

# Downing College Postgraduate Conference 2024



Under the Auspices of the Sir William  
Frere Society

**Saturday, 11th May**

# Introduction

The inaugural Downing College Postgraduate Conference was held in the Easter Term of 2019. Apart from a break in 2020 caused by the Covid crisis, Conferences have been held every year since. By tradition, those responsible for organizing the Eurovision Song Contest wait until the date of the Downing Conference has been fixed before announcing that as the date for their Contest. At least, that's how it seems

The idea behind the Conference is that Downing Postgraduates at whatever stage in their studies should have the opportunity of presenting the fruits of their research to a an engaged and supportive audience of students, Fellows, and alums. Organisation of the Conference is the combined responsibility of MCR Officers: this year, Felix Prutton (President), Chara Triantafyllidou (Vice President), Yuan Yin and Cheri Au (Welfare and Education Officers); and the MCR Liaison Fellow, Paul Millett.

It is anticipated that this year's Conference will be as enjoyable and successful as in previous years. At time of writing, fourteen speakers are planned to make presentations, covering a wide range of subjects across the Humanities, Sciences, and Social Sciences, with Dr Daisy Hessenberger, Downing alumna, contributing a concluding address. Three of the postgraduate speakers are from Lincoln College, Downing's sister college in Oxford. This continues and extends the very welcome Postgraduate connection established last year.

If you are viewing the conference live on the day via the YouTube stream, you can comment on the video to ask questions of speakers. One of the MCR Officers will be monitoring this and ask questions on your behalf. If anyone has a question after a speaker has finished, the individual speakers' email addresses are included in this programme above their abstracts.

On this occasion, and for the first time, the Conference is being held under the auspices of the newly-formed Sir William Frere Society, which exists in order to bring together Fellows and Postgraduates to discuss study and research. The society is named for Sir William Frere, the second Master of Downing College (1812–36): a legend in his own lifetime for being the first Cambridge Head of House actively to encourage the social interaction of Senior Members with students.

**We hope that the 2024 Postgraduate Conference proves worthy of Sir William's aspirations!**

# Programme

Howard Theatre, Downing College

## Morning

**09.20-09.50 Registration with Tea and Coffee in the Grace Howard Room  
(Ground Floor of the Howard Building)**

**09.50-10.00 Welcome (Dr Paul Millett, Liaison Fellow for MCR Students)**

**10.00–11.20 Session 1: Medical Sciences and Biochemistry**

**Chair: Dr John Morgan**

10.00 Michael Batavanis, "Weight loss drug semaglutide: real-world effectiveness and safety"

10.20 Monty Ali, "Investigating the Potential of *In-silico* Techniques for Protein Engineering"

10.40 Ina Kruger, "Mixing it up in algae: patterns of meiotic recombination in the unicellular green algae *Chlamydomonas reinhardtii*"

11.00 Christian A. Cepeda, "Exploring the Role of LIGHT and HVEM in Remyelination Processes in a Rat Model of Multiple Sclerosis"

**11.20-11.40 Tea and Coffee in Grace Howard Room**

**11.40-13.00 Session 2: Literature and Linguistics**

**Chair: Dr Paul Millett**

11.40 Timothy Roe, "How to talk about money without giving offence: some methods from ancient Greek lyric poets (success not guaranteed)"

12.00 Georgia Fulton, "Paradox in *The Praise of Folly* and *Utopia*: Seriocomic Techniques In Early Tudor England"

12.20 Emily Finston, "The Moment and its Crisis: Forms of Speculation in the work of Wallace Stevens"

12.40 Chara Triantafyllidou, "Unravelling the Tapestry of Language Skills in English as an Additional Language (EAL)"

**13.00-14.20 Lunch in the Grace Howard Room**

## Afternoon

### **14:30-15:30 Session 3: Social Sciences: Education, Punishment and Politics** **Chair: Prof. Graham Virgo, Master of Downing College**

14.30 Charlotte Oliver, "How Do We Make Our Teaching Laboratories More Inclusive?"

14.50 Rick Aiyer, "The Human Rights Aspects of Corporal Punishment: Realizing Children's Overdue Entitlement to Equal Protection from Assault"

15.10 Stephanie Foggett, "In Her Own Words: A Study of Women's Voices in Contemporary White Supremacy and Far-Right Online Hate"

