

OXFORD MUSLIM
*Student
Research*
C O N F E R E N C E

Academia:
The Sacred Pursuit
of Knowledge



OXFORD UNIVERSITY
ISLAMIC SOCIETY

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MERTON COLLEGE
UNIVERSITY OF OXFORD

Welcome to OMRC 2020

Assalamu Alaikum,

Thank you for signing up to the 2nd **Oxford Muslim Student Research Conference (OMRC)**.

After a successful inaugural conference last year, with more than 120 students in attendance, OMRC is back for its second instalment. The conference aims to attract Muslim students and academics from Oxford and universities from all over the UK to share research, network and encourage the next generation of Muslim academics.

We hope you leave this conference inspired by the breadth of research conducted by Muslims across the UK, and with a better understanding of the 'Sacred pursuit of Knowledge'. We would like to extend our thanks to all the speakers and volunteers who have made this event possible, and we hope you enjoy a great conference!

The OMRC team



- 9:30 - 10:00 REGISTRATION
- 10:00 - 10:15 INTRODUCTION TO THE CONFERENCE
- 10:15 - 10:45 **'WHY MUSLIMS NEED ACADEMIA'**
DR USAAMA AL-AZAMI
- 10:45 - 12:10 RESEARCH PRESENTATIONS
*PROF AFAF EL-SAGHEER
ABDELKADER EL ALAOUI
IMRAN NAVED
IMAN MASMOUDI*
- 12:10 - 13:15 LUNCH BREAK & POSTER SESSION
DHUHR 12:16
- 13:15 - 14:35 RESEARCH PRESENTATIONS
*DR AMIR ZAYEGH
SAQUIB HUSSAIN
ABDULKHALIQ ALSAADI
DR SURIYAH BI*
- 14:35 - 15:30 TEA BREAK & POSTER SESSION
ASR 14:40
- 15:30 - 17:00 PANEL DISCUSSIONS
INSIGHTS INTO ACADEMIA
- 17:00 - 17:15 PRAYER BREAK
MAGHRIB 16:41
- 17:15 - 18:15 **'WHY ACADEMIA NEEDS MUSLIMS'**
DR JONATHAN BROWN

Merton College will be our venue for OMRC 2020. It is one of the constituent colleges of the University of Oxford, over 750 years old and occupying a central location in the city.

The main lectures will be held in the **T.S. Eliot Lecture Theatre**, while the adjacent forum and the **Mure Room** will be used for the lunch break, the poster session and the tea & coffee.

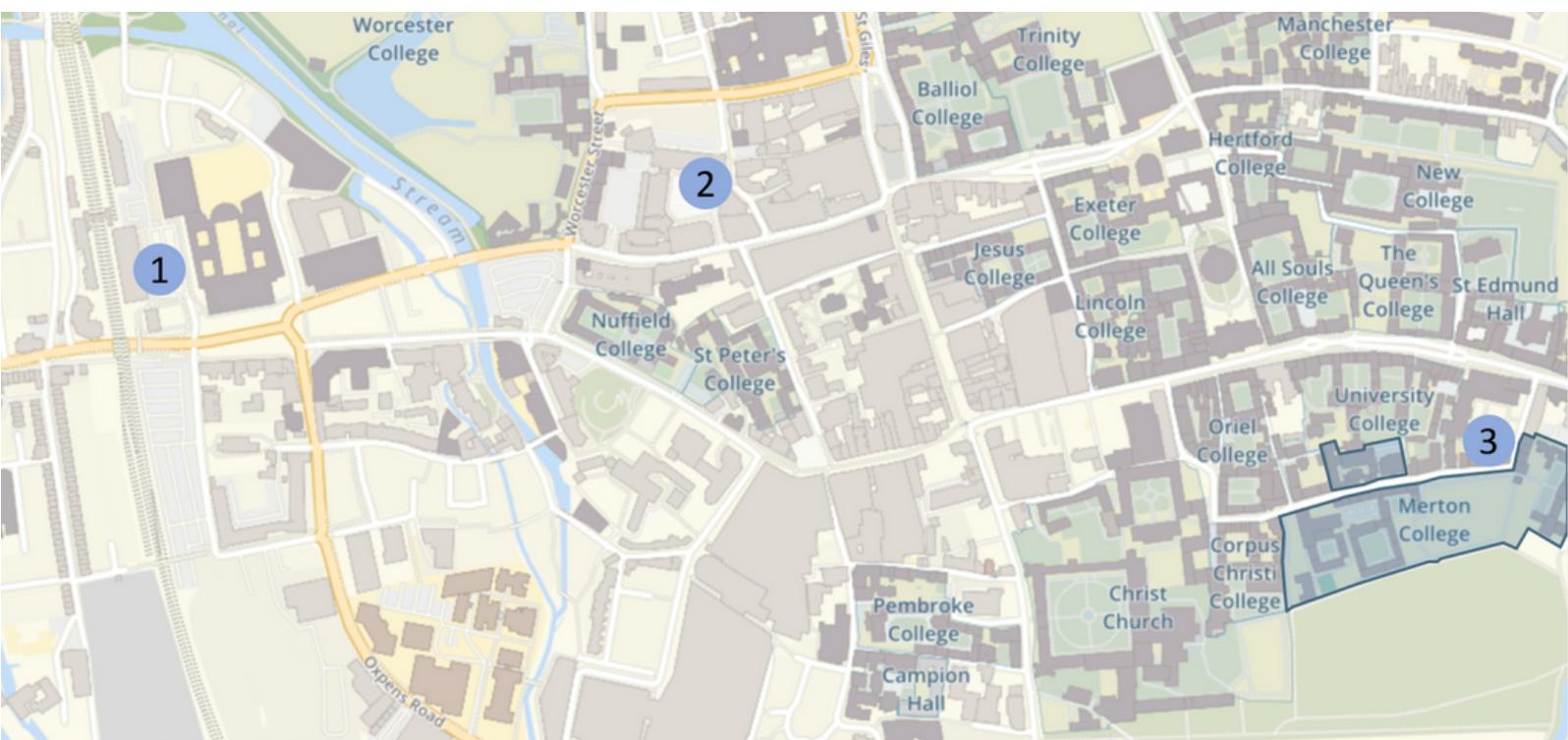
How to get there?

