South Africa

MPhil Physics  
Churchill College

I am originally from South Africa, and grew up in New York City. I attended Stanford University, studying physics and computer science. First drawn to the elegance and explanatory power of physics, I became interested in applying its experimental techniques to study biological systems.

I have also developed machine learning algorithms to analyze the large datasets these methods tend to produce. At Cambridge, I will use a combination of experimental and computational approaches to study the genetic basis of complex disease. I strongly believe integrating new experimental and computational methods will lead not only to fundamental advances in biology but also to more informative diagnostics, more targeted treatments, and more accessible healthcare.

**Muhammad Iqbal**

Indonesia

PhD Pathology  
Downing College

Since completing school education, I have had a firm intention to become a biomedical researcher who can translate research queries into practical application for the Indonesian people. I have gone through a set of diverse experiences in the past to finally formulate my own direction for this

dream; from being a bioengineer that produced a cancer cell-specific inducer of apoptosis from a chicken anaemia virus gene to founding my own start-up company focusing on natural product utilisation for bacterial infections. Now, I am directing my future to become an immunologist that aims at ending the global issue of antibiotic resistance. I will investigate how we can manipulate the human neutrophil phosphoproteomic response to *Staphylococcus aureus* and identify potential non-antibiotic therapies for augmenting the host clearance of this crucial pathogen. This degree will be paramount for me to establish biomedical research environment in Indonesia and help developing Indonesian biopharmaceutical industry. Such work will be of relevance to many similar nations, and will help address the global burden of infectious diseases. In my spare time, I love spending time with my family and friends & writing my bioscience blog at [iqbalmuhammad.com](http://iqbalmuhammad.com).

**Kristopher Jensen**

Denmark

PhD Engineering  
Jesus College

Born and raised in Denmark and having lived a year in the US, I moved to England to study Natural Sciences at the University of Cambridge as an undergraduate student. After a bachelors degree in chemistry, I developed a passion for neuroscience as a Janelia Undergraduate Scholar in the US,

where I studied how fruit flies navigate. I therefore decided to pursue a PhD in neuroscience, where I will make a move to slightly larger organisms to tackle some of the mysteries of the brain in the Cambridge Department of Engineering. Working in the Computational and Biological Learning Lab alongside researchers in both machine learning and computational neuroscience and drawing on the expertise of the Cambridge neuroscience community more broadly, I aim to improve our understanding of motor learning using tools from dynamical systems theory and control theory. Improving our knowledge of the motor system will help us further understand how we interact with a complex environment, while advances in basic neuroscience can also drive advances in more applied fields, such as artificial intelligence and clinical neuroscience.



# BREAKING THE HUMAN TRAFFICKING LOOP

ANNA FORRINGER-BEAL

While she was at high school Anna Forringer-Beal worked as a research assistant on a university project about people who risked their lives making the dangerous crossing from Mexico and Central America to the US.

Her research work involved building a catalogue of artefacts that researchers had collected on the borders of Mexico and Arizona. Anna recalls finding a really tiny shoe – a trainer with velcro straps. Friends of the child who had owned it had written messages on the shoe such as ‘we’ll miss you’ and ‘we wish you well’. “It shaped me profoundly,” says Anna. “It made me realise I was in a position of power and that I should not be working in this space unless I was trying to dismantle violent systems and help others.”

Anna’s PhD at the Multidisciplinary Centre for Gender Studies will compare the Modern Slavery Act with the US’ Trafficking Victims Protection Act. She wants to go back to the roots of the acts and look at ways to reposition trafficking as a human rights concern rather than a criminal issue. That would mean emphasising victim support and resources over punitive measures.

Anna says that it is important to recognise the different social identities trafficking victims have because it affects the process by which they could leave a trafficking situation. For example, many trafficking victims who are also undocumented are afraid

to come forward for fear of being deported. “The best tool traffickers have is a restrictive immigration system. It’s their best friend. They tell victims that they will be kicked out of the country if they report the abuse – and the government’s treatment of immigrants backs this up. We need to break that loop,” says Anna. “We have the resources to care for victims and if it cuts down on a crime as heinous as trafficking then we should do it.”

Anna, who was born in Michigan, started doing academic research early. At 16, she joined The Undocumented Migration Project as a research assistant at the University of Michigan. That involved interviewing undocumented immigrants, many of whom had faced violence during the crossing into the US. This was to form the basis of her undergraduate thesis on gendered differences in the migration process.

As a result of witnessing the impact of an abusive relationship on her mother she was also interested in gender power relations and at the University of Michigan Anna sought out the opportunity to work in the university’s sexual assault prevention and awareness centre. At the centre, where she was a coordinator, she managed 44 volunteers and taught over 500 freshmen about sexual consent as well as creating the syllabus for a mini undergraduate course on gender violence in the history of the feminist movement.

On graduating Anna turned to activism and worked for the nonprofit, Polaris, on their national human trafficking hotline, but, although she loved the work, she realised that she was not dealing with the source of the problem: policy and law enforcement.

A year later she started her master’s in Multi-disciplinary Gender Studies at Cambridge with a focus on how the White Slave Panics of the early 20th century influenced contemporary anti-trafficking policy. Specifically, she investigated the UK’s Modern Slavery Act and, drawing on her ethnographic background, spoke to MPs about their approach to policy-making. By drawing a connection between the historical anti-trafficking methods and modern policy responses, Anna was able to demonstrate the similarities between the two – suggesting the need for a new, human rights-focused approach. Her PhD will pick up where her master’s left off.



**Dino Kadich** USA / Bosnia and Herzegovina

PhD Geography  
Emmanuel College



From a young age, I was keenly aware that the neat categories that bound and define our sense of belonging were much more complex and difficult for some than for others. My experience growing up as a refugee from Bosnia and Herzegovina in Tucson, Arizona, gave me the opportunity

to understand how political geography is produced in the everyday, through acts of inclusion and exclusion small and large. When I began my studies at the University of Arizona, I learned that such quotidian experiences were of enormous value to scholars trying to understand how political geographic realities are enacted and reproduced. As an MPhil student in geography at Cambridge, my work has focused on using participatory video to bring out how actually-existing political contestations over urban space and belonging play out among youth in Sarajevo. In my PhD, I hope to continue this engagement in Bosnia and expand it to Istanbul, Turkey, where a set of shared histories and contemporary struggles beckons for research that can think about how young people navigate nationalist politics and everyday material struggles across contexts. I am honoured to return to this community.

**Luke Kramer**

USA

MPhil Chemistry  
Christ's College



I grew up in Houston near the Texas Medical Center, and early shadowing experiences inspired me to consider a career in medicine. As an undergraduate at Harvard I pursued my interests in service work and chemistry research. In the Nocera Group, an inorganic chemistry laboratory

at Harvard, I first worked on quantum spin liquids and later on catalysis. As I developed a love for transition metals, I learned that they play an outsized role in topics ranging from oxygen transport to signaling in the brain. At Cambridge I look forward to studying iron distribution in biological solar cells, which use photosynthetic bacteria to generate electricity from solar energy. This research builds on my previous experience in inorganic chemistry while preparing me for future work with in vivo and human systems. Following a MPhil at Cambridge, I plan to pursue an MD-PhD degree and use inorganic chemistry to address unsolved problems in medicine, including neurodegenerative diseases such as Alzheimer's. I feel enormously grateful to join the Gates Cambridge community and learn from other students whose research questions are inspired by the needs of those around them.

**Michelle Ko**

USA

PhD Biological Science (MRC Laboratory of Molecular Biology), Churchill College



While growing up next to the library in Cockeysville, Maryland, I came to love stories. After reading hundreds of books, I consider the grandest origin story to be the curious saga of how we developed from a single cell into who we are today. Even more exciting to me is that this remarkable

journey still has many questions left unanswered. To explore this further, I am pursuing a degree in Human Developmental and Regenerative Biology at Harvard University and conducting research in autism spectrum disorder and cortical development in the Arlotta Lab. Through this research and my coursework, I became interested in how the nervous and immune systems communicate with each other in sickness and in health. During my PhD at the MRC Laboratory of Molecular Biology, I will explore this theme and I aim to interpret the dialogue between the nervous system and innate lymphoid cells. I hope that this research of fundamental interactions will empower the field to understand neuro-immune diseases better. I am immensely excited and grateful to join the vibrant and passionate community of Gates Cambridge Scholars.

**Grant Kynaston**

Australia

MPhil Classics  
Peterhouse



My interest in the application of linguistics to ancient texts was first piqued while studying Latin and Classical Greek in high school, and subsequently at the University of Sydney in my Bachelor of Arts. In reading and analysing works in their original languages – first in Latin and Greek, and later in Classical

Arabic, through a Master of Islamic Studies at Charles Sturt University – I found myself drawn to their underlying linguistic structures. Little modern study has considered ancient literatures in light of recent developments in linguistics, and much less with regard to how these features affected performance or composition. My work therefore explores how phonological variables and broader considerations of dialect and stylistic context shaped compositional choices in ancient poetry, with a focus on Greek epic and lyric. I hope to pursue this study further through my Master of Philosophy in Classics at the University of Cambridge, with the generous support of the Gates Cambridge Scholarship programme.