### **15.30-15.50 Tea and Coffee in Grace Howard Room**

### **15.50-16.50 Session 4: Ecology & Environment** **Chair: Dr Zoe Barber, Vice Master of Downing College**

15.50 Bergthor Traustason, "Harnessing Microbial Nitrogen Fixation for Sustainable Cereal Production"

16.10 Prisca K-P. Kouakou, "Enablers for Just Sustainability Transitions in the West African Cocoa Sector"

16.30 Sophie Parish, "Governing Sacrifice in the 'Chilean Chernobyl': The Power and Politics of Extraction in Quintero-Puchuncaví, Chile "

### **17.00-17.45 Concluding Address: Dr Daisy Hessenberger**

### **17.45-18.00 Concluding Thoughts and Remarks**

### **18.00-19.00 Reception in Grace Howard Room followed by Hot Buffet Dinner**

# Session 1: Medical Sciences and Biochemistry

Chair: Dr John Morgan

***\*Please DO NOT take pictures of the slides. Thank you!\****

## 10.00 **Weight loss drug semaglutide: real-world effectiveness and safety**

*Michael Batavanis, Medicine (mab250@cam.ac.uk)*

Obesity is a global epidemic and a major public health issue with a significant impact on healthcare systems and society in general. Drugs are rarely utilised to tackle this due to their limited efficacy. Semaglutide is a weekly injectable medication, which was recently approved to be used in the UK for weight loss. It has shown great efficacy in randomised controlled trials and may herald a new era in the management of obesity.

The talk will explain how the drug works and the study I have been involved in. This included 40 overweight or obese individuals who were treated with semaglutide for weight loss for a minimum of 3 months. After 3 months, the median percentage weight loss was 6.6%, and after 6 months it was 13.3%. Regarding its safety profile, 65% of participants reported side effects, mostly gastrointestinal symptoms that were mild and short in duration.

## 10.20 **Investigating the Potential of *In-silico* Techniques for Protein Engineering**

*Monty Ali, PhD in Chemistry (ma986@cam.ac.uk)*

Proteins, the building blocks of life that underpin biological functions across all organisms, are translated from genetic blueprints (DNA) into diverse sequences which yield fascinating structures. These proteins serve a structural and functional role throughout all forms of life, and their deviation from homeostatic conditions can precipitate health crises, from cancers to neurological diseases. The discovery and analysis of protein structures or sequences have led to some of the great medical breakthroughs in the world today. Our lab focuses on designing protein structures and sequences to modify biophysical attributes like binding, solubility, and stability, contributing significantly to drug discovery efforts. We have pioneered computational tools for protein sequence and structure design, producing desirable and measurable effects on their biophysical properties. This presentation will showcase these innovations, exploring their potential to transform therapeutic and diagnostic tools.

## 10.40 **Mixing it up in algae: patterns of meiotic recombination in the unicellular green algae *Chlamydomonas reinhardtii***

*Ina Kruger, PhD in Plant Sciences (ik377@cam.ac.uk)*

Sexual reproduction is an ancient process, believed to have evolved between 1 and 2 billion years ago in the last common ancestor of eukaryotes. Sex involves meiosis, a special type of cell division which halves the number of chromosomes making haploid cells (gametes), so that upon fusion with another haploid cell the full complement of chromosomes are restored. During meiosis, meiotic recombination also occurs, where crossovers form between chromosome pairs and genetic material is exchanged, generating new combinations of alleles and contributing to variation within the population. In many species, the location of these crossovers is partly controlled by epigenetic marks on DNA and histone proteins. My project aims to explore the dynamics of crossover location and control in the unicellular green algae *Chlamydomonas reinhardtii*, by using long-read sequencing to map crossovers in tetrads of offspring between diverse strains of *C. reinhardtii*. Due to the deep conservation of meiosis, I hope my results will have wide ranging implications for sex in plants, animals and fungi.

## 11.00 **Exploring the Role of LIGHT and HVEM in Remyelination Processes in a Rat Model of Multiple Sclerosis**

*Christian A. Cepeda, MPhil in Clinical Neurosciences (cac226@cam.ac.uk)*

Multiple sclerosis (MS), affecting 2.5 million globally, is a debilitating central nervous system disorder marked by inflammation and demyelination. This study investigates the role of the protein LIGHT and its receptor HVEM in modulating microglial activity, focusing on remyelination processes. Preliminary results, supported by bulk RNA-Seq analysis, indicate a 7-fold upregulation of HVEM in microglia during recovery, suggesting an anti-inflammatory shift conducive to remyelination. To confirm these results in vivo, immunohistochemistry and confocal microscopy are being used on MS models in rats. Following these results, LIGHT treatment will be tested to confirm if it promotes the expected beneficial shift in microglial phenotype that reduces MS symptoms. Our findings highlight LIGHT's potential in enhancing myelin debris clearance and remyelination, offering insights into novel therapeutic strategies for MS. This research emphasizes the importance of targeting microglial activation for MS treatment, aiming to slow disease progression and improve patient outcomes.



## Session 2: Literature and Linguistics

### Chair: Dr Paul Millett

***\*Please DO NOT take pictures of the slides. Thank you!\****

#### 11.40 **How to talk about money without giving offence: some methods from ancient Greek lyric poets (success not guaranteed)**

*Timothy Roe, PhD in Classics (Greek literature) (tpar2@cam.ac.uk)*

The relationship between wealth and virtue was contested in archaic and classical Greek literary sources. Our best attested lyric poet, Pindar, provided songs to wealthy patrons celebrating their victories in athletic contests. The most lavish of these are for events in which the praised victor did not personally enter the race but financed the chariot-team. Pindar mentions wealth much more often in the context of these expensive victories; he also unashamedly acknowledges that he is getting paid to extol the victor's virtues. This is surprising in the light of other lyric poetry, in which wealth is often a corrupting influence. I hope to shed some light on Pindar's remarks by focusing on the ethics of talking about wealth and the role of the poet's self-characterisation in his ethical programme.

#### 12.00 **Paradox in *The Praise of Folly* and Utopia: Seriocomic Techniques In Early Tudor England**

*Georgia Fulton, Literature, Junior Research Fellow at the Faculty of English, University of Oxford, Lincoln College Oxford (georgia.fulton@ell.ox.ac.uk)*

This paper argues that the pre-polemical literary work of Thomas More and Desiderius Erasmus (namely, *Utopia* and *The Praise of Folly*) adapt generic techniques from classical satire. The adaptation of these techniques (which could variously fit into labels as diverse as seriocomedy, Lucianic satire, *serio ludere* or *jocoseria*) is actually an enaction of their Reformation interest in Christianising the classical. Taking Erasmus' term 'morosophy' as a useful label to summarise this impulse, this paper will identify how these two humanists set up a literary strategy which uses *dubitatio*, metafictional language and doubled perspectives in order to hold productive space for paradox to exist in the texts. This hybridity can be traced back to the Pauline reading of Jesus' crucifixion as *kenotic*, which is the key concept underscoring Erasmus' presentation of morosophy in *The Praise of Folly*.

## 12.20 **The Moment and its Crisis: Forms of Speculation in the work of Wallace Stevens**

*Emily Finston, MPhil in English Studies (ef432@cam.ac.uk)*

Looking at the work of late modernist American writer, Wallace Stevens, I hope to discuss Stevens' poetry as a form of heightened temporal awareness, of composing within the precarity of the present as a moment of *Kairos* or crisis in which the imagination becomes responsible for navigating indecision or uncertainty. Far from being a poet of withdrawn abstraction and hermetic opacity, Stevens' writing is permeated by a strong sense of its situation both within personal biographic time and collective historical experience, engaging with temporal pressures through the work of poetic form and its particular textures and tenses of speculation. In contrast to Auden's infamous claim that 'poetry makes nothing happen', Stevens' work insists on the significance of speculative experience, that which happens without happening, and on the value of poetry's quickening and intensifying of first-person experience, enabling us to inhabit the world as a place of material sufficiency rather than metaphysical lack.

## 12.40 **Unravelling the Tapestry of Language Skills in English as an Additional Language (EAL)**

*Chara Triantafyllidou, PhD in Theoretical and Applied Linguistics (ct620@cam.ac.uk)*

Children who speak English as an Additional Language (EAL) comprise about 20% of the pupil population in the UK. Their classification is broad and covers a mix of simultaneous and sequential bilinguals from a wide range of backgrounds and with varying levels of fluency in English. Despite their heterogeneity, EAL pupils have been consistently shown to underperform their monolingual peers in language attainment and reading (Department for Education, 2016), though the reasons behind their underperformance are not yet fully understood.