1) By train: The train station is marked below as '1'. It is a 20 minute walk from the train station to Merton College (marked '3').

2) By bus: If you are travelling to Oxford by bus, you will most likely arrive at Gloucester Green bus station (marked '2'). It is a 15 minute walk to the venue.

Please report directly to the main **Porters' Lodge**, where volunteers will direct you towards the main lecture theatre for registration.

Registration opens at **9:30**. Please arrive in good time to ensure that you are seated in time for the first session, starting at **10:00**.



The **Muslim Researchers' Network (MRN)** connects over 100 Muslim academics and students throughout the UK and beyond. We currently have sub networks for Islamic studies, Medical research, Biological sciences, Philosophy, Physics/Chemistry, Engineering and Economics.

MRN

MUSLIM RESEARCHERS' NETWORK

The primary aim is to share ideas and resources in order to benefit from the complementary experiences and connections of academics across different institutions. It is also a platform to advertise academic events and conferences of interest.

If you are interested in joining, please sign up at registration!



After the first set of research talks, we will be breaking for one hour. For lunch, a selection of vegetarian sandwiches will be provided. If you have specified any dietary requirements, please take your lunch from the section specified accordingly, or speak to one of our volunteers.

Throughout the lunch break, a poster exhibition will be on display. Out of respect for the speaker, please be back in the lecture theatre at **13:10**, in time for the second set of research presentations.



The afternoon coffee & tea break will provide an opportunity to speak to other attendees and network with students from your subject.

To facilitate discussions and networking, many of our speakers and panellists will be present in the vicinity of the posters, which will be showcasing the research done by some of our attendees. Drop by and have a look for what promises to be an interesting and inspiring exhibition!



'WHY MUSLIMS NEED ACADEMIA'

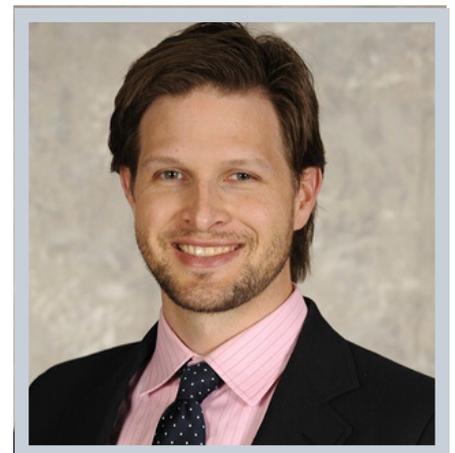


**DR. USAAMA
AL-AZAMI**
OXFORD UNIVERSITY

Dr Usaama al-Azami is the Departmental Lecturer in Contemporary Islamic Studies at Oxford University. He read his BA in Arabic and Islamic Studies at the University of Oxford, and his MA and PhD in Near Eastern Studies at Princeton University. Usaama al-Azami is primarily interested in the interaction between Islam and modernity with a special interest in modern developments in Islamic political thought. His PhD which he is working to develop into his second monograph is entitled "Modern Islamic Political Thought: Islamism in the Arab World from the Late 20th to the Early 21st Centuries". His broader interests extend to a range of disciplines from the Islamic scholarly tradition from the earliest period of Islam down to the present.