**Cristian Larroulet Philippi** Chile / France

PhD History and Philosophy of Science  
St Edmund's College



I was born and raised in Chile. There I studied mostly economics, but also quite a bit of sociology, and philosophy. I worked then as a researcher in policy-relevant areas of economics (at J-PAL) both in Chile and in India, and I also taught philosophy of science and economics in Chile. I decided to bring those interests closer together by studying philosophy of the social sciences at the LSE. I look forward now to continue doing so in my PhD at Cambridge HPS. My goal is to develop rigorous philosophical analyses of the theoretical and normative aspects of science, with a special focus on the social sciences. I expect this research to inform not only internal debates in philosophy of science, but also in economics, and in the interdisciplinary debates that surround public policy disputes.

**Joshua Law** USA

MPhil Health, Medicine, and Society  
Darwin College



I was raised near Birmingham, Alabama, where I first grasped at the mystery of human experience and the beauty of devotion to a higher cause. I spent four meaningful years at The University of Mississippi, earning a BA in Religious Studies with minors in Biology and Chemistry.

My undergraduate research exploring the gendered world of ancient medicine was published by the Journal of Theta Alpha Kappa, and my senior thesis utilized a case study analysis to demonstrate the impact of western masculinity upon historical Jesus studies. Since my graduation from University, I have been teaching science in middle schools and caretaking for individuals with disabilities. As I undertake an MPhil in Health, Medicine, and Society at Cambridge, I hope to deepen my understanding of health systems in order to prepare myself for a career in public health advocacy. I am honored to join the Gates Cambridge community and look forward to a lifetime of listening and learning that might improve the lives of others.

**Stephen Lezak** USA

PhD Polar Studies  
Trinity Hall



My work focuses on the connections between human and physical landscapes. I examine the nexus of climate, extractive industries, and the human communities most directly affected by environmental change. In the past several years, I have studied these transformations in rural Mongolia, expanding

and curtailing opportunities for nomadic herders living in the Gobi Desert. To date, my research has been published and featured in several academic and popular outlets, including The Washington Post. At Cambridge, I will be studying many of these same socioecological systems in the context of the Arctic. By focusing on the world's fastest-warming region, I hope to examine the (un)natural laboratory of melting glaciers and retreating sea ice. While these changes send some communities into retreat, they also create new opportunities for developers and extractors to prospect for wealth in Earth's last terra incognita. This new frontier offers a glimpse into a future where climate change doesn't cause the end of the world but the beginning of a new chapter of socioecological history. I hope my research will shed light on this future to inform policy and innovation that helps vulnerable communities cope with the pressing demands of a changing climate.

**Rachel Linfield** USA

MPhil Health, Medicine, and Society  
Jesus College



As an undergraduate at Princeton, I am majoring in the History of Science and completed the pre-med curriculum. My research interests at Princeton revolve around the medicalization of postpartum depression, the feminist self-help movements who pushed for increased

medical recognition of their experiences, and the narratives of women, across time and geography, who suffer from postpartum depression. Through an MPhil in Health, Medicine, and Society at Cambridge, I intend to expand my senior thesis work on organized feminism's advocacy for medical treatment of postpartum depression, with a focus on how social movements within England influenced the psychiatric treatment of postpartum depression. Ultimately, I hope to attend medical school and then specialize in the treatment and care of women's mental health, to honor each woman's story, including, where relevant, experience with motherhood. I am excited to learn from and with the diverse scholars who comprise the Gates Cambridge community.

# ADDRESSING THE HIDDEN CRISIS OF ANTIBIOTIC RESISTANCE

MUHAMMAD IQBAL

The problem of antibiotic resistance is a global one, forecast to cause up to 10 million deaths a year in the near future.

In Indonesia efforts to stop its progress are hampered by a lack of research in biomedicine, the absence of a centralised medical record system for healthcare providers and the fact that people can get access to antibiotics without a prescription and tend to stop taking them as soon as they feel better rather than completing the course. "It is very much a hidden crisis," says Muhammad Iqbal.

His PhD in Pathology will help address the pathology of *Staphylococcus aureus* infection in the human body. The bacterium is related to MRSA, an antibiotic-resistant strain of *S. aureus* which is now at epidemic levels worldwide.

Muhammad will study how neutrophils, the white blood cells which form the core of the human immune system, respond to *Staphylococcus aureus* by investigating the vast network of unexplored interactions between the immune cells and the bacteria through a non-biased, large-scale technique, called phosphoproteomics. He ultimately hopes to create new effective drugs to treat infection.

Muhammad's route to his PhD has not been a traditional one and has involved manufacturing and selling products made from propolis, a resin-like material made by honey bees, setting up an apiary and mentoring the students who ran it.

His business experience is linked to his research into the anti-bacterial properties of propolis and it was his interest in finding out more about the immunomodulatory properties of propolis that led him to Cambridge. Honey-based products are very popular in Indonesia, which has a booming herbal medicine market, due, to a certain extent, to the high cost of imported drugs. Muhammad is keen to establish a sound scientific basis for the production of good quality, effective treatments in his country.

He has been inspired in part by one of Indonesia's greatest philosophers, Hamka, who was born in the lakeside village his family comes from in the multi-ethnic Minangkabau highlands of Sumatra.

Muhammad did his undergraduate degree in Medical Biotechnology at the University of Indonesia where he also developed an interest in environmental issues. He and his fellow students founded a student environmental organisation which worked with a local waste recycling company to create a waste segregation system and a waste management awareness campaign.



During his four-year course he was involved in two very different research projects, one of which involved propolis. After his undergraduate degree he and his lecturer set up a business to manufacture propolis products, including propolis candy to treat dental diseases.

The business built an apiary in the Indonesian village of Sukabumi. Local students worked on the project and Muhammad acted as a science and English teacher to some of the students as well as giving them advice on how to get into university.

The experience made Muhammad realise that, to produce effective drugs, he needed to improve his research skills in translational biomedicine.

Muhammad won a presidential scholarship from the Indonesian government to do an MPhil in Pharmacology at the University of Cambridge. His initial intention was to look at how propolis might be used to modulate the immune system, but after conversations with his supervisor he opted to focus on tumour angiogenesis.

Between his Master's and his PhD, he has been working as a consultant in pharmaceutical and food consultancy company in the Netherlands where his wife was studying. True to the Gates Cambridge mission, he says: "My aim is very much to improve the lives of others and I feel that drug discovery is a way I can have a significant impact on people's health outcomes."

**Andrea Luppi**

Italy

PhD Clinical Neurosciences  
Selwyn College



I grew up in a small town halfway between Milan and the Italian Alps, but I earned my BA degree in Psychology and Philosophy from the University of Oxford, followed by graduate work at Oxford, Cambridge and Harvard. I see myself and my work as trying to bridge the gap between mind and matter:

building on my MPhil work at Cambridge, my PhD in Clinical Neurosciences will apply measures from network science and information theory to study the brain across multiple states of altered consciousness – such as sleep, anaesthesia and vegetative state. Ultimately, I would like to develop a unified understanding of how consciousness is lost, and how we can promote its recovery in patients. I am also committed to communicating what we know about the brain and the mind, both across disciplines and to the wider public – especially when such knowledge is relevant for mental health. These issues are still surrounded by misunderstanding and stigma, and I believe that accessible knowledge is the best antidote. I am very excited to be re-joining the community of Gates Scholars at Cambridge.

**Veronika Mantziou**

Greece

PhD Genetics  
Queens' College



I came to the UK to study Biomedical Sciences. During my studies, I grew an interest in cancer treatment research, which was developed in my internship at the Institute of Cancer Therapeutics in Bradford. There, I realised the uncanny similarities between embryonic stem cells (ESCs) and

cancer cells at the metabolic level, and identified the need to gain a deeper understanding of the key events occurring in early mammalian embryogenesis. For this reason, I decided to do an MPhil in Developmental Biology at the University of Cambridge, and to focus on the link between metabolism and embryonic development. Preliminary data of my research support the crucial effect of energy metabolism, not only on cell growth, but also on cell signaling and pluripotency. My goal as a PhD student is to continue and expand on my current research, which is in accordance with the principle of the “3Rs” (Replace, Reduce and Refine the use of animals in Research) and paves the way towards personalised medicine. I am incredibly honoured to be part of the vibrant and insightful Gates Cambridge Community and its global network of Scholars.

**Bingnan Lyu**

China

PhD Medicine  
Clare Hall



I chose biological sciences as my major in Xiamen University and got admission to the Beutler Institute, where the training of genetics and immunology presented me the promising future of precision medicine as an alternative treatment of infectious diseases.