The aim of this project is to disentangle the various factors underpinning reading comprehension in EAL pupils, considering both linguistic (vocabulary, prosody, and grammar) and ecological factors (socioeconomic status and reading habits).

I will present preliminary data from an ongoing data collection which involves linguistic assessments, questionnaires, and two eye-tracking experiments – a listening and a reading experiment – comparing EAL pupils to monolingual peers in Year 5 (9-10 years old).

### Reference

Department for Education (2016). Statistical First Release: National Curriculum Assessments at Key Stage 2 in England: SFR 62/2016. London, UK.



## Session 3: Social Sciences: Education, Punishment and Politics

### Chair: Prof. Graham Virgo, Master of Downing College

***\*Please DO NOT take pictures of the slides. Thank you!\****

#### 14.30 **How Do We Make Our Teaching Laboratories More Inclusive?**

*Charlotte Oliver, Lucy Rowlands, Malcolm Stewart, Chemistry Teaching Laboratory, University of Oxford, Lincoln College Oxford (charlotte.oliver@lincoln.ox.ac.uk)*

There is growing discussion regarding how to make our teaching laboratory environments comfortable to a diverse range of students (Flaherty, 2022; Boval and Kennedy, 2018 ; Feo et al., 2023). However, there is an absence of instrumentation to assess this in the literature. This research has aimed to create a multi-dimensional understanding of how students are impacted by their laboratory environment, by developing a new survey and shadowing procedure. This methodology is a unique synthesis of first-person experience of the teaching laboratories with existing literature. Using the lens of inclusive design, the potential barriers for neurodivergent and disabled students as well as those with periods were particularly considered. Results are currently being collected and will be presented and discussed.

For a diverse cohort of students to be attracted to and retained within STEM, they need to be greeted with an environment that includes them.

#### 14.50 **The Human Rights Aspects of Corporal Punishment: Realizing Children's Overdue Entitlement to Equal Protection from Assault**

*Rick Aiyer, LL.M (ha547@cam.ac.uk)*

Only 14% of the world's children are fully protected in law from all corporal punishment. Since Sweden pioneered abolition over forty years ago, in 1979, merely 62 states have followed suit. This presentation will provide a brief overview of the human rights aspects of corporal punishment. In particular, it will discuss children's entitlement to equal protection from assault under the *UN Convention on the Rights of the Child*. It will also discuss children's entitlement to equal protection from assault as a derivative of the right to dignity and equality. It will then explore the divergence between theory and practice as well as the scope for judicial intervention, drawing on the Israeli decision in *Plonit* (which abolished the defence of "reasonable correction") and the Canadian decision in *Canadian Foundation* (which upheld a similar defence in Canadian criminal law). By way of conclusion, the presentation will challenge the belief that abolishing protection for corporal punishment risks exposing parents and caregivers to state enforcement for light "pats on the bum."

## 15.10 **In Her Own Words: A Study of Women's Voices in Contemporary White Supremacy and Far-Right Online Hate**

*Stephanie Foggett, PhD at the University of Cambridge Centre for Gender Studies  
(sf749@cam.ac.uk)*

Historical to contemporary understandings of white supremacist, far-right, and other violent extremist movements have largely focused on the participation and roles of men. This trend is not unique to the study of the far-right. Much of the literature within terrorism studies presents men as the primary actors and leaders, with the focus on men dominating historical accounts, academic literature, and popular perceptions of these groups and movements. The past decades have seen a greater focus by historians, political scientists, and policymakers on the complex roles that women have played within terrorist groups and movements over history, as well as the importance of understanding gender dynamics in terrorism and violent extremism more broadly. This research project seeks to better understand gender dynamics within contemporary white supremacy and the far-right and aims to foster a more comprehensive understanding of the movement as a whole.

## Session 4: Ecology & Environment

### Chair: Dr Zoe Barber, Vice Master of Downing College

***\*Please DO NOT take pictures of the slides. Thank you!\****

#### 15.50 **Harnessing Microbial Nitrogen Fixation for Sustainable Cereal Production**

*Bergthor Traustason, Antonis Papachristodoulou, Philip Poole, Department of Biology and Department of Engineering Science, University of Oxford, Lincoln College Oxford (bergthor.traustason@lincoln.ox.ac.uk)*

Utilising nitrogen-fixing soil microbes offers a sustainable alternative to synthetic fertilisers, reducing agricultural dependency on them and their associated environmental impacts. However, the natural ability of these microbes to efficiently colonise and transfer nitrogen to cereal crops is limited by complex biological controls. In this work, efforts are directed at addressing these issues by focusing on *Kosakonia radicincitans* DSM16656T, a nitrogen-fixing bacteria of significant interest, and gaining insights of its regulatory mechanisms and plant colonisation through RNA sequencing and high-throughput methodologies. The goal is to engineer it to respond to specific plant-derived signals, thereby enhancing the specificity and efficiency in nitrogen fixation. This study helps reveal the resource needs for nitrogen fixation and delivers insights that improve the development of targeted engineering strategies for sustainable cereal agriculture.