'WHY ACADEMIA NEEDS MUSLIMS'

Dr. Jonathan A.C. Brown is the Alwaleed bin Talal Chair of Islamic Civilization in the School of Foreign Service at Georgetown University, and the Director of the Alwaleed bin Talal Center for Muslim Christian Understanding. He received his BA in History from Georgetown University in 2000 and his doctorate in Near Eastern Languages and Civilizations from the University of Chicago in 2006. Dr. Brown has studied and conducted research in countries such as Egypt, Syria, Turkey, Morocco, Saudi Arabia, Yemen, South Africa, India, Indonesia and Iran. The author of "Hadith: Muhammad's Legacy in the Medieval and Modern World", he has published extensively on Hadith, Islamic law, Salafism, Sufism, Arabic lexical theory and Pre-Islamic poetry.



**DR. JONATHAN
A.C. BROWN**
GEORGETOWN UNIVERSITY



**PROF. AFAF
EL-SAGHEER**
CHEMISTRY

Afaf studied Chemistry at Suez Canal University (Egypt) and did her PhD at Southampton University with Professor John Mellor then moved back to Egypt to become a lecturer. She was promoted to Associate Professor in 2009, then Professor in 2014 at Suez University. Afaf is now working as a chemical biology research fellow/long term academic visitor (Chemistry Department at Oxford) on the use of click chemistry to assemble novel long modified biocompatible DNA and RNA constructs for modified gene synthesis, and on new methods of DNA synthesis and its applications in biology and medicine (diagnostics and therapeutics).



EXTENDING THE BOUNDARIES OF NUCLEIC ACIDS FROM CHEMISTRY TO APPLICATIONS

Chemical ligation of DNA strands can be used to produce artificial DNA backbones which have potential for use in therapeutics and synthetic biology. Next-generation sequencing analysis of modified DNA templates that can be read through and copied accurately by DNA polymerases explained our backbone modifications and confirmed our hypothesis of the ability of these modifications in mimicking the native phosphate backbone. These results provide insights into the design of biocompatible backbone mimics that could be used in the assembly of large modified DNA and RNA constructs and used in various applications including Crispr gene editing. Modified backbones can also be applied in short modified therapeutic oligonucleotides for higher affinity and enzymatic stability



DR. ABDELKADER
EL ALAOUI
ECONOMICS

Abdelkader El Alaoui is currently a Visiting Academic (Research fellow) at OCIS-Oxford University, UK. He was Associate Professor of Finance and “Director of Research” at ESCA School of Management, Casablanca. He does research in Financial Economics. His current research interests include Islamic Finance, Corporate Finance, Capital Markets, Portfolio Selection, Risk Management, Asset Pricing, Nonparametric Estimation and Testing. He published several chapters in International books and articles in SSCI-indexed journals as “Journal of Economic Behavior & Organization”, “Journal of International Financial Markets, Institutions & Money (JIFMIM)”, and “Economic Modelling”. Abdel-Kader (PhD in Islamic Finance, INCEIF – Malaysia) held the position of visiting research fellow at “Durham Business School – UK”. He previously taught at “Paris Dauphine University”, “International University of Rabat” and CESAG, Senegal.



SHARI’AH SCREENING, MARKET RISK AND CONTAGION: A MULTI-COUNTRY ANALYSIS

This study investigates the relationship and shock transmission between firm leverage and systematic risk within the Shari’ah stock screening rules among seven European countries. Due to the fact that high leverage augments systematic risk and accentuates the firm’s vulnerability to shocks, debt screening is used to examine the sampled portfolios. As it imposes limits on debt, we examined the impact of such an ethical screening and a risk moderating principle on stock volatility, susceptibility to contagion and the implications for portfolio diversification. Using a vector autoregressive dynamic panel of multi-country framework, systematic risk is analysed by taking into account firm characteristics, country effects, and the heterogeneity across firms, thereby ensuring the robustness of results. Our findings suggest that the systematic risk changes with changes in the capital structure; the Shari’ah-compliant stocks are shown in most cases to carry less risk than conventional stock, while they do not necessarily out-perform in terms of return; during the global financial crisis. We conclude that during the global financial crisis, Islamic compliant stocks demonstrated lower values of systematic risