

NEW

PERSPECTIVES



WOLFSON RESEARCH EVENT 2021

PROGRAMME BOOKLET

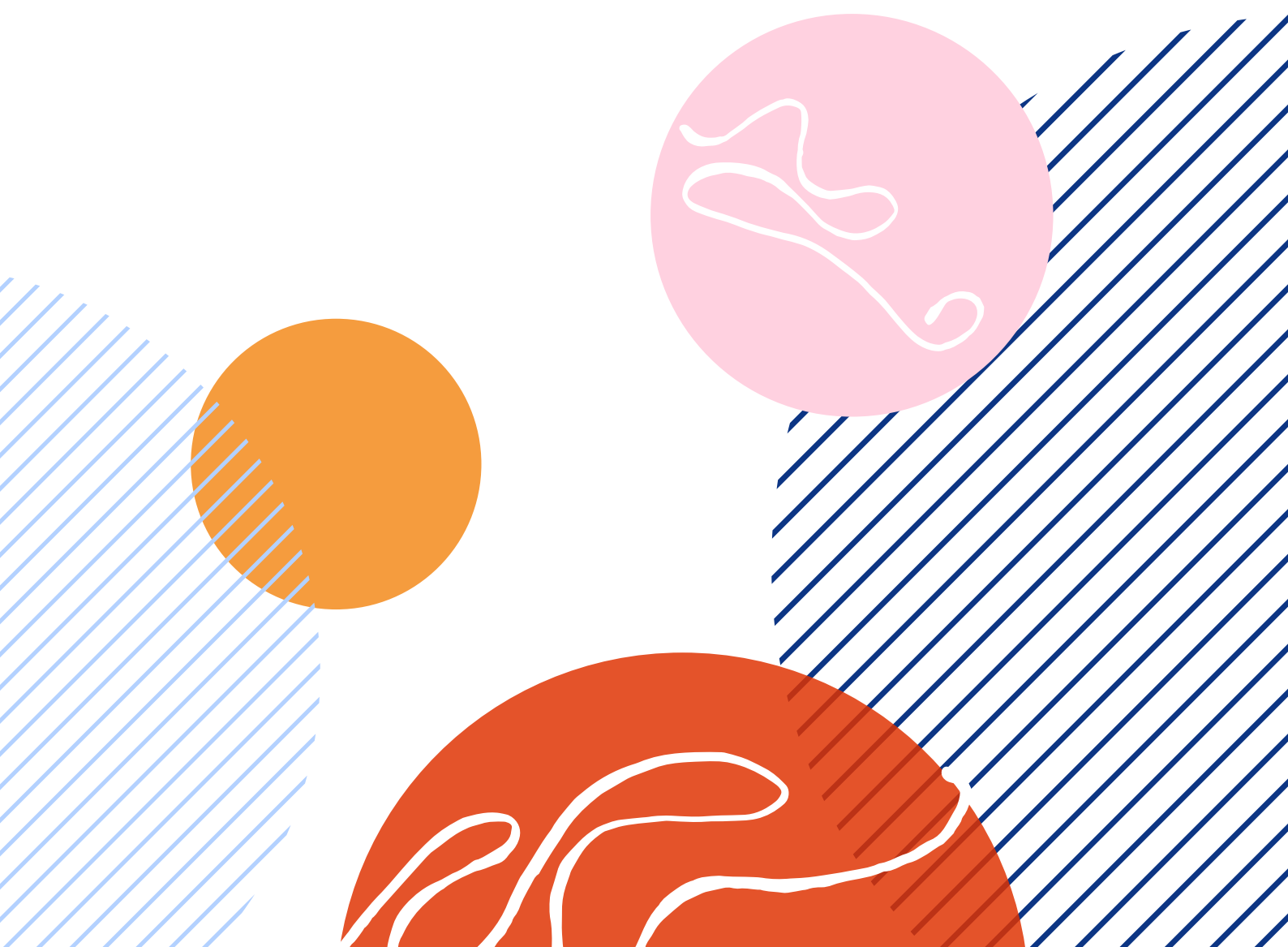


TABLE OF CONTENTS

Welcome to the Wolfson Research Event!	1
Meet our 2021 WRE Committee	2
Event Schedule	4
Keynote Speakers	
Ms. Marie Anne Coninx: <i>How innovation and research offers new perspectives for the Arctic</i>	5
Dr. Paulo de Assis: <i>Artistic research as a unifying musical practice: A case-study beyond the composer-performer-musicologist divide</i>	6
Professor Juan Maldacena: <i>Black holes and the structure of spacetime</i>	7
Oral Presenters	
Tamara Achampong: <i>Influence of SES and self-efficacy on maths achievement and maths anxiety relationship</i>	8
Rubén Asiaín Mira: <i>A second life to human wastes: Energy extraction from domestic wastewater</i>	8
Caleb Deck: <i>Developing a framework to guide building owner sustainability choices</i>	9
Christopher George: <i>We the people? The conservative national identity and its role in American political polarisation</i>	9
Alex Guizar-Coutiño: <i>REDD+ works best where it matters most</i>	10
Thilal Halimah: <i>Resilience in education – exploring the experiences of Syrian and Jordanian children and young adults in Jordan</i>	10
Aviral Marwal: <i>Geographic Information System (GIS) based spatial proximity analysis of household location and services</i>	11
Leon Pietschmann: <i>Knowledge exchange in incubators</i>	11
Dhruv Panchal: <i>Harnessing hibernation to treat dementia</i>	12
David Sánchez García: <i>Sex workers in Spain: The 'others' of the Spanish feminist movement</i>	12
Rahul Swaminathan: <i>Solar-electric vehicles: Do they have a practical place on roads?</i>	13
Rae White: <i>Climate change memes & eco-anxiety: Expressions of public feelings in memes</i>	13

TABLE OF CONTENTS

Poster Presenters

Kai Fricke: <i>A short teaching programme improves Cambridge medical students' confidence in performing basic surgical skills in preparation for foundation years</i>	14
Itsuhiro Ko: <i>Transfer of nucleic acids from plants to parasitic nematodes: The evolutionary arm-race between hosts and parasites</i>	14
Santiago Sottit: <i>The "Waste to Art" project: raising awareness of food waste the art way</i>	15
Konstantinos Tsigaridis: <i>Physics problem solving in high-school students: The role of executive functions</i>	15
Konstantinos Korakakis, on behalf of the S&C Hub: <i>Wolfson's sustainability & conservation stories</i>	16
Reflecting back and looking forward: Catching up with our Interdisciplinary Research Hubs	17
<i>Gender Interdisciplinary Research Hub</i>	18
<i>Global Health Interdisciplinary Research Hub</i>	19
<i>Sustainability & Conservation Interdisciplinary Research Hub</i>	20
<i>Let's Talk About Race and Racism</i>	21



WELCOME TO THE WOLFSON RESEARCH EVENT!

We're excited to welcome all of you to our 10th year of the Wolfson Research Event (WRE). This event is a chance to showcase the incredible and diverse research being undertaken by students of our college. Similar to last years' model, WRE 2021 has adopted an online format that allows our speakers to present their work and engage in discussions with an international audience. Spanning three sessions on April 28th, 29th, and 30th, we'll hear from a range of current students and distinguished keynote speakers whose work crosses boundaries, challenges perspectives, and addresses pressing issues in modern society. To close out our event this year, we've added an interactive workshop on May 4th on adopting an interdisciplinary focus to address modern challenges.

The 2021 Wolfson Research Event is centred around the idea of New Perspectives, a theme that both characterises the work of our presenters and is exemplified in the challenges and breakthroughs of this past year. We invite our attendees to consider the new perspectives that are needed to ensure the invigoration of science, innovation, and humanity in the years to come. Through the innovative research and interdisciplinary discussions had during this years' event, we aim to use the impact of our research and activism to generate solutions and ideas for an optimistic future.