Specific genetic variations among the population can disrupt host immunity and confer vulnerability to certain infectious diseases. Studying genes that participate in immune responses, therefore, enables us to develop novel therapies targeting related pathways and apply them to patients carrying those mutations. In my PhD study, I will focus my research on tuberculosis, a continuous threatening disease for the human being, especially in developing areas. By identifying genes that affect the host susceptibility to mycobacterial infection and revealing their functions in pathogenesis, discoveries will be likely to promote our understanding in the fundamental mechanisms of our immune system, and shed light on host genotype-specific therapies to the tuberculosis infection, which enable patients to receive personalized treatment with lowest cost but highest efficiency. It is a great honour of being one of Gates scholars and joining the community with the shared commitment for benefiting others.

**Daide Martino**

Italy

PhD History  
St John's College



I was lucky to grow up in Italy first, then in Belgium, and when I made the leap across the Channel to study History at Cambridge I already saw myself as a European citizen. As I researched the history of a Florentine family relocating to South Germany in the midst of the Thirty Years' War for my Master's,

I found in the past some parallels with my own experience of transnational movement. For my PhD I will cross not just national but also disciplinary boundaries, investigating the uses of hydraulic knowledge and expertise across three early modern cities, Florence, Augsburg, and Amsterdam. Retracing the careers of hydraulic experts responsible for monumental fountains and mundane sewage systems alike, my work will be at the crossroads between the history of science, art history, and environmental history. In particular, I intend to contribute to the field of water history, which has very concrete implications for the present, and for ensuring that we can continue to hold water in shared and sustainable possession with fellow humans.

**Etienne Mashuli**

Burundi / USA

PhD Politics and International Studies  
Clare Hall

Born in Rwanda, my earliest memories are of life as a young refugee. I pursued my undergraduate at North Central College on a generous scholarship from the school's board of trustees. During my masters at Yale, I focused on the events that I left behind: mass atrocities and their consequences.

For my PhD, I am looking into the experiences of a vastly marginalised group in the African Great Lakes known as the Batwa. I am interested in how colonial and neo-colonial notions of eugenics have turned them into a de-politicized group, one which has no say on its political, economic and social reality. Beyond academics, I continue to be involved in the education space especially in providing quality education for marginalised communities. To this end, I am a co-founder of the Tujenge Scholars Program, a leadership institute, which has sent Burundi students to prestigious institutions such as Harvard, Carleton, Brown, MIT etc. The goal is that this group of young leaders will be responsible for Africa's transformation.

**William McCorkindale**

Hong Kong / UK

PhD Physics  
St John's College

After 4 physics-filled years at Cambridge alongside summer research at the Max Planck Institute for Plasma Physics and Caltech, I will be conducting a PhD in computational drug design. Mankind has so-far synthesized  $10^8$  compounds, which sounds like a lot, but it is estimated that

there are at least  $10^{20}$  possible drug-like molecules. My PhD will attempt to achieve this by describing three-dimensional molecules in a continuous representation – the continuity of the representation allows it to be used as an input to conventional machine learning techniques for the prediction of novel drug candidates with optimal properties. By lowering the cost of drug discovery, this would particularly benefit the research of neglected diseases where the profit margin for drug development is low to non-existent. In the future I hope to found a computational drug discovery start-up in my hometown, focusing on diseases afflicting the Asia-Pacific region. I am incredibly honoured to join the Gates community, and I look forward to meeting and exchanging ideas with like-minded scholars!

**Megan Masterson**

USA

MASt Astrophysics  
Churchill College

As an undergraduate student at Case Western Reserve University, I have devoted my time to engaging in a variety of interdisciplinary research, spanning the subjects of astronomy, physics, planetary science, and mathematics. Through astronomy coursework and a recent research

experience analyzing X-ray data from a distant, merging galaxy cluster, I have developed a passion for observational astronomy. I am excited by our ability to understand real astronomical objects, from the stars that populate our own galaxy to the objects whose light takes billions of years to reach us. At the University of Cambridge, I am especially eager to expand my astrophysics knowledge through rigorous coursework and to engage in observational astronomy research as a MASt student. Alongside my years of research, I have passionately supported science education as a volunteer at the North Carolina Museum of Natural Sciences where I ran solar observing sessions and taught mini lessons on dark matter. I am honored to be joining the Gates Cambridge community and look forward to interacting with and learning from my Gates Cambridge peers of all different disciplines.

**Brandon Mercado**

Bolivia

PhD Biochemistry  
Girton College

I went to Universidad Autonoma Gabriel Rene Moreno where I received a bachelor's degree in Biochemistry. During my time as an undergrad student, I developed an interest in improving the health system of my country by performing research in those diseases that mostly affect Bolivia. The following

year, I became part of a training program in charge of Professor Robert H. Gilman from the Johns Hopkins University, who gave me the opportunity of doing a master degree in Epidemiological research at the Universidad Peruana Cayetano Heredia where I studied the development of cardiomyopathy. During my training, I also completed courses in Argentina, Chile, Peru and the United States, which later allowed me to present my work at the Annual Meeting of the American Society of Tropical Medicine and Hygiene (ASTMH). I was also awarded a fellowship in research at the Johns Hopkins University. At Cambridge, I will perform a PhD in Biochemistry studying the interaction of *Toxoplasma gondii* with the host cell. Besides my academic work, I am interested in youth development for which I have been selected as a Bolivian Youth Ambassador, a program sponsored by the Department of State of the United States.

# TOWARDS A MORE INCLUSIVE SOCIAL SCIENCES

CRISTIAN LARROULET PHILIPPI

Cristian Larroulet Philippi is interested in broadening the reach of the social sciences and ensuring they engage with the society around them rather than with scientific abstractions. That approach, he believes, will lead to both better science and better policy.

Through his PhD in the philosophy of science he hopes to develop an approach which will be useful across the social sciences.

He says: "All scientific theories can fail not only if the data does not back up the theory but if they leave out important parts of the story." Cristian adds that this is why scientists need to be more aware of the scientific process and of the need to include others in that process, from how they go about framing their studies onwards. "What makes good and bad science cannot be determined only internally by the scientific community," he says. "The public should participate. We need to assess different ways of involving the public in scientific studies. Scientists need to engage with the different sectors of society."

Cristian was born in Santiago, Chile, the fourth of seven children. His mother was a plant researcher and his father taught economics and worked on think tanks and in the government. Influenced by his father's work, Cristian opted to study economics at the Pontificia Universidad Católica de Chile after leaving school. However, he soon found the way economics was taught was too narrow so he started taking courses in anthropology, sociology, theology and eventually philosophy.

At university Cristian also worked with young people from disadvantaged areas to help them prepare to take university entrance tests. It was a desire to break out of the university bubble and do something practical that also led him to opt for a semester in a township in South Africa, working for a local NGO with people affected by HIV, in particular young children who were in danger of dropping out of school because they were caring for HIV-infected parents.

That experience left him more dissatisfied with economics when he returned. In addition to teaching philosophy of science and economics at university, Cristian started working as a research assistant for a professor who was working with the J-PAL researchers' network at MIT. The network specialises in social programme evaluation, testing the impact of social programmes on the ground.

Cristian continued to work with J-PAL while he was doing his undergraduate degree, masters and beyond. In Chile he worked with Chilean researchers investigating how to support parents to help their children to learn. He also worked on an oral health

project, looking at the impact of oral health and other socio-economic factors on access to work.

After he completed his master's Cristian and his wife went to India for a year. There Cristian worked with the government of Chennai in Tamil Nadu and with the NGO Pratham in Uttar Pradesh, investigating the impact of rearranging classes based on the level students are at rather than their age. Cristian and his wife also spent six months living in spiritual centres and ashrams learning about the country's spiritual traditions.

As a result he decided, in 2015, to do a master's in philosophy of the social sciences at the London School of Economics in order to make his transition from economics to studying philosophy more formal.

After his course, Cristian moved to Boulder, Colorado, as his wife, who is a therapist, was studying there. While she was doing that, Cristian began a PhD in Philosophy at the University of Colorado at Boulder which gives him a general background in the subject, preparing him for a less abstract PhD at Cambridge.



**Stephen Metcalf \***

USA

PhD Public Health and Primary Care  
Trinity Hall



Growing up in eastern Kentucky, I was fascinated by questions of meaning in life and devastated by the hardship I witnessed at home and abroad. Education has been my ticket to exploring meaning and inequity. With generous support through the Brown Fellows Program, I immersed myself in the

liberal arts and sciences at Centre College, studying neuroscience and mathematics as well as philosophy and religion. I lived as a monastic for a summer in a Buddhist monastery in Taiwan, investigated crime scenes and defended the underserved in Washington, DC, and carried out a final-year thesis on spiritual memoirs and autobiographies. After examining the association between the immune system and mental illness through the MPhil in Epidemiology at Cambridge, I joined research teams at Dartmouth College, where we have explored self-regulation as a mechanism of behaviour change and conducted policy-focused research on the US opioid crisis. During my PhD I will address a critical question: Given similar histories of adversity, why do some children do better than others? I look forward to working with others in the Gates Cambridge community as we explore fundamental life questions and help others thrive.

\*Deferring to 2020 class

**Gabrielle Mills**

USA

PhD Chemical Engineering  
Peterhouse



From a young age, I expressed a keen interest in the issues surrounding infectious diseases and global epidemics. As a Biomedical Engineering student at Arizona State University, my interest in epidemiology and its engineering applications were further developed and contextualized by an

additional minor in Global Health and a research internship at the Translational Genomics Research Institute. During the course of my PhD, I aspire to develop a novel mode of treatment for infectious diseases produced from bacterial pathogens – such as tuberculosis and cholera. In an era where antibiotic resistance is becoming more common, zoonotic pathogens are jumping from animals to humans at increased rates, and the human population will grow exponentially in the next generation, engineered diagnostics, treatments, and preventions for diseases are especially important. I seek to be a leader in the worldwide pursuit to alleviate the burden of disease on developing populations by delivering technologies that are simple, inexpensive, and – above all else – feasible in their applicable environments. I am grateful to be joining the Gates Cambridge Community and for the opportunity to network with some of the greatest intellects of our generation with the united goal of improving the human condition.

**Ilaria Michelis**

Italy

PhD Sociology  
Newnham College



Before recently returning to academia for an MPhil in Sociology of Marginality and Exclusion, I worked in humanitarian response for ten years, focusing on preventing and providing services to survivors of Violence Against Women and Girls (VAWG). I am taking on a PhD in Sociology to explore

the introduction of the theory and practice of intersectionality within humanitarian responses from a decolonial and feminist perspective. By leveraging both my professional and research experience, I will work closely with displaced women and girls affected by violence to develop guidance for humanitarian practitioners to adopt an intersectional approach to the design and delivery of VAWG prevention and response programmes. I am also interested in exploring research methods that recognise and attend to the significant power imbalances inherent in the researcher-participant relationship in situations of displacement. As a Gates scholar, a humanitarian practitioner and a researcher I will continue to contribute to building a safer world for women and girls.

**Dillon Muhly-Alexander \***

USA

MPhil Development Studies  
Jesus College



Born and raised on a farm in rural West Virginia, I developed an early interest in food security and accessibility. During my undergraduate studies at West Virginia University, I joined a research team that identified and mapped every food distribution site in West Virginia and became

increasingly interested in “development” as a formal academic field. I studied abroad and conducted research on economic development projects in Nicaragua, Timor-Leste, and Rwanda. In addition, I worked for the Senate President of the West Virginia Legislature and the West Virginia Secretary of State. These experiences led to an appreciation of the impact politics exerts on the economic development process. I currently serve as an AmeriCorps VISTA and work on program development related to increasing accessibility to higher education among first-generation and low-income students. I plan to work in international development for several years before returning home to work on economic development in West Virginia and Appalachia. I enjoy hiking, writing, playing tennis and basketball, watching Mountaineer sports, and traveling. I am excited and honoured to join the global Gates Community and begin work on the MPhil in Development Studies.

\*Deferred from previous year



**Nitika Mummidivarapu** USA

MPhil History and Philosophy of Science and Medicine  
Newnham College



As an Indian émigré raised in the Silicon Valley, I found that the progressive views of the area juxtaposed the cultural and religious aspects of my heritage. Balancing the fundamental ideologies of science and religion became an inherent struggle in my desire to understand how the world worked. Through my academic endeavors in the biological sciences and the humanities, I felt empowered to challenge the dichotomous view I had of the world. While volunteering in my community, I discovered the downstream effects of poorly-written scientific literature and the resulting consequences in healthcare. Frustrated by this mistrust in and misrepresentation of science, I began to explore the shortcomings and limitations of science as a practice. At Cambridge, I hope to explore and understand if appealing to a group's cultural and religious values will improve their understanding and acceptance of scientific theories. With a future in medicine and literature, I believe the merging of these two disparate fields will be a central mode for understanding how to improve healthcare in a diverse and modern society.

**Jack Myhre** USA

MPhil Engineering for Sustainable Development  
Magdalene College



My life has been characterized by travel and shifting residences, yet my home will always be East Africa where I was born. Its stunning vistas and resilient people have a 20 year hold on my wandering heart. Yet both are threatened by the deterioration of climate and the disregard we as humans have shown to the world. Graduating with a major in Mechanical Engineering and a minor in Energy Engineering from Duke University, I hope to take this background and learn how to use my education to slow, stop, or replace engineering practices that are destroying the environment. During the past few years, I had the opportunity to complete several internships working in rural Burundi. In addition, my studies of Energy Engineering in New Zealand sparked my interest in creating technical solutions that limit environmental impact while pushing global change. The Gates Cambridge Scholarship has given me the opportunity to continue this passion with Engineering for Sustainable Development. It is my hope to help the rapidly developing communities of East Africa grow in a sustainable way, with a particular focus on sources of renewable energy.

**Dhruv Nandamudi** USA

PhD Biological Science (MRC Cognition and  
Brain Sciences Unit), Downing College



As an undergraduate researcher at the Yale's Center for Emotional Intelligence and Clinical and Affective Neuroscience Lab, I grew particularly interested in exploring the impact of psychosocial stress on neurological subsystems. In my capacity as director of the Yale Wellness Project, I helped design and conduct a large-scale study aimed at better understanding the role of stress in student life, and mitigating its more deleterious neural effects through the implementation of targeted interventional efforts. At Cambridge's MRC CBU, my PhD will focus on exploring the neuroscientific relationship between stress and memory control through a combination of neuroimaging and molecular paradigms. This bears particular relevance to mental health science for the clinical treatment of mood and anxiety-related disorders. My goal is to better understand the mechanisms guiding the interaction between stress and motivated forgetting in an effort to inform potential treatment methodologies for psychological disorders by enhancing cognitive emotion regulation. I am profoundly honored to be a part of the Gates Cambridge community, and its network of scholars dedicated to bettering the human condition.

**Lisa Neidhardt** Germany

PhD Medical Science (Cambridge Institute for  
Medical Research), Jesus College



I undertook my Bachelor's and Master's study in biochemistry at Free University of Berlin, where my research mainly focused on protein folding homeostasis during aging and neurodegenerative diseases in particular of Huntington's disease. For my PhDI will study cellular adaptations to the stress of unfolded and misfolded proteins in the secretory pathway. The unfolded protein response (UPR) defends protein folding homeostasis in the endoplasmic reticulum (ER) by matching the folding capacity to the unfolded protein load in the compartment. This simple feedback process impacts the function of the secretory pathway and because protein secretion is central to intercellular communication, ER stress and the response to it influences many physiological and pathophysiological processes. With this research I hope to identify new components of this regulatory network to integrate these into an understanding of the pathophysiology of common human diseases, which may one day pave the way for pharmacological intervention in UPR signalling. I am truly honoured to become a member of the Gates Cambridge family and look forward to connecting to other scholars that share the motivation to actively shape our future.

# FINDING EFFECTIVE TREATMENT FOR MENTAL ILLNESS

DHRUV NANDAMUDI

Dhruv Nandamudi lived most of his early years on the outskirts of Detroit. At eight his family moved to Silicon Valley in California and, despite being very young, the difference in settings was clear to him.

Although Silicon Valley was much more multicultural than Detroit, it was also much more competitive. That culture was reflected at school.

The pressure to achieve good grades ramped up in middle school and Dhruv became aware of the impact of stress on his fellow students' mental wellbeing.

This early awareness has fuelled Dhruv's subsequent studies and interest in how acute stress affects people's sense of self.

At Cambridge he will do a PhD in Biological Science at the MRC Cognition and Brain Sciences Unit under the supervision of Dr Michael Anderson. There he will investigate the role of stress in mental health and the interplay between memory control and cognitive behavioural strategies to reduce negative environmental triggers.

Dhruv gives the example of a war veteran whose post-traumatic stress disorder is triggered by watching a film where there is an explosion. That might begin a downward spiral. If that veteran is able to actively suppress that memory or retrieve alternative memories it can make the trigger less potent and negative, he says. He states: "I am interested in how we can best bolster the efficacy of memory control as a therapeutic intervention."

Dhruv had not originally intended to be a researcher. Half of his family are in medicine. It was no surprise then that he initially wanted to follow in their footsteps and become a doctor.

However, Dhruv got the research bug early. Even while he was at school he was taking part in research studies at Stanford over the summer vacation. He worked in diabetes, cancer and cell biology laboratories. Dhruv was also a national finalist in both the Siemens Competition and Intel International Science and Engineering Fair (ISEF). At Yale Dhruv's interest in research on mental health and his awareness of the lack of resources for psychology and neuroscience developed gradually. He spent several summers working in clinical mental health settings, for instance, on a psychiatric ward. The summer after he was a resident counsellor at a hospital in Wisconsin working for a psychological facility whose focus was on cognitive and behavioural therapy. "I saw the efficacy of that approach in comparison with pharmaceutical attempts to fix complex problems," says Dhruv.

He became passionate about investigating the causes of mental health issues and finding effective treatments.

Inspired by his summer work and by a class he was taking in psychology and happiness, Dhruv began working at the Yale Centre for Emotional Intelligence where, through the encouragement of co-director Dr Emma Seppala, he led a large scale study into the effects of student stress on academic performance. Using brain scans, self-reporting and measuring cortisol levels, the project investigated how stress might be alleviated through, for instance, mindfulness workshops and leadership training.

The results were presented to the Yale board, including suggestions for simple interventions that could help.

In the year between graduating and starting at Cambridge Dhruv has been working in Professor James Gross' laboratory at Stanford looking at how student stress affects dietary choices.

He hopes his research can help to provide effective treatments for mental health problems and recalls one of his mentors at Yale, Dr Kristi Lockhart, telling him about a girl who had become depressed as a result of complex family problems. She was put on anti-depressants which improved her mood, but did not solve problems, such as abuse and bullying. "It was like putting a bandaid on a bullet wound," says Dhruv.



**Mahlaqua Noor**

Pakistan

PhD Medicine  
Hughes Hall



I grew up in Pakistan and moved to Germany to study Biochemistry and Cell Biology at Jacobs University where I designed polyelectrolyte microcapsules for T-cell staining and investigated the cytokine-mediated death of intestinal organoids to understand the pathogenesis of Crohn's

disease at NYU. For my thesis, I am conducting research on the role of cathepsin K in the choroid plexus using mouse models. Simultaneously, I have explored my passions for science writing, education access, and community service. I am an Assistant Editor in "The Journal of Young Investigators" where I review scientific manuscripts submitted by undergraduate researchers. I am actively involved in science communication through blogging and graphic designing to help science reach a wider audience. I also served as the President of "Explore Bremen", a student-initiated outreach club that mentors socio-economic disadvantaged kids. At Cambridge, I will investigate the modulation of NK cell responses by HCMV in latent and reactivating cells. Since HCMV infection can be fatal in immunocompromised patients, therapeutically targeting the viral reservoir via NK cells could have far-reaching clinical implications. I am incredibly honored and excited to join the passionate and dynamic Gates Cambridge community.

**Ola Osman**

Canada

PhD Multi-disciplinary Gender Studies  
Newnham College



I am a Sudanese-Canadian student, I grew up in London, Ontario and received my bachelor's degree from the University of Western Ontario's Department of Women's Studies and Feminist Research. I am currently completing an MSt in Women's Studies at the University of Oxford as a Clarendon

and Prince Sultan Scholarships holder. My research deploys African and Black feminist thought to explore how gender, race, motherhood, mourning, capitalism and militarism can be examined at the international level. During my PhD in Multi-Disciplinary Gender Studies, I aim to investigate how ex-combatant Liberian women have fared in the areas of reintegration and participation in Liberian society fifteen years after the end of the civil war. As a Black feminist scholar, I write to fill the archival abyss that has obliterated Black women's stories of suffering and resistance in a world where our personal lives are urgently political.

**Tiago Pimentel  
Martins Da Silva**

Brazil / Portugal

PhD Computer Science  
Churchill College



I was born in Brazil, but have also lived in Portugal, USA and Italy – and soon also in the UK. Enjoying travelling and meeting new people, I have been exposed to different cultures and realities. This opened my eyes to large global inequalities, hidden from us in our day to day. New technologies can

either help increase or decrease some of these inequalities. The recent evolution of machine learning has led to an incredible improvement in natural language processing (NLP) algorithms. These methods, though, have been mostly tested and studied in English settings. NLP is an empowering technology, which can improve the lives of illiterate or computer-illiterate people by giving them access to new technologies. During my PhD in the University of Cambridge I intend to use natural language processing methods to study languages' linguistic properties. I also intend to investigate the natural language processing methods themselves, through systematic analyses of their performance in different languages. I believe that by improving our knowledge of how NLP methods work, we can improve their performance in non-mainstream languages, empowering the communities that speak them.

**Mkpouto Pius**

Nigeria

MPhil Genomic Medicine  
Murray Edwards College



More people die every year from preventable and treatable diseases than of terminal illnesses, and a good number of these diseases are hereditary. This influenced my undergraduate study of Genetics and biotechnology at the University of Calabar, Nigeria, to increase my understanding of

the genetic basis of diseases. I followed this up with an MSc in Biotechnology and Enterprise at the University of Manchester, where I studied the different expression systems for producing pharmaceutical proteins, and factors that influence therapy, drug production, targeting, and distribution, as well as pricing and availability of such pharmaceutical products in different regions of the world. My dissertation is focused on expressing a human protein in animal cells for functional studies and studies related to drug targeting with the hope that this will provide a means of production of inexpensive therapy for the ailments related to mis or overexpression of the protein. As a result of my passion for creating change, I have been actively involved in leading initiatives on preventive living through my non-profit initiative which focuses on vulnerable groups, especially women and girls in rural communities of Nigeria that suffer limited access to amenities.

**Ellen Purdy**

USA

MPhil Chemistry  
Lucy Cavendish College



As an undergraduate at the University of Chicago majoring in Chemistry, I identified art conservation as a field that brings together my love of scientific research and knowledge of art history. The work of conservation scientists often goes unseen, but is crucial to understanding and

preserving works of art and culture for future generations. At Cambridge, I will work on the application of Raman Spectroscopy to non-destructive analysis of paint pigments. The goal of this work is to further our understanding of the technical and aesthetic choices of artists as well as the effects of previous restoration work done on paintings. In the course of my work, I hope to use the Hamilton Kerr Institute of easel painting conservation at Cambridge to learn more about the art historical side of this field as well. I also plan to explore the great hiking and used bookstore scene around Cambridge.

**Annabelle Richard-Laferrrière**

Canada

PhD Astronomy  
St John's College



I have always had a passion for science to learn about and understand the Universe around us. I therefore chose Physics at Université de Montréal (UdeM) for my B.Sc. during which I did a project studying the impact of supermassive black holes (SMBH) on their environment. I was thrilled to

continue in the same field for my M.Sc. studying the mass of a SMBH believed to be one of the biggest in the Universe in collaboration with Texas A&M University. With this experience, an exchange in Australia and an internship in Germany, I knew that I wanted to do my PhD outside of Canada as, to me, it is really important to be in contact with people from around the world. Therefore, I am delighted to pursue a PhD at Cambridge studying mechanisms enabling SMBH to transfer energy to their surroundings. I also work to empower girls and women in physics, by helping in the creation of the Diversity Physics Committee at UdeM and participating in events for girls. I am really honoured to be part of the Gates Cambridge Community, an international community driven by having an impact in the world around them.

**Valentine Reiss-Woolever**

USA

PhD Zoology  
St Edmund's College



As a native of Arizona's biodiverse Sonoran desert, my appreciation for the environment was inevitable. After moving to Germany for secondary school, I studied Zoology at University College Cork in Ireland, including an exchange at National University of Singapore. For the past two years, I have

been working across Latin America in community-based conservation. Experiencing the conflicts plaguing tropical forests provoked my desire to solve a critical problem: while demand for agricultural land threatens biodiversity, production is essential to livelihoods. I will focus on conservation and income stability in smallholder oil palm plantations, evaluating management methods' effects on biodiversity, ecosystem functioning, and profit. The research aims to improve understanding of oil palm ecology, smallholder economic relations, and other core ecological and sociological principles. With educated management, I believe biodiversity conservation has potential to ameliorate poverty and foster improvement for a range of pressing concerns. I am truly honoured to be part of the Gates Cambridge Trust, which provides an unparalleled foundation and community for positive global change.

**Dillon Rinauro**

USA

PhD Chemistry  
St John's College



Growing up in Bellingham, Washington, I developed a passion for elder care early on and it has since become an integral part of my life. After graduating from high school, I moved to Los Angeles where I attended Loyola Marymount University to study biochemistry and conduct research on the

pathogenesis of misfolding protein diseases, namely, type II diabetes and Alzheimer's. I became interested in the latter as I volunteered at a convalescent home for the elderly through the Ignatians Service Organization. At Cambridge, I will be pursuing a PhD in Chemistry where I will investigate the mechanism through which tau protein aggregates with emphasis on methods of inhibition for the treatment of Alzheimer's disease. My experience here will allow me to expand upon my knowledge of amyloidogenic diseases and collaborate with students from around the world to foster intellectual diversity. Outside of the lab, I enjoy hiking, running, music, cooking, as well as volunteering with incarcerated youth, persons experiencing homelessness and environmental justice programs.

# EXPLORING THE DIASPORA EXPERIENCE

## LOLADE ALIYU SIYONBOLA

It has been established for some time that eating fruit and vegetables is good for your health and can protect people from a range of illnesses, including some forms of cancer.

Lolade Aliyu Siyonbola wants to understand how the identification choices of Nigerian second-generation immigrants influence how well they assimilate, their contributions to their host countries and the role of the Nigerian diaspora in Nigeria's development. As a Nigerian who spent much of her childhood in the US, her interest grew out of her own desire to reconnect with Nigeria through language.

Lolade set up her own Yoruba classes several years ago after looking for someone to teach her. The classes evolved into a cultural institute and the experience of running that has driven Lolade's research interests in diaspora engagement and reconnection. For her master's in African Studies at Yale, she was interested in studying how Nigerian immigrants in Tokyo, Mumbai and New York chose to identify, what they brought to their countries and whether they chose to reconnect with their African roots. "My ultimate goal is to encourage people to return to give back to their country through education and other resources," she says.