#### 16.10 **Enablers for Just Sustainability Transitions in the West African Cocoa Sector**

*Keessy Maria-Prisca Kouakou, Thomas Adoah, William Thompson, Joss Lyons-White, Federico Cammelli, Wilma Blaser-Hart, Johan Six, Rachael D. Garrett, Department of Geography and Conservation Research Institute (kmpk2@cam.ac.uk)*

Sweet chocolate is linked to socio-environmental challenges in West Africa, including deforestation, poverty, and smallholder farmers' vulnerability to climate change. Agroforestry presents solutions to restore degraded landscapes, mitigate climate change, and support smallholders' livelihoods. However, success remains limited despite chocolate companies' efforts to promote agroforestry in their sustainability initiatives. Through 105 semi-structured interviews and corporate sustainability policy reviews, this study identifies barriers and opportunities for scaling up agroforestry in the cocoa sector. Results show limitations to scaling agroforestry due to economic regimes based on exporting low-value cocoa and rising demand for cheap chocolate. To enable just transitions, reforms are needed to address tree tenure, broaden company initiatives beyond seedling distribution to supply shed development and shift narratives from zero deforestation to landscape sustainability and justice. Our findings suggest that policy reforms within the supply chain are crucial to scale up sustainable cocoa production and enhance smallholder resilience in West Africa.

## 16.30 **Governing Sacrifice in the 'Chilean Chernobyl': The Power and Politics of Extraction in Quintero-Puchuncaví, Chile**

*Sophie Parish, MPhil in Development Studies (scp65@cam.ac.uk)*

Resource extraction has been a key driver of industrial development since the beginning of the colonial period five hundred years ago. Today, extractivist policies continue to permeate the Latin American political landscape and are advanced by governments as an important driver of socioeconomic development. Such policies, however, have led to environmental and social devastation in regions rich in natural resources, whose natural environment and local population are 'sacrificed' in favour of economic development. In these 'sacrifice zones', local populations live alongside massive industrial complexes at great cost to their personal health and well-being. This research focuses on Chile's most famous sacrifice zone, Quintero-Puchuncaví. Through semi-formal interviews and participatory observation, this research explores the social, environmental and health impacts of the Ventanas industrial complex on the local population. The findings suggest that residents of the region are particularly vulnerable to human rights violations and demonstrate that in Chile, not all lives are valued equally.

## **Concluding Address**

### **Chair: Prof. Graham Virgo, Master of Downing College**

#### **17.00 Dr Daisy Hessenberger, PhD in Evolutionary Genetics, Downing College Alumna**

Our concluding speaker, Dr Daisy Hessenberger, is a Downing alumna who completed her BA Hons in NatSci (Plant Sciences) and her PhD in Evolutionary Genetics at the University of Cambridge. Daisy participated in the women's conservation and leadership expedition to the Antarctic in 2019. She has collaborated with businesses, NGOs, and solution providers to mobilize natural climate solutions, identify opportunities and barriers to investment, and share knowledge and technical capacity. She is currently a Global Subject Matter Expert in Nature & Biodiversity at Arcadis and provides thought leadership on the role of nature and specifically Nature-based Solutions (NbS) in working towards an improved quality of life.

#### **17.45-18.00 Concluding Thoughts and Remarks**

## Acknowledgements

We would like to thank all those who have helped bring the conference to fruition: the Internal Events Coordinator, the Howard Theatre and Conference Support Manager, Downing Catering, IT, Tutorial and Admissions, Alumni and Development, the Senior Tutor and Senior Bursar for their support, those speaking at and chairing the various sessions, the guest speaker and the Master.

Yin Yuan  
Cheri Au  
Chara Triantafyllidou  
Paul Millett

Please scan the QR Code below or use [this link](#) to provide feedback on the conference.