This year also marks the 10-year anniversary of our first WRE, held in the spring of 2011. While the WRE and the world around it have undeniably shifted since its inception, we're incredibly grateful that this event has remained an important fixture of the Wolfson community. This event would not be possible without Wolfson's vibrant community of international scholars, whose work and achievements are at the heart of our college. On behalf of our committee, we'd like to thank you all for attending this year's event. We hope that you use the WRE as an opportunity to learn, exchange ideas, and think about global challenges from new perspectives.

Thank you for joining us this year!

WRE 2021 Organising Committee

Recordings of each session and our interdisciplinary workshop will be made available on the Wolfson Research Event [webpage](#) and added to Wolfson's [media collection](#). Questions, comments, or concerns? Reach out to us at wre@wolfson.cam.ac.uk.

Keep up with future WREs by connecting with us on [LinkedIn](#)!

MEET OUR 2021 WRE COMMITTEE



Vassilis Gkoumas (he/him), *Chair*

Vassilis is an environmentalist and a second-year PhD student in Land Economy, where he is exploring the social and economic impacts of environmental conservation. Along with his PhD, he contributes to the research project on environmental taxation at the UCL Institute for Natural Resources and on local energy initiatives in the West Midlands.



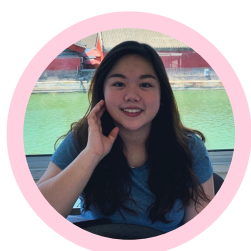
Ian Roque (he/him), *Editorial Officer*

Ian is a second-year astrophysics PhD student. His research focuses on building telescopes with unprecedented sensitivity in order to detect signals from the first stars in our universe.



Saman Samadi (he/him), *Editorial Officer*

Saman is an award-winning composer and artist-researcher undertaking a PhD in Music. For over a decade, his work has been performed internationally. He is a former faculty member of the City University of New York, Music School of New York City, and the Piano School of NYC. He is currently the President of the Wolfson College Music Society.



Cynthia Lam (she/her), *Workshop Officer*

Cynthia is a PhD student at the Department of Clinical Neurosciences. She is interested in how music and also psychedelics affect the brain. In her free time, she enjoys playing the piano, dancing and swimming.



Allysa Czerwinsky (she/her), *Programme Officer*

A presenter at last year's WRE, Allysa holds an MPhil in Criminological Research from the University of Cambridge. Her interests centre on the intersections of technology, harm, and violence, with a specific focus on understanding gender-based harassment and violence in communities that make up the Internet manosphere. Outside of academics, she's an avid crocheter and hiker.

MEET OUR 2021 WRE COMMITTEE



Imogen Stockwell (she/her), *Programme Officer*

Imogen is an MPhil student in basic and translational neuroscience at the Department of PDN. She has a focus on molecular and cellular research, as well as an interest in physics and philosophy, and has previously worked at the Stem Cell Institute.



Ed Fernyhough (he/him), *Publicity Officer*

Currently pursuing an MPhil in Political Thought and Intellectual History, Ed comes to Cambridge with degrees in History and Political Theory from Bristol and LSE. In between, he managed 3 years in marketing at Hussle before quitting to research the intersections of history and moral and political philosophy. He's passionate about football, writing, and electronic music in his personal life.



Nyandire Reinhard Bonke (he/him), *Logistics Officer*

Reinhard is a Chevening Scholar on the MPhil Conservation Leadership Programme and also serves as WCSA's Green Officer. Alongside his studies, he champions sustainable development, capacity building and raising awareness on the need for environmental sustainability in Kenya, and is the founding executive director of the African Sustainability Network.



Meg Westbury (she/her), *College Liaison to the WRE Committee*

Meg is the Academic Services Librarian (Human and Social Sciences) for the Cambridge University Libraries, and was the Wolfson Lee Librarian from 2013 - 2020. Her research interests include intersections between research infrastructures and students' identities as well as collaborative and peer-supported writing processes.

EVENT SCHEDULE:

Wednesday, 28 April (14:30 - 16:05 pm BST)

- 14:30 - 14:40** Welcome from Wolfson President, Professor Jane Clarke
- 14:40 - 15:05** *Keynote Address:* Ms. Marie Anne Coninx
- 15:05 - 15:20** Alex Guizar-Coutiño
- 15:20 - 15:35** Tamara Achampong
- 15:35 - 15:50** Rubén Asiaín Mira
- 15:50 - 16:05** David Sánchez García

Thursday, 29 April (14:30 - 16:30 pm BST)

- 14:30 - 14:35** Welcome from Allysa Czerwinsky
- 14:35 - 15:00** *Keynote Address:* Dr. Paulo de Assis
- 15:00 - 15:15** Leon Pietschmann
- 15:15 - 15:30** Rae White
- 15:30 - 15:45** Caleb Deck
- 15:45 - 16:00** Thilal Halimah
- 16:00 - 16:30** *Flash Poster Presentations*
 - Konstantinos Tsigaridis
 - Kai Fricke
 - Itsuhiro Ko
 - Santiago Sottil
 - Konstantinos Korakakis, on behalf of the S&C Hub

Friday, 30 April (14:30 - 16:00 pm BST)

- 14:30 - 14:35** Welcome from Imogen Stockwell
- 14:35 - 15:00** *Keynote Address:* Professor Juan Maldacena
- 15:00 - 15:15** Christopher George
- 15:15 - 15:30** Dhruv Panchal
- 15:30 - 15:45** Rahul Swaminathan
- 15:45 - 16:00** Aviral Marwal

Tuesday, 4 May (14:30 - 16:30 pm BST)

New Interdisciplinary Perspectives: How to be more interdisciplinary-confident and friendly

An interactive workshop to complement this year's WRE that demonstrates the advantages of adopting an interdisciplinary focus, hosted by members of our Wolfson's three Interdisciplinary Research Hubs and college's Race & Racism Initiative.

KEYNOTE SPEAKERS



Ms. Marie Anne Coninsx (she/her)

Former EU Ambassador at Large for the Arctic
(2017 - 2019)

*How innovation and research offers new perspectives
for the Arctic*

Keynote address: 28 April

Ms. Marie-Anne Coninsx is a former official of the European Union (EU) with an extensive European diplomatic career. She is also a proud alumna of Wolfson College, University of Cambridge.

Marie-Anne has been an official of the European Union for 35 years (1984 - 2019), with experience spanning international relations, trade, and climate activism. She started her career at the Legal Service in the European Commission and worked during 12 consecutive years as a staff member at Cabinets of three EU Commissioners, dealing respectively with International Relations & Trade, EU Internal Market, Development Policy and with relations with the European Parliament. She also worked at the External Relations Department at EU HQ, overseeing relations between the European Union and Latin America.

Most recently, Marie-Anne was the first EU Ambassador at Large for the Arctic (2017 - 2019), where she championed the importance of igniting climate action through principles of international cooperation and inclusiveness. Before taking on this role, she previously served as the EU Ambassador to Canada (2013 - 2017) where she extensively visited the Canadian Arctic, and the EU Ambassador to Mexico four years prior. Her other postings abroad include having served as the number two at the EU Delegations in New York and in Geneva, providing her with extensive experience on multilateral issues.

Beyond her work with the EU, she holds a law degree from Ghent University in Belgium and completed post-graduate degrees at Cambridge and the European University Centre in France, which included studying Law of the Sea.

Marie-Anne is Belgian, and is fluent in five languages: Dutch, French, English, German, and Spanish. She is an active senior, living partly in Belgium and in Germany, at the foot of the Bavarian Alps.

KEYNOTE SPEAKERS



Dr. Paulo de Assis (he/him)

Performer, composer, author, and researcher at the Orpheus Institute (Ghent, Belgium)

Artistic research as a unifying musical practice: A case-study beyond the composer-performer-musicologist divide

Keynote address: 29 April

Dr. Paulo de Assis is active as a performer, composer, author, and researcher. He currently serves as the principle investigator on the Orpheus Institute's *MusicExperimentX: Transdisciplinary Encounters in and Beyond Music*, a project that aims to challenge conventional modes of music interpretation and representation to open broader fields of practice and inquiry. Paulo has developed an international profile as a researcher who combines musical practice (as a pianist of the classical repertoire and experimental performer), musicological expertise on twentieth century Western art music, publishing experience (as author, editor, and translator), and wide-ranging transdisciplinary interests in contemporary philosophy, post-structuralism, psychoanalysis, and epistemology.