For her PhD in Sociology, Lolade will extend her research and look at the immigrant experience in London and New York in order to understand assimilation trajectories in the second generation: how they identify culturally, who they are marrying, where they are settling, what cultural capital they are producing and how this affects their links with Africa and their interest in giving back.

Lolade was born in Lagos and lived there until she was five, then moved to the UK for two years before ending up in Columbia, Missouri. After completing a degree in Computer Science at the University of Missouri, Lolade moved to New York and started working in the tech industry as a network engineer in the financial sector. She soon felt burnt out and tried to start her own company selling t-shirts with educational messages about Africa. It was at this time that she started organising Yoruba classes. She also worked for an education consultancy, tutoring disadvantaged children with learning difficulties, before returning to the tech world.

After getting married in 2008, Lolade and her husband created the Yoruba Cultural Institute which provides structured language classes for individuals and groups.

In 2013, the Institute organised its first film project, the Nollywood Diaspora Film Series, which provided a forum for



MATTHIAS REICHWALD FOR HARAMBANS

dialogue about the role of film in social change. Lolade decided she wanted to study the Nigerian diaspora in a more strategic way, focusing on the experience of immigrants, particularly those from Africa who she says are underrepresented in US research. She adds: "I also wanted to understand the role of indigenous language, film and fashion in their assimilation and identification processes."

So she applied to do her master's, running the Yoruba Cultural Institute's online offerings and doing student advocacy work on the side. She has big ambitions for the future and plans to set up NOIR Labs, a non-profit that will incorporate her previous film and language projects into a platform to empower the African Diaspora to support development on the continent. This will include a travelling film festival, as well as a language-learning platform which scales the Yoruba classes to include other African languages such as Zulu and Amharic.

"The aim is to build a community of like-minded people and to ensure those who visit Africa have local support for the integration process," she says. "If people have mastered a local language and have a network in place their experience when they travel back will be richer and they will be more likely to return or spend more time there. Knowing a language makes you feel less of an outsider."

## Felix-Ekkehard Ritter Von Horstig

Germany

PhD Nanoscience and Nanotechnology  
St Catharine's College



As an undergraduate studying Natural Sciences at UCL I have been able to explore both Physics and Chemistry from a unique, interdisciplinary perspective. The strong research base of the university quickly engulfed me in various research projects, all centred around science on the nanoscale.

Following on from this experience, I am looking forward to starting my CDT in Nanosciences at Cambridge. I have a strong interest in energy storage and generation and recent advances in nanotechnologies are promising a bright future to these fields. I believe that by developing new, efficient and cheap to manufacture batteries and solar panels we can help reduce our carbon emission as well as bring power to remote places that do not have access to an electricity grid.

## Fernando Rojas

USA

MPhil Latin-American Studies  
Clare College



As an undergraduate at Yale, I studied the history of relations between the United States and Mexico in the 20th century. I focused particularly on the movement of people and ideas during the early decades of the 20th century and the Cold War years. By highlighting the historical fluctuations in

migration, my work hopes to frame current conversations about migrations across borderlands. At Cambridge, I will interrogate Mexico's cultural response to decolonization movements around the world during the 1960s and 1970s. Outside classes, I have developed an immense appreciation for museums and galleries. These public-facing institutions shape the way societies engage and discuss ideas. To connect my research with broader audiences, I have devoted time to working in a variety of museum spaces. In the summer of 2016, I developed a temporary exhibit about the segregation of Mexican children in 1920 Topeka, Kansas, researched and funded by the Brown v. Board of Education National Historic Site. I hope to maintain this tradition of breaking past academic circles by seeking novel ways to discuss important moments of the past with increasingly larger audiences. It is an incredible honour to join the Gates Cambridge community.

## Payton Rodman

Australia

PhD Astronomy  
Churchill College



I grew up in North-West Tasmania and attended the University of Tasmania in Hobart for my BSc in Physics/Applied Mathematics and BSc (Hons) in Physics. During this time, I became interested in the supermassive black holes found in galaxy centres known as Active Galactic Nuclei

(AGN), which play a large role in the formation and evolution of galaxies over cosmic time. For my PhD, I will be simulating the processes that govern accretion onto these objects, and how different instabilities generated during accretion may lead to a twinkling effect at X-ray wavelengths. The findings from this project will help inform our understanding of the behaviour of weakly-magnetised plasmas and turbulence in fluids, which may have far-reaching consequences beyond the field of AGN. I will also be continuing on with my second passion, which is to find new ways to share the wonders of science with as many people as possible, particularly students in our oft-forgotten rural communities.

## David Rousso

Canada

PhD Physics  
Churchill College



During my Nanotechnology Engineering degree at the University of Waterloo, I have come to understand the importance of interdisciplinarity. Being taught everything from biochemistry to controls systems, my research background has been broad from photonic metasurfaces and plasmonic

biosensors at Harvard to Bose-Einstein condensates at Cambridge, to muon physics at the Paul Scherrer Institute, and program management at Microsoft Japan doing coding work in machine learning. I will be pursuing a PhD in High Energy Physics at the ATLAS collaboration at Cambridge in the hopes of advancing our understanding of the universe beyond the standard model. I am incredibly honoured to join the Gates Cambridge community, and as an interdisciplinary at heart, I am excited for the opportunities this community will give to stem new collaborations. Interdisciplinary collaborations with particle physics have yielded incredibly impactful results, from proton therapy for cancer treatment, to cosmic muon tomography for understanding how the Pyramids were built and the effects of global warming with respect to glacier melting. I also seek to address current issues in STEM outreach, such that we may ensure that every child can pursue their passion in spite of their cultural pressures.

**Roan Runge**

USA

PhD Anglo-Saxon, Norse and Celtic  
Magdalene College



My studies have led me towards two fields which have, so far, had very little overlap. In my undergraduate degree at Exeter College, Oxford, I focused on medieval language and literature, which led me to an interest in medieval Irish literature, with the opportunity to study the language and literature of Ireland in my final year. Simultaneously, I became more interested in trans theory, writing my dissertation on queer and trans women in modern science fiction and fantasy comics. Currently, in my Master's degree in the department of Celtic and Gaelic at the University of Glasgow, I combine these two areas of study, using trans theory to examine the role of figures on the boundary between human and animal in medieval Irish literature. Thinking about the continued dehumanization of trans people, as well as trans reclamations of unhumanity and monstrosity, I hope to take theoretical approaches to figures who linger between species and gender. I believe this approach has potential to open up new avenues of inquiry in Celtic Studies, as well as to build alternate ways of looking towards trans pasts in order to consider trans futures.

**Gregory Serapio-Garcia**

USA

PhD Psychology  
St John's College



A San Francisco Bay Area native, I grew up immersed in and fascinated by technology. Carrying this fascination with me to study Psychology and Computing and Digital Technologies at the University of Notre Dame, I won my first research grants to conduct a crowdsourced Internet study of personality and subjective well-being in 105 nations and nine languages. At Notre Dame's Center for Advanced Measurement of Personality and Psychopathology, I developed an interest in the overlap of clinical disorders with everyday personality traits. In 2017, I was selected for a National Science Foundation (NSF) Computational Social Science REU at Notre Dame's Center for Research Computing where I used machine learning to predict mental illness traits from social media big data. At Cambridge I will synthesize mobile-sensing and personality data to predict mental illness outcomes and subjective well-being. As a Gates Cambridge Scholar and social data scientist, I hope to inform the next generation of the world's best physicians, lawyers, philosophers, and educators of both the promise of online social data in transforming mental healthcare and the moral imperative to combat the exploitative use of big data in this proliferating field.

**Kanupriya Sharma**

India

PhD Criminology  
Pembroke College



Being born and brought up in India, where crimes against women are inescapable realities, I had always wanted to pursue a career in the area of criminal justice reform. My professional stint as a journalist further deepened my interest and motivated me to pursue an MA in Social Work in Criminology and Justice from Tata Institute of Social Sciences. Following this, I started working for an anti-human trafficking organisation, conducting rescue operations of children from child labor, domestic servitude and sex slavery. Post this, I completed my MPhil in Criminological Research from the University of Cambridge where I explored prison intimacies as a form of resistance for women in India. Currently, I am working as a Chief Minister's Urban Leadership fellow in the Delhi government providing analytical support in formulation of policies related to women. For my PhD, I aim to study women's imprisonment and resettlement experiences in India through the lens of their intimate relationships. The study hopes to enhance the current understanding of prisons in a non-western context and enable policymakers to frame policies that are gender-responsive to the specific needs of women.

**Daniel John Sheridan**

USA

PhD Asian and Middle Eastern Studies  
Jesus College



Captivated by the origins of peoples, cultures, and languages, I embarked on learning Mandarin Chinese as a senior in high school and subsequently obtained a BA in History. Afterward, I moved to Northeast China for three years: two years as a university English instructor and one year as a Confucius Scholarship language student. Interactions with people and places connected with Central Asia and the Middle East propelled my pursuit of a MA in Iranian Studies at SOAS, University of London. My thesis translated and provided commentary on a significant 7th century Chinese envoy report on the Sogdian city of Samarqand, including an oft-cited account of Zoroastrian funerary practices. This was the first time the account had been translated into English in its entirety. Generously enabled by the Gates Cambridge Scholarship, my PhD seeks to shed further light on the Sogdians, an Eastern Iranian people that primarily lived in modern-day Tajikistan and Uzbekistan. Although best known as Silk Road traders par excellence, I will focus on non-trader motifs in Chinese primary accounts to obtain a more holistic view of the Sogdians.

# APPLYING A GENDER LENS TO CLIMATE CHANGE

REETIKA SUBRAMANIAN

Reetika Subramanian's research into the impact of climate change on gender relations will see her embedded among a group of female labourers who are forced to leave their village annually as a result of the increasing number of severe droughts in western India.



For her PhD, she will study climate migration and gender equality in multiple sites in Marathwada, a historically drought-prone region in western India. The region has suffered six successive droughts in the last six years which have led to large-scale migration among small and marginal farmers, driven by debt. The crisis of survival has led to high school dropout rates, a rise in early marriages and unsafe migration of the adolescent daughters of farmers.

Reetika's research will involve field work with Dalit and Adivasi girl labourers from the villages of Beed district from which locals are forced to migrate annually. It will also include looking at the songs sung by women when they are grinding grain for flour. Reetika says: "The songs reflect the women's lived experience. My aim is to understand the gendered impact of droughts."

Her interest in gender inequality is driven by her own family experience. Born into a middle class family in Mumbai, she and her two older sisters grew up against a background of domestic violence. She says: "The experience of seeing my mother treated like that left me feeling very angry and that anger continues to be a dominating force."

Reetika had always been interested in writing, describing it as "a space I have taken refuge in". She was also keen to assert her independence so at 16 she got her first journalistic assignment. At 18 she started her first trainee journalist job while she was doing an undergraduate degree in journalism. During her course she joined the Hindustan Times, India's second largest English daily newspaper. After a while, Reetika found the daily news beat gruelling and felt she was only scraping the surface of what was going on in the city. So she joined the Partners for Urban Knowledge, Action & Research [PUKAR] collective and worked with youth from marginalised communities and neighbourhoods, training them as researchers and bloggers.

Reetika worked for PUKAR through most of her two-year master's in media and cultural studies at the Tata Institute of Social Sciences. At the end of her course she spent a semester at Sciences Po in Paris, returning to India to do her master's thesis on an urban ghetto in northern Mumbai, exploring how young Muslim women there were able to move between very patriarchal spaces at home and a women's group at the local library which was much more liberal.

Reetika applied for an MPhil in Multidisciplinary Gender Studies at Cambridge in order to contextualise her field experience within a broader academic framework and won a Chevening-Cambridge Trust Scholarship.

Reetika's thesis, which was awarded the Bell Scholar prize, was on the centuries-old practice of female genital cutting. She was keen to trace progress since she had first written an article on the practice for the Hindustan Times in 2011 and had become involved in an Indian feminist movement opposing it. Reetika is working with one of the movement's leaders on a young adult book on the practice.

After her MPhil finished Reetika returned to India to work with the Centre for Migration and Labour Solutions, where she undertook field research and documented in-depth news stories on gender, labour and distress migration.

She is looking forward to starting her PhD and states: "My fundamental interest in pursuing my research project stems from my yearning to reconcile collaborative storytelling with pressing marginalised realities."



**Hafsah Haseeb Siddiqui**

Pakistan

PhD Geography  
Newnham College



While studying Human Geography and Sociology at the University of Toronto, my professors nurtured my interest in examining social inequality and segregation in urban space. I was inspired to contemplate justice-oriented visions of city building and analyze uneven development and political

fragmentation within cities which are more pronounced now than ever. At Cambridge, my research will consider how citizen-led development can be employed as a tool for empowering the urban poor in the context of housing inequality and forced evictions from informal settlements in Pakistan. Specifically, I will investigate how cross-class alliances can enhance marginalized groups' political claims-making abilities and help them assert their status as legitimate urban citizens. My scholarly aim is to highlight diverse Southern urban experiences, which will reveal important socio-political particularities about life in cities of the Global South. By inspiring policymakers and researchers, I hope to achieve a future where cities are not divided or fragmented but rather inclusive spaces of collaboration between residents. I am grateful and excited, and humbled most of all, to be joining a community of students who share a strong commitment to changing the world for the better.

**Kiran Sridhar \***

USA

MPhil Strategy, Marketing and Operations  
St John's College



Throughout my life, I have been motivated to learn about and tackle big problems' including hunger and nuclear security. There are few more pressing problems facing the world than the specter of cyberwarfare. Our lives are increasingly reliant on technology; a cyberattack could imperil our health, security,

or economic prospects. This is a challenge my generation will face, particularly for those living in liberal democracies, like the US, where my parents immigrated to and which has provided me with so many opportunities. I want to be a part of the solution. I am particularly interested in quantifying the costs of cyberattacks. After all, if we aren't able to price the risk, companies cannot determine the optimal levels of protection and governments can't impose the optimal amounts of regulation. After spending a year at Tsinghua University in Beijing, I am incredibly excited to study Strategy, Management, and Operations at Cambridge, working with the Centre for Risk Studies, which has been a leader in calculating aggregate risk in cybersecurity. I hope to conduct research in partnership with government agencies, insurance companies, and computer science researchers to elucidate the cyber threat.

\*Deferring to 2020 class

**Sridhar Sriram**

USA

MPhil Technology Policy  
Hughes Hall



Growing up, I was fortunate to have a family that stressed that my actions were only meaningful if they wielded a positive impact on those around me. I also became interested in the way people interacted with each other. My interest in societal interactions led to a major in Public Policy in

an attempt to turn those fiction pieces into policies. Likewise, an unexpected, yet budding, love for technology inspired me to pursue Computer Science to author short stories of impactful, real-world code. Focusing on this intersection of technology and policy, I wanted to leverage technology as an empowering medium to uplift my surrounding communities. However, I quickly discovered that contemporary technologies are riddled with biases that manifest themselves in the algorithms that power these tools. I hope to gain an understanding of how best to regulate algorithmic bias without hampering the innovation process, while also exploring the technical frameworks necessary to tackle such biases. I am so grateful to join the Gates-Cambridge community and am excited to learn about the world's stories through peers that are equally committed to improving the lives of others.

**Reetika Subramanian**

India

PhD Multi-disciplinary Gender Studies  
Queens' College



Early marriage and bridal trafficking in Rajasthan, sexual violence in Mumbai, female circumcision among Dawoodi Bohras: my experiences as a journalist and researcher have exposed me to diverse geographies, socio-economic realities and cultural prejudices that young women across

India face. Home, however, is the place where I first found my bearings. As a survivor of domestic violence, my feminism got defined by my mother's everyday negotiations within the structures that cultivate and normalise the culture of silence. It drove me to challenge patriarchal notions of leadership and become sensitive to differences. Gender became a way of seeing the world. My study straddles the areas of climate justice and gender equality. In India's historically drought-prone and caste-ridden Marathwada region, I seek to combine a multi-sited feminist ethnography with an informed interpretation of oral folk poetry, to understand the historical compulsions, lived experiences and gendered labour burdens of Dalit and Adivasi girls in a climate crisis. My fundamental interest in pursuing the project stems from my yearning to reconcile collaborative storytelling with pressing marginalised realities.

## Nikita Sushentsev Russian Federation

PhD Radiology  
Gonville and Caius College



During the fourth year of my undergraduate medical studies in Moscow, I developed an interest in radiology and then undertook two consecutive summer research placements at the Department of Radiology in Cambridge. Coming back to the Department as a PhD student, I will focus my work on facilitating

clinical translation of hyperpolarised  $^{13}\text{C}$ -pyruvate magnetic resonance spectroscopy by identifying the niche clinical areas where it can revolutionise care for patients with prostate cancer. Moreover, I will continue coordinating the UK-Russia Young Medics Association, a student-led project through which more than 40 clinical and research exchanges between medical students, junior doctors and early career biomedical researchers of the two countries have been arranged over the past two years. Seeing how long-term professional collaborations, friendships and de novo institutional links flourish under the Association, I am strongly convinced that in times of global instability it is science diplomacy that has the unlimited and yet unexplored capacity for bringing people together.

## Otilia Vintu Romania

MPhil Innovation, Strategy, and Organization  
Christ's College



In 2016, I started a BSc. in Politics and Anthropology at the University of Manchester while having to work two part-time jobs, one as Robotics Instructor and the other as B2B sales in the IT industry. This interplay between interdisciplinary analysis of social dynamics at university and a focus

on technology in the workplace both reflected and further crystallised my interests. In my second year, I conducted research on digitalisation and skill acquisition at Google Digital Garage, for which I received a prize at the Global Undergraduate Awards. Another award-winning project I presented at international conferences was on the topic of immigrant integration. The focus of my MPhil in Innovation, Strategy and Organisation is on how to integrate Artificial Intelligence with existing workers in a way that fosters innovation. With automation becoming ubiquitous, the challenge is to integrate AI not only in a way that would benefit existing workers, and thus prevent the waves of unemployment expected in "robots taking over" scenarios, but would also lead to more innovation and strengthen the symbiosis.