Paulo previously studied piano with Vitaly Margulis and Michel Béroff at the Hochschule für Musik Freiburg in Germany and with Alexis Weissenberg in Verbier and Engelberg in Switzerland. He also holds a PhD in music analysis on the works of Luigi Nono (Venice/Salzburg, 1999 – 2004 - supervised by Jürg Stenzl, André Richard, and Wolfgang Motz). His work over the last 12 years has been devoted to artistic research: he was the principle investigator of the European Research Council's project "Experimentation versus Interpretation: Exploring New Paths in Music Performance in the Twenty-First Century" from 2013-2018, is the founder and Chair of the international conference series *Deleuze and Artistic Research* (DARE), is the editor of the book series *Artistic Research* at Rowman & Littlefield International (London/New York), and recently became a member of the Swiss National Research Council in April of 2021.

He is regularly invited for keynote speeches, evaluation committees, review panels, PhD external examinations, masterclasses and performances. While his primary affiliation is to the Orpheus Research Centre in Music at the Orpheus Institute in Ghent, Belgium, he also teaches ad hoc at the Master's and PhD levels at the Katarina Gurska Institute for Artistic Research in Madrid, Spain.

KEYNOTE SPEAKERS



Professor Juan Maldacena (he/him)

Carl P. Feinberg Professor in the School of Natural Sciences at the Institute for Advanced Study (Princeton, United States)

Black holes and the structure of spacetime

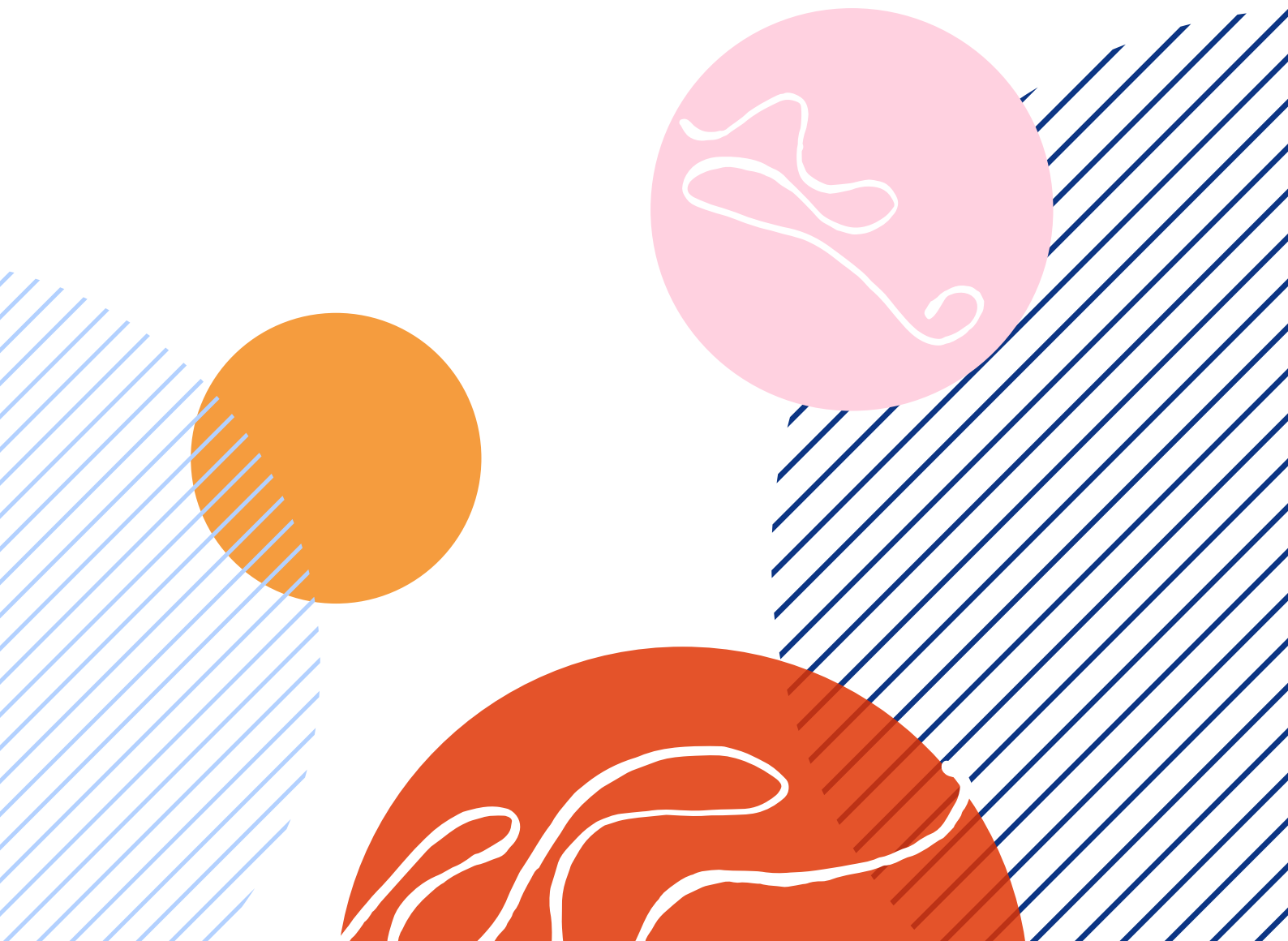
Keynote address: 30 April

Professor Juan Maldacena is a theoretical physicist and the Carl P. Feinberg Professor at the Institute of Advanced Study in Princeton, United States. Born in Buenos Aires, Argentina, Juan received a degree from Universidad de Cuyo in Bariloche before pursuing his PhD at Princeton University under the supervision of Curtis Callan. After finishing his doctoral work, he held a post-doc position at Rutgers University and was a professor of Physics at Harvard University. After joining the Institute for Advanced Study in 2001 as a professor, he became the first Carl P. Feinberg Professor of Theoretical Physics in the School of Natural Sciences in 2016. In 2019, he was awarded an honorary doctorate from the University of Buenos Aires.

Juan's research focuses on quantum gravity, string theory, quantum field theory, and quantum aspects of black holes. He has most notably proposed a realisation of the holographic principle in 1997, the AdS/CFT correspondence, that has since become the most highly cited paper in the field of high energy physics. It builds on the goal of theoretical physicists to unite the theory of quantum field theory with quantum gravity and resolve the theoretical paradoxes of black holes. The theory has important implications for the quantum mechanics of spacetime and cosmology and continues to drive discoveries within the field of theoretical physics.

His work has led to numerous important discoveries in theoretical physics, including significant contributions to the foundations of both string theory and quantum gravity, that have been recognised through prestigious awards and accolades. Juan has received the Lorentz Medal (2018), the Albert Einstein Medal (2019), and the Galileo Galilei Medal (2019), and has been elected to the American Academy of Arts and Sciences (2007) and the National Academy of Sciences (2013).

ORAL PRESENTERS





Tamara Achampong (she/her), 28 April

Influence of SES and self-efficacy on maths achievement and maths anxiety relationship

Maths anxiety (MA) is a negative emotion towards maths that has been shown to impair maths achievement and or performance. While the relationship between MA and maths achievement is well documented, the influence of socio-economic status (SES) and self-efficacy for self-regulated learning (SERL) has been overlooked. Therefore, we investigated whether SERL and SES (as measured at both the school and individual level) influenced the MA and maths achievement relationship. 288 UK students (16-19 years of age) completed a series of online questions to assess the stated measures. We confirmed our central hypothesis: replicating the association between maths anxiety and maths achievement, with high MA being associated with lower maths achievement. Whilst significant associations were found between school SES and maths anxiety; this was not the case at the individual SES level. SES differences in maths achievement were also reported, with participants from lower SES backgrounds and schools being less likely to attain higher maths grades. However, we did not find SERL to correlate with maths anxiety nor maths achievement. Together, these findings provide insights into additional factors that may influence the MA and maths achievement relationship and contribute to the established literature on the SES achievement (or awarding gap).

Presenter bio: Tamara is studying an MPhil in Psychology and Education and holds a BSc in Psychology from the University of Warwick. She is passionate about educational inequality, awarding gaps and how psychology can improve educational outcomes, specifically for disadvantaged learners. Her thesis year explores the promotive effects of friendship support and emotion regulation on the association between childhood adversity and student mental health.



Rubén Asiaín Mira (he/him), 28 April

A second life to human wastes: Energy extraction from domestic wastewater

Wastewater streams contain a significant number of compounds that are currently considered pollutants. However, human wastes should be considered critical resources that could be extracted and reused. Despite being present less than 1% of the total volume of domestic wastewater, urine contributes largely to all the nitrogen produced (~80%) mainly in the form of urea ($(\text{NH}_2)_2\text{CO}$). Since urea is a hydrogen-rich compound (6.7 wt.%), it could be extracted from domestic wastewater to produce energy. In contrast to conventional wastewater treatment plants, decentralised systems are a promising new avenue that separate and treat wastewater streams directly at the source, where the concentration of each specific pollutant is at its highest. Urine source-separation is accomplished by utilizing no-mix toilets. The urea from urine could be then removed from water using adsorption technology and further transformed into hydrogen for energy production. As a result, this process would be less resource-intensive, offering a sustainable form of sanitation for 2 billion people in developing countries, have a potential impact in rural areas and enable the development of self-sustained cities. This presentation aims to show recent progress on the development of cost-effective materials for the selective adsorption of urea using functionalised activated carbon. The adsorption process has been proved to be effective for the recovery of urea in the form of hydrogen using a thermal treatment that simultaneously regenerates the material, promoting the sustainability of the treatment.

Presenter bio: Rubén is a PhD student in the Department of Chemical Engineering and Biotechnology. He is part of the REWATERGY Programme, a Marie Curie European Industrial Doctorate Training Network. His research is focused on the removal of nitrogen compounds from wastewater and their use as a source of energy, aiming for a more sustainable water cycle.



Caleb Deck (he/him), 29 April

Developing a framework to guide building owner sustainability choices

The modern world is filled with an abundance of information. Our access to information results in overwhelming options and causes choice paralysis. Building owners are no exception, and often revert to standard design choices based on lowest first-cost estimates when improving or renovating buildings. These decisions are rarely sustainability-driven and often have unsatisfactory consequences for the environment. This study asks: is there a way to develop a framework to help building owners evaluate existing building renovations in a more holistic way, considering long-term economics, environmental factors, and social factors? It aims to help building owners develop interest in and accessibility for long-term improvement decisions through creating a simple and straightforward sustainability rating system. Following a survey of related literature and global sustainable building practices, I am developing a proposed improved tool for building owners (or municipal authorities) to evaluate choices by entering basic building information such as size, age, occupancy, and location; they are then provided a series of upgrade options to select based on their inputs. The tool would also generate a series of estimated scores regarding economic, environmental, and social impacts of the upgrades. Further research is needed to improve the tool's precision, but in the proposed format, the tool creates interest in sustainable upgrades and guides discussion regarding the value of making more-sustainable choices when upgrading buildings.

Presenter bio: Caleb is a mechanical engineer from Oklahoma City, Oklahoma, USA. He completed his undergraduate degree from Oklahoma State University in 2016 and has been working as a licensed mechanical engineer in the architecture and engineering consulting industry for the past 4 years. He looks to continue in the A&E field with a focus on sustainable building design following Cambridge.



Christopher George (he/him), 30 April

We the people? The conservative national identity and its role in American political polarisation

The source of extreme political polarisation within the US is the perception, held by a disproportionately influential part of the electorate, that what they consider to be America and American is under threat. This conservative national identity is based upon the principle of social hierarchy. Other forms of insecurity, primarily economic, have exacerbated the polarising fear of change to the preferred racial, moral, and gendered order. The adherents of this identity have enabled, driven, and lead political polarisation through the notion of perceived mutual benefit and 'Goldilocks' nature of American democracy. Initial thoughts are offered on how this issue may be resolved, now that its origins are recognised. The implications of this are clearly applicable beyond the context of Trump and the US.

Presenter bio: Christopher is a first year undergraduate studying history. Prior to attending Cambridge he spent a year at UC Berkeley studying political economy and public policy. His interest is in the role identities play in decision making.



Alex Guizar-Coutiño (he/him), 28 April

REDD+ works best where it matters most

Keeping carbon locked-up in forests is key to tackling climate change. Reducing Emissions from Deforestation and forest Degradation (REDD+) projects aim to contribute to climate change mitigation by protecting and enhancing carbon stocks in tropical forests, but there are no systematic global tests of their impact. We used a matching approach to quantify the performance of 44 voluntary REDD+ project sites in 17 countries. On average REDD+ had no detectable reductions in deforestation rates, but this may be partly because REDD+ are often implemented on top of existing conservation interventions which have slowed deforestation. Projects implemented against high background deforestation showed significant reductions in deforestation, indicating that REDD+ have slowed forest loss where pressures are highest. With countries gathering to accelerate action towards the goals of the Paris climate agreement, these results suggest that international carbon finance can, if carefully targeted, help slow tropical deforestation.

Presenter bio: Alex is a PhD candidate in Plant Sciences at the University of Cambridge Conservation Research Institute (UCCRI). His research explores the role of "nature-based solutions" for climate change mitigation, particularly those strategies involving tropical forest conservation.



Thilal Halimah, 29 April

Resilience in education – exploring the experiences of Syrian and Jordanian children and young adults in Jordan

Entering its tenth year, the conflict in Syria is now known as the deadliest conflict of recent global history. It continues to generate the largest refugee population in the world, including over 5 million refugee children. From the onset of this conflict, billions of donations have been spent on mostly addressing short-term humanitarian needs. More recently, there has been a growing interest in enhancing the resilience of the Syrian refugee community, addressing long-term needs, and administering humanitarian responses from a resilience-oriented approach. This study seeks to address this growing interest by first exploring the resilience of the Syrian refugee children and young adults and their non-refugee peers in Education in Jordan. Recognising the multidimensional nature of resilience, this study first seeks to identify quantitatively how personal, social, and environmental factors contribute to the resilience scores of each participant. Subsequently, qualitative data will be incorporated to explore the statistical trends further. Two secondary datasets have been kindly offered for this study; the Queen Rania Foundation dataset which relates to children aged 12-15 (N = 3,062), and the International Medical Corps dataset which relates to young adults aged 18-25 (N = 366). The findings from this study are important in identifying the dynamics of the context in question which acts as a steppingstone for further intervention work, namely the ongoing initiatives by the Government of Jordan to improve the resilience of the refugee and non-refugee communities in Jordan.

Presenter bio: Thilal is a PhD candidate at the University of Cambridge, where she holds a PhD research fellowship by the Queen Rania Foundation. Her research focuses on exploring resilience in the contexts of education, forced migration and conflict, and she is particularly interested in exploring how personal, social and environmental factors influence resilience. Prior to starting her PhD research, she worked as a secondary teacher of English in London while also completing an MEd in Educational Psychology as an Aziz Foundation scholar at the University of Cambridge.



Aviral Marwal (he/him), 30 April

Geographic Information System (GIS) based spatial proximity analysis of household location and services

Cities are functional spaces that connect places and people. People's preference to live and work within a city decides their travel behavior, which is affected by the urban form and their socioeconomic characteristics. In this study, we analyse how the household density varies in the capital city of India, Delhi, in regard to proximity with seven different locations— Central Business District (CBD), major roads, schools, hospitals, metro stations, commercial areas, and industrial areas. The analysis is carried out for households of high- and low-income categories. Using Geographic Information System (GIS), we first create a spatial map of seven different locations and then map the household density for both income categories. Using a multivariate regression model, we regress the household density on the distance to different locations. The result shows that for both the household categories distance to CBD, metro stations, schools, and industries has a negative relation with household density while the distance to roads has a positive relation. However, the impact of these factors varies substantially for the two household income categories. The statistical analysis shows that the mean distance to different locations is higher for low-income households compared to high-income households. The study has important policy implications to amend the inequitable household spatial distribution in Delhi.

Presenter bio: Aviral is a first-year PhD student at the Department of Land Economy. His research focuses on micro-simulating the dynamics of urban form and accessibility using Agent Based and Neural Network Models. He has a bachelor's degree in engineering from the Indian Institute of Technology Delhi and a master's degree in development policy from Tata Institute of Social Sciences Mumbai in India.



Leon Pietschmann (he/him), 29 April

Knowledge exchange in incubators

The impact of business incubators has significantly increased over the last years. Knowledge and knowledge exchange are integral to the success of start-ups in an incubator, which is essentially a type of start-up coworking space. The opportunity of collaboratively working together in a shared space, exchanging knowledge and supporting each other attracts increasing numbers of start-ups to join an incubator and actively participate in their ecosystem. My research focused on how and what types of knowledge are exchanged in start-up coworking spaces. Tacit knowledge related to managerial advice and business topics appears to be the one most frequently exchanged. Even though most of this knowledge is shared through informal exchanges, the exchange behaviour of incubatees appears to be highly dependent on their degree of metaknowledge, the topic and their use of digital communication. In addition, this research provides insights into the incubatees' motivation for joining the incubator as well as exchanging knowledge with others.

Presenter bio: Leon is a doctoral researcher at the Institute for Manufacturing. Prior to that, he was a Management Consultant at the Boston Consulting Group (BCG) and graduated from Cambridge with a MPhil in Industrial Systems, Manufacturing and Management in 2019. Leon has a strong interest in new technologies as well as the start-up ecosystem and loves sharing his experience from founding his own company.



Dhruv Panchal (he/him), 30 April
Harnessing hibernation to treat dementia

The number of people living with dementia is projected to nearly triple in the next 30 years worldwide. It relentlessly erodes the function of its victims and places an ever-increasing burden on their families and society. Unfortunately, there are no effective drugs despite decades of research. Treatments are urgently required. An important pathology in dementia features an early and currently irreversible loss of neuronal connections essential for brain function. My goal is to restore these connections, which is very likely to restore cognition and function in patients. Interestingly, hibernating animals can regenerate these connections after a bout of hypothermia during hibernation. By cooling mice modelling dementia, our group mimicked hibernation and observed dramatic improvements in outcomes. They then identified a key protein regulating this effect. In my PhD I have discovered a neuronal 'thermostat' which, when targeted with a drug, fools the neuron into thinking it is cold and induce this protein at normal temperature. In mice with disease, this drug boosts this protein, rescues the loss of connections between neurons, prevents neuronal death, and prolongs the survival of the mice. This represents the first ever demonstration that the neuroprotection associated with hypothermia can be mimicked pharmacologically and could represent a novel treatment for dementia. Further, as hypothermia is potentially neuroprotective in a range of conditions like stroke, traumatic brain injury, and in babies starved of oxygen from complicated births, this treatment could offer benefit to millions of people suffering from neurological illnesses, young and old alike.

Presenter bio: Dhruv gained his medical degree at Imperial College, London in 2011 and has since worked in London, Oxford, and Brisbane as a junior doctor. He's currently a neurology registrar and a Wellcome Trust PhD candidate in clinical neurosciences at the University of Cambridge. He is interested in finding novel treatments for dementia by targeting mechanisms common between the different types.



David Sánchez García (he/him), 28 April
Sex workers in Spain: The 'others' of the Spanish feminist movement

Right before the Covid-19 pandemic was declared, the self-proclaimed feminist Spanish Ministry for Equality published the draft bill of the much-awaited Sexual Liberty law, putting 'consent in the centre'. In October 2020, this bill was amended, introducing prison sentences of up to four years for prostitution-related charges, regardless of the consent of the prostitute, effectively criminalizing several forms of sex work. During the pandemic, prostitutes have been excluded from the discussions drafting the law, have been denied access to the guaranteed minimum income scheme unless they declared they were victims of trafficking, and brothels have been closed, allegedly for reasons of public health, while street prostitution is criminalized through neoliberal municipal ordinances and the punitive 'Gag Law'. Prostitutes, the vast majority of whom are women, seem to be intelligible only as victims to be saved. In public interventions, the Minister for Equality repeatedly conflates prostitution and sex exploitation, neglecting the existence of freely consented prostitution. Moreover, other aspects such as the fact that 80-90% of prostitutes are foreigners and many are trans, are overlooked. The institutional neglect of sex workers can be read as instrumental for neoliberal state policies increasing precarity and migratory laws strengthening the Spanish border regime. Understanding these questions within debates of the Spanish feminist movement is central for developing feminist ideas which can promote justice for us all.

Presenter bio: Originally from Madrid, Spain, David is currently studying an MPhil in the Sociology of Marginality and Exclusion at the University of Cambridge. He is also the LGBTQ+ Officer at Wolfson College and an active member of the Interdisciplinary Gender Research Hub. His ongoing research explores the institutional neglect of sex workers in feminist discussions in Spain and the construction of victimhood in Spanish discourses about sex work.



Rahul Swaminathan (he/him), 30 April

Solar-electric vehicles: Do they have a practical place on roads?

Both hybrid-electric vehicles (HEVs) and purely battery-electric vehicles (BEVs) have an established presence in the consumer automotive market, with demand for these vehicles rapidly increasing. New UK HEV registrations rose by 108% and BEV registrations by 179% in Q3 2020 compared to Q3 2019. However, solar-electric vehicles (SEVs) remain largely in the prototype stage. One successful prototype was Helia, built by Cambridge University Eco Racing in 2019. Helia is a 4-seater SEV capable of cruising at 50 mph on just the power of a typical electric kettle, with twice the range of a Tesla Model 3. By using Helia as a case study, I argue that SEVs do indeed have the potential to see widespread use, but not as a direct replacement for HEVs, BEVs, and conventional petrol vehicles. Instead, given the efficiencies seen in modern photovoltaic cells, SEVs are better suited to long-haul trips involving large stretches of highway cruising than they are to typical city driving conditions.

Presenter bio: Rahul is a fourth-year undergraduate engineer, specialising in power electronics, control, and machine learning. He's currently the head of the electrical team at Cambridge University Eco Racing (CUER), a student organisation that built Helia, the UK's most efficient electric vehicle. In collaboration with CUER, he's designing a novel motor controller for use specifically in solar-electric vehicles using wide band-gap gallium nitride transistors instead of conventional silicon.



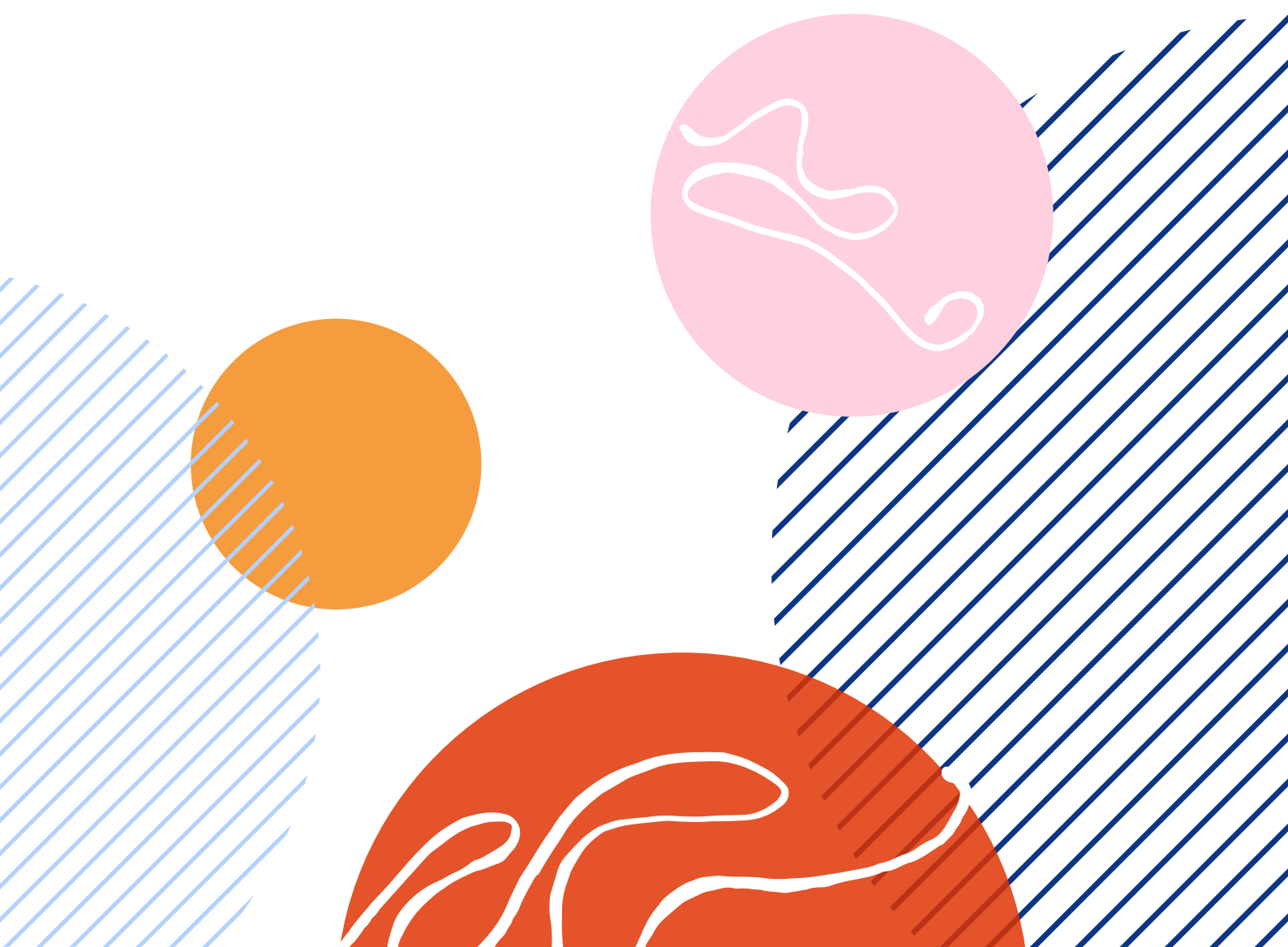
Rae White (she/her), 29 April

Climate change memes & eco-anxiety: Expressions of public feelings in memes

From viral YouTube hit Gangnam Style inspiring thousands of parodies to Pepe the frog becoming a registered hate symbol, memes have taken on political and cultural importance in the landscape of new media. Memes are important as they build political cultures through popular culture, allowing involvement in the political sphere through humour and online community. In their barest form, memes are ideas presented in various formats (image, text, video, etc.) that spread across the internet through imitation. This research proposes the first broad look at the climate change memeosphere with a focus on the emotive properties of memes. My work seeks to answer: 1) What are the dominant affects across the climate memeosphere? 2) How are climate memes being used to mobilise climate action? To answer these questions, I have collected a sample of 150 memes across social media sites and a series of interviews with moderators from the most popular climate meme pages. Using a thematic analysis, this piece draws out themes of eco-anxiety, eco-angst, denial, optimism, collective action, and inaction. The overriding aim of this project is to understand the phenomenon of climate memes and explore the functions they serve in creating counter-cultural power.

Presenter bio: Rae is studying for an MPhil in Sociology at the University of Cambridge. She received her BA in Politics and Philosophy from the University of Sheffield. Her interest areas include climate justice, political mobilisation, online community (specifically memes and digital activism), Queer and Feminist Theory.

POSTER PRESENTERS





Kai Fricke (he/him), 29 April

A short teaching programme improves Cambridge medical students' confidence in performing basic surgical skills in preparation for foundation years

According to GMC requirements, junior doctors have to be able to perform basic surgical procedures. Contrary to these requirements, a recent national study concluded that UK medical schools provide minimal surgical skills training which could leave newly qualified doctors unconfident to perform basic surgical skills. The purpose of this study is to determine whether a proposed teaching programme can help increase medical students' confidence in performing basic surgical skills. Cambridge Medical students on their student selected placement in Plastic Surgery were asked to fill in a questionnaire before and after they underwent a teaching programme. Questions were self-reflective and included the following topics: (1) confidence in performing basic suturing independently; (2) confidence in choosing appropriate suture materials; (3) confidence in suture techniques; and (4) confidence in administering local anaesthetics. Answers were recorded on a modified Likert scale. A total of 13 and 21 students from 3 cohorts filled in the questionnaire. After completing the programme, students were significantly more confident in each of the main topics ($p = 0.009$, $p < 0.001$, $p = 0.012$, $p < 0.001$, respectively). This study demonstrates that a concise surgical teaching programme can improve medical students' confidence in performing basic surgical skills as required in their Foundation Programme.

Presenter bio: Kai is a final year medical student interested in neurosurgery. Before coming to Wolfson, he completed an undergraduate degree in neuroscience at Brown University in the US and a Master's in neuroscience at École Normale Supérieure in Paris. In his free time, he enjoys playing tennis or going on walks with his dog.



Itsuhiro Ko (he/him), 29 April

Transfer of nucleic acids from plants to parasitic nematodes: The evolutionary arm-race between hosts and parasites

Plant-parasitic nematodes (PPNs) are economically important pests of most crops, accounting for over \$80 billion of annual yield losses to global agriculture. To cause disease, PPNS deliver "parasite" proteins into the host to alter plant growth and extract nutrients via a needle-like mouthpart, called a stylet. Recently, several studies evidence substantial nucleic acid movement into PPN genomes, known as horizontal gene transfer (HGT): PPNS gained new parasitism abilities by "stealing" genes from bacteria and fungi. However, no study to date has verified plant-derived HGT events in PPN, nor explored the mechanism of HGT. Given that these nematodes spend their entire life eating plant tissue, there seems a conspicuous absence of plant-derived cases. This project is focusing on exploring the plant-derived nucleic acid transfer events in PPNS by studying the various nucleic acid species from plant, to parasitic nematode. I use comparative genomic approaches, coupled with sensitive real-time molecular biological detection, to evaluate possible plant-derived HGT events in PPNS.

Presenter bio: Itsuhiro is an MPhil student in the Department of Plant Science, supervised by Dr. Sebastian Eves-van den Akker. He holds a BS in Plant Science and Entrepreneurship minor from the Pennsylvania State University in the United States. His research focuses on the plant-parasitic nematode interaction, with the special interest of horizontal gene transfer in plant-associated organism.



Santiago Sottill (he/him), 29 April

The “Waste to Art” project: raising awareness of food waste the art way

According to the United Nations Food and Agriculture Organization (FAO), one third of food produced for human consumption is wasted. This represents over 2 billion tonnes of food lost every year. Food waste refers to food fit for human consumption being discarded. The goal of the Waste to Art project is to raise awareness of food waste by fostering conversation and debate. The exhibition will consist of a series of three still lifes, in the style of the 'old masters', created with leftover food collected from the plates of Wolfson's cafeteria customers. The cafeteria at Wolfson offers meals three times per day to over 400 students, staff, and alumni. The still lifes aim to present food waste in a new way, starting with our own plates. To highlight the environmental impact of the food, each work includes a short description with an estimation of the value lost, carbon emissions, and water requirements. A list of practical tips to reduce household food waste will also be included. The Waste to Art project, done in collaboration with the Wolfson Arts Committee and the Sustainability and Conservation Hub, will be displayed in the first week of Easter term in the Gallery leading to the cafeteria.

Presenter bio: Santiago is an MPhil candidate in Engineering for Sustainable Development and holds a Bachelors in Bioresource Engineering from McGill University, Canada. His research focuses on how resilience and sustainability concepts can be applied in infrastructure systems. Previously, he worked as an Environment Specialist at Nestlé and in sustainability consulting. In his free time, he enjoys running the trails around Cambridge, gardening, and painting.



Konstantinos Tsigaridis (he/him), 29 April

Physics problem solving in high-school students: The role of executive functions

Considerable in-depth studies have been carried out in the disciplines of psychology, neuroscience and education about Executive Functions. Both teachers and parents have been increasingly becoming aware that these neurocognitive skills are fundamental in the students' learning process across all school ages (Zelazo et al., 2016). Through this planned research a detailed investigation will be conducted in order to detect if and how the core Executive Functions as well as the higher order Executive Functions are linked with physics problem solving by utilizing both previously validated cognitive assessments and formal curriculum examinations. In addition, based on the extensive literature about the role of Executive Functions in mathematics and in mathematics problem solving (Brookman-Byrne et al., 2018; Partanen et al., 2020; Ropovik, 2014), a detailed analysis concerning the investigation on the correlation among Executive Functions, mathematics and physics problem solving is being presented for the first time, highlighting the uniqueness of this research. The selected age group for the current research is mid-adolescence students from 15 to 17 years of age, a period when students learn advanced concepts in both science and mathematics and their Executive Function skills are expected to have reached their full potential. Establishing the role of Executive Functions and mathematics in physics problem solving could contribute to the investigation on the link between Executive Functions and science learning. Moreover, it can offer great potential to educators in order to construct targeted teaching approaches that could consequently enhance students' physics problem solving ability to better prepare them for challenging academic events.

Presenter bio: Konstantinos is currently pursuing a PhD in Education and holds a BSc in Physics and a MSc in Educational Planning and Teaching both awarded from the National and Kapodistrian University of Athens. His research focuses on investigating Executive Functions and their role in Science learning. He also has prior experience teaching Physics to senior High School students for almost 15 years, preparing them for their National Physics examinations.



Konstantinos Korakakis (he/him), on behalf of the S&C Hub

29 April

Wolfson's sustainability & conservation stories

This project from Wolfson's Interdisciplinary Research Hub on Sustainability and Conservation aims to compile and recognise Wolfson's past and current efforts in the area of sustainability and conservation. We want to comprehend, acknowledge and celebrate our college's strengths, weaknesses, network and past successes to be as productive and ambitious as we can be. The stories included in this project can be about past research, about professional work and projects, or about grassroots and community activities. Stories about ongoing activities and projects are also welcome. Our poster presents stories of the work of two fellows and a student. From different industries, they share the same objective: through research and action, students, alumni and fellows make sustainability and conservation core values of Wolfson.

Presenter bio: Konstantinos is a proactive member of Wolfson's Interdisciplinary Research Hub on Sustainability and Conservation, and is presenting this poster on their behalf. Having always been attracted to historical and heritage environments, Konstantinos studied architecture and developed his career in retrofit, refurbishment and redevelopment projects of heritage status and within conservation areas, where sustainability issues are becoming increasingly challenging. He joined the Cambridge Institute for Sustainability Leadership in 2020 and is currently completing an MSt in Interdisciplinary Design for the Built Environment at Wolfson College.



REFLECTING BACK AND LOOKING FORWARD

CATCHING UP WITH OUR INTERDISCIPLINARY RESEARCH HUBS

Wolfson's Interdisciplinary Research Hubs on Gender, Global Health, and Sustainability & Conservation were formally announced by President Jane Clarke at last year's WRE. As global challenges often require interdisciplinary solutions, our three hubs provide an environment to discuss current problems, encourage dialogues, and create novel and effective solutions to complex problems across disciplines and professional fields. In the months since their launch, our hubs have become an important fixture in Wolfson's contribution to knowledge production, education, and activism.

In addition to our three hubs, Wolfson has recently launched a new initiative, *Let's Talk About Race and Racism*, to help foster lasting anti-racist dialogues and action within our community, the wider University, and society at large. This initiative is a collective of passionate students, fellows, and staff, with events and projects spanning across all research hubs and societies at Wolfson. Learn more about each of our hubs and our Race & Racism Initiative in the pages that follow!

These four collectives exemplify the importance of adopting interdisciplinary perspectives to address a variety of societal issues, including gender-based oppression and violence; the lasting impacts of global health crises such as the COVID-19 pandemic; combatting the destruction of our natural world; and addressing racism through anti-racist dialogues and actions that effect real change. With this in mind, our hubs and Race & Racism Initiative have created an interactive workshop on the benefit of adopting interdisciplinary perspectives to combat modern challenges. Through collaborative discussions and storytelling, attendees will explore concepts of multi-, trans-, and interdisciplinarity, intersectionality, competence, and friendliness. Attendees will also come away with insights and understandings of how researchers and activists can apply these concepts within their own work. Register [here](#)!

Gender Interdisciplinary Research Hub

Bringing together passionate individuals spanning a variety of disciplines to actively educate, discuss, and disrupt ideas and issues related to gender. We draw on Wolfson's diverse networks of students, professionals, and world-class researchers to explore gendered issues across the globe. Our hub also recognises that gender intersects with other axes of oppression, including race, ethnicity, sexual orientation, class, and dis/ability status, among others. We strive to incorporate these intersections into the events and initiatives we put forward.

Interested in learning more about us or becoming an organising member? Check out our page [here](#) or reach out to us at genderhub@wolfson.cam.ac.uk.

Past Initiatives and Events



Let's Talk: Tackling Violence Against Women

An interdisciplinary panel to commemorate the UN's International Day for the Elimination of Violence Against Women, featuring perspectives from criminology, history, communication studies, and gender studies. Recording [here](#).



Sex Work and Borders: International Sex Workers' Rights Day

Sex workers and activists from England, Ireland, Aotearoa New Zealand, Spain, and Sweden discussed their experiences and identified areas for change. Part of Wolfson Explores *BORDERS. Recording [here](#).



Wolfson College's International Women's Day Conference

An annual platform for women and gender-focused researchers at college to share their work and lived experiences with a wide audience. Collaboration with WCSA's Women and Non-Binary Representatives. Recording [here](#).



From Mississippi to Cambridge: Marie Battle Singer, Britain's first Black psychoanalyst

Professors Jane Rhodes and Lynn Hudson discussed the life achievements of Marie Battle Singer, who navigated race, gender, and national identity on both sides of the Atlantic. Collaboration with college's Race and Racism Initiative. Recording [here](#).

Looking Forward

In the coming year, we aim to create additional opportunities to raise the profile of our gender-focused researchers, including:

- establishing an informal work-in-progress series for researchers to present their work at college
- fostering greater alumni involvement and creating networking opportunities for researchers and activists
- continuing our interdisciplinary focus through collaborative events with college collectives

Organisers:

Anna Ceschi, Jane Clarke, Megan Coe, Allysa Czerwinsky, Gabrielle Davidson, Susan Larsen, David Sánchez García, Katrin Wittig



Global Health Interdisciplinary Research Hub

The Global Health Hub is a place for Wolfson members to meet and discuss important issues relating to global health. As an interdisciplinary research hub, everyone is welcome! We have held a number of events in the past year including panel discussions, short talks, and informal meetings. Many of these have focused on COVID-19, but future events will cover other important topics in global health.

Past Events

Below are short descriptions of our previous events, with links to recordings and summaries of each:

COVID-19 and Me

- The first gathering of the global health community! We reflected on how COVID-19 has affected us from the point of view of research, personal position, and role in society.

Beyond Health: The Extended Effects of COVID-19 on Our Society

- This panel event explored how COVID-19 has altered our world. Our panel included experts in journalism, reporting, and clinical research.

Making the 'Urban' Better: Planetary health conversations on building healthy sustainable cities in the era of COVID-19 and beyond

- The WHO published a manifesto for healthy recovery from COVID-19, including building healthy cities and promoting healthy sustainable food systems. The event included conversation with global partners whose work impacts the built environment, population health and sustainability. Discussions fed into ongoing efforts to integrate health foresight into Africa's cities for human and planetary health.