## Avani Vieira India

PhD English  
Lucy Cavendish College



Over years of studying literature, first as an undergraduate at St. Stephen's College, Delhi and then as a Master's student at the University of Oxford, I have developed an appreciation for the narratives that often go unheard. My work considers independent literary expression in India and turns to

the ways in which writing and documentation can transform how we occupy, understand, and move in the world. By looking to minority voices, through scholarship and curatorial work, I hope to bring attention to the politics of artistic practice, building spaces that are aware both of their potential and their responsibility.

## Bailey Weatherbee USA

PhD Physiology, Development and Neuroscience  
Jesus College



Since childhood, I was always fascinated by developmental biology. I wanted to understand how a single cell could become a complex organism. After matriculating as an Honors Biology student at the University of Delaware, I joined Dr. Salil A. Lachke's developmental genetics laboratory where

I studied the role of RNA-binding protein-mediated post-transcriptional regulation in mammalian ocular lens development. Simultaneously, I explored my passions for education access and science advocacy. Since 2014, I've worked with Leading Youth Through Empowerment – a non-profit that offers accelerated coursework to high-achieving at-risk youth. I also participated in the American Society for Biochemistry and Molecular Biology's Advocacy Training Program through which I met with the offices of my senators and representative to advocate for science funding and education. At Cambridge, I will carry out my Ph.D. project in the laboratory of Dr. Magdalena Zernicka-Goetz studying the post-implantation development of human and mouse embryos. Post-implantation stages are referred to as the "black box" of development, and very little is known about these early stages when many pregnancies fail. Recently, Dr. Zernicka-Goetz's group developed a culture system that opened this "black box" and I look forward to finding what lies within it.

# UNLOCKING THE BLACK BOX OF HUMAN LIFE

BAILEY WEATHERBEE

When Bailey Weatherbee was six, she wanted to know why she didn't have any brothers and sisters. Her parents explained that her father had a chromosomal defect that halved the chances of a successful pregnancy and that her mother had suffered five miscarriages after she was born.

That explanation jumpstarted an interest in developmental biology which has now led her to do a PhD in the human post implantation development team.

In 2016, her PhD supervisor Professor Magdalena Zernicka-Goetz's lab reported that it had grown human embryos in vitro beyond the implantation stage – up to 13 days after fertilisation. This allows researchers to analyse – for the first time – key stages of human embryo development up to 13 days after fertilisation.

Bailey had read about the research as an undergraduate and was fascinated by it, given 60% of pregnancies fail by day 14.

For her PhD, she will study epiblast development and the cell differentiation that gives rise to the formation of the amniotic sac. "Post-implantation stages are referred to as the "black box" of development, and very little is known about these early stages when many pregnancies fail," says Bailey. She will analyse single cell sequencing and use 3D stem cell models to investigate differences in gene expression between the epiblast – the part of the embryo that gives rise to the whole body – and the amniotic epithelium [the amniotic tissue]. "The aim is to show how cell fate decisions are being made and why so many pregnancies fail," she says.

As a child, Bailey, from Delaware, showed an early interest in science and attended a charter high school which was focused on STEM. She became increasingly interested in developmental biology and contacted a University of Delaware professor to ask if she could do some research work. She ended up working on a project looking at morphology changes and cell death in mouse muscle stem cells for the rest of her time at school.

Bailey chose to study Biology at the University of Delaware. As an undergraduate she was named a Telkes Scholar by the Honours Programme in recognition of her research potential.

For the past three years she has been working in the developmental genetics laboratory under Professor Salil Lachke, studying ocular lens development. Her focus is on the role of RNA-binding protein-mediated post-transcriptional regulation in mammalian ocular lens development and how this links to the formation of cataracts. Bailey has identified how an RNA-binding protein controls expression of a key transcription factor – a protein involved in the process of converting, or

transcribing, DNA into RNA – that, when misregulated and not working correctly, may cause cataracts.

In addition to her academic work, Bailey is active in education access work, politics and science engagement. In high school, she was chosen to be a representative on the Youth Philanthropy Board of the Delaware Community Foundation. The Board had to review grant applications and distribute \$15K of grants to at-risk youth programmes. One of the applications was from the Leading Youth Through Empowerment programme which helps children from deprived areas get into good public schools. Bailey fell in love with the programme and has been working for it ever since, managing the programme's social media, tutoring and helping young people once they are at high school.

In addition, while at the University of Delaware, Bailey founded a political club, the Young Progressives and has done the American Society for Biochemistry and Molecular Biology's Advocacy Training Programme through which she met US senators and representatives to talk about STEM education and funding for after school programmes for at risk youth and research.



EVANKNAPE, UNIVERSITY OF DELAWARE OFFICE OF COMMUNICATIONS AND MARKETING

**Lea Wenger**

France

PhD Clinical Neurosciences  
Fitzwilliam College



What happens to the neurons in the brain? Why do they fail with age? Neurons have always been the centre of attention in the field. However emerging evidence shows how important certain sideline players are in shaping neuronal responses.

Astrocytes are cells within the brain that provide neurons with the energy they need and a map for building new connections. They are also key in determining which neurons survive and which will die in the context of disease, but how they decide this is still unknown. Since my undergraduate studies in Veterinary Medicine, undertaken at the University of Cambridge, I have been drawn towards the unknown. The extent of the knowledge left to discover in neuroscience and the rate at which the field is evolving drove me to pause my clinical studies to pursue a PhD in Dr. Lakatos' lab. During this PhD, I will investigate the astrocytic response to injury and neurodegeneration. By looking at the evolution of this response through time in human stem cell cerebral organoids, I hope to reveal pathways that we may be able to target, to promote neuroprotection in cases of traumatic brain injury and/or neurodegeneration.

**Aishat (Aisha) Yusuf**

Nigeria / UK

PhD Medical Science at the MRC Cancer Unit  
King's College



As a child who frequently visited the hospital, many questions about human health boggled my mind. Indeed, these curiosities lead me to the captivating world of the Medical Sciences. In 2016, I obtained a full tuition fee waiver to study Biomedicine in Karolinska Institute, Sweden. I have spent

my undergraduate summers carrying out research projects in various labs. My interest in cancer research developed during the later part of my education. With cancer being a global disease and a major cause of mortality worldwide, it is of paramount importance that we strive to speed up diagnosis and improve treatment. My PhD project involves the identification of candidate biomarkers that could be used in patient risk stratification for oesophageal cancer. It is my hope that by identifying these biomarkers, patients at risk can easily be identified and, therefore, be able to seek medical intervention at a very early stage before the disease progresses. At and beyond Cambridge, I hope to work on projects directed towards positively impacting health and lives of people including my home country, Nigeria and the world at large. I am truly humbled and beyond grateful to be part of such a prestigious international scholarship programme.

**Thomas (D'Arcy) Williams**

USA / UK

MPhil Public Policy  
Clare Hall



Raised in Ghana by parents working in global health, I was inspired to address health inequalities. Moving to Washington D.C., I entered the diverse public school system and learned the convening power of listening and empathy. These values served me well at McGill University where I

earned a First Class Honours BA in International Development. Passionate about the role of health in development, my summers were spent working on public health programs in Kenya and Nepal. Outside academics, I played McGill Varsity Soccer and co-founded a social business, Heart City Apparel, which used street art to support homeless charities in 6 countries. After McGill, I worked on global health policy for the Clinton Global Initiative and Population Services International. I then became a Peace Corps Volunteer in Cameroon where I lived in a remote village and spearheaded malaria and HIV/AIDS programs. I am honoured to be joining the Gates Cambridge community and to be surrounded by scholars who share the common desire to make a positive impact.

**Shahriar (Shawn) Zamani**

USA / Iran

PhD Medical Science at the MRC Cancer Unit  
Homerton College



As an undergraduate student studying Public Health at the University of South Florida, I became interested in cancer epidemiology, prevention, and cancer health disparities. During a research internship at the NIH/ National Cancer Institute, I further developed my skills in epidemiology by using data from

population-based cohort studies to study upper gastrointestinal cancers. Since graduating, I have continued my work in cancer epidemiology at Moffitt Cancer Center and Research Institute where I study melanoma and its related risk factors among melanoma-prone families. I will investigate the role of pre-cursor lesions in the development of esophageal adenocarcinoma. The ultimate goal of my research is to contribute to the prevention, early detection, and improved outcomes of esophageal cancer among high-risk populations. Through various research, practice, and community service experiences, I have become involved in translational epidemiology for public health and policy development. Mentoring and guidance have played an important role in my career and I seek to support students from underrepresented backgrounds in the sciences. As a PhD student, I aim to advance our knowledge of esophageal cancer, translate epidemiological findings to clinical practice, and help the next generation of scientists get ahead.



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