Open meeting

- This event was an informal get-together to discuss the next steps for the hub.

Based on discussions from the open meeting, we plan to have an event which will focus on a single question in global health from lots of different perspectives. The aim of this event will be to give insight into the way different people and fields might approach issues in global health.

The date and time of our next event is not yet confirmed but we would love to see you there! You can keep up to date with our events via the Global Health Hub [page](#) on the Wolfson website.

Sustainability & Conservation Interdisciplinary Research Hub

Convening interested individuals and organisations to inform, educate, and explore disruptive solutions to combat the destruction of the natural world. We empower Wolfson's diverse and international network to trigger the deep changes needed to wider global systems through an interdisciplinary focus, multi-generational collaboration, and systems thinking.

Check out our webpage [here](#), or get in contact at: sc-hub@wolfson.cam.ac.uk

Current Initiatives

With our members we have devised a [Theory of Change](#) using the metaphor of a tree. The community is our trunk, and progress made on each themed branch works to grow the tree.

[Wolfson S&C Stories](#)

Compiling Wolfson's past and current successes in the area of sustainability and conversation.

- [Submit your story here!](#)

Branch: Curation - Librarianship

[Wolfson Living Lab](#)

New mechanism for researchers from any discipline to undertake academic or interest projects with some positive or actionable green benefit to the Wolfson site, community or network.

- Thanks to the Hoath Family Donation.

Branch: Living Lab

[Mapping Cambridge's 'Green' Network](#)

Developing interactive visualisations of all green-related organisations in the:

- [City of Cambridge](#)
- [University of Cambridge](#)

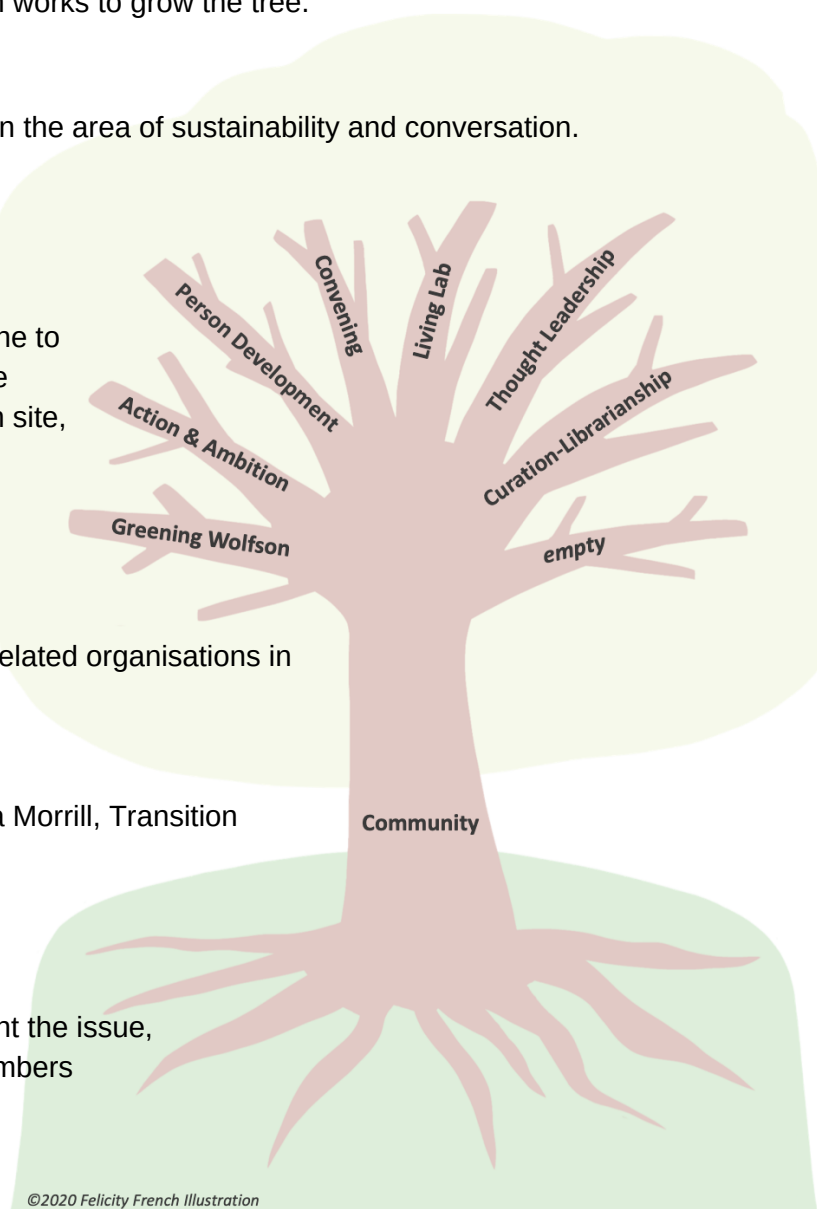
In collaboration with: Charlie Barty-King, Ms. Lena Morrill, Transition Cambridge, Cambridge Doughnut.

Branch: Thought Leadership

[Waste to Art](#)

Art series exploring creation from waste to highlight the issue, as part of the Living Lab. Thanks to Proactive Members Santiago Sottit and Anne Waburi.

Branch: Person Development



Organisers:

Charlie Barty-King, Steve Evans, Rae White, John French, Sian Cook, Matthias Wong, Nyandire Reinhard Bonke, Konstantinos Korakakis, Zach Whit, Anne Waburi, Caleb Deck, Santiago Sottit, Keshav Srinivasan, Alexei Lapkin, Dick Fenner



Let's Talk About Race and Racism Initiative

Let's Talk About Race and Racism is a Wolfson initiative intended to inspire new dialogues about race and racism, to learn from those dialogues, and create stronger communities in college, the University, and beyond. We understand that this is a first step in moving towards a more inclusive and welcoming space for all of our members and intend this initiative to open up a conversation that will be difficult and challenging but can enact real change throughout our college community, the University of Cambridge, and society at large. We urge all of our members to join in supporting this initiative and to work collectively to create a better college, and a better world, for us all.

This initiative spans all research hubs and societies at Wolfson. It is an overarching theme within the college's guiding statements. Talks, lectures and events at Wolfson are flagged as related to this theme; some events have been purposefully designed to increase the momentum of the discussions.

Events and Initiatives

"Somalinimo" Screening and Discussion

Produced by Wolfson alumna Awa Farah, this documentary explores the experiences of race, identity, and belonging for British-Somali students at Cambridge through intimate interviews with Awa, Hafsa Said, and Samiya Dubed. Recording [here](#).

Shade in Cambridge Podcast

Formally launched in January 2021, *Shade in Cambridge* is a seven-part series exploring ideas related to race and racism through the personal stories, experiences, and perspectives of its featured guests. Current episodes can be streamed on [Spotify](#) and [Anchor](#).

Humanities Society Talks

- [‘Toward Black Ecomusicology, 1853? Listening to enslavement with Solomon Northrup’](#)
- [‘A very British History - British Bangladeshis’](#)
- [‘A mild despotism tempered by sugar: the rise of the overseer state in Britain’s post-slavery empire’](#)

Asian Film Day Screenings and Discussions

Hosted by WCSA's International Students Representative Abbernaa Dhevi Kukananthan, these screenings highlighted the beauty and brilliance of films from Saudi Arabia (*Wadjda*), Korea (*The Handmaiden*), India (*The White Tiger*), and Japan (*Spirited Away*).

From Mississippi to Cambridge: Marie Battle Singer, Britain’s first Black psychoanalyst

Professors Jane Rhodes and Lynn Hudson discussed the life achievements of Marie Battle Singer, who navigated race, gender, and national identity on both sides of the Atlantic. Collaboration with college's Gender Research Hub. Recording [here](#).

These past events are just some examples that illustrate how the Let's Talk About Race and Racism theme has been shaping discussions here at Wolfson. A more comprehensive list, as well as our full statement of commitment, can be found on college's [website](#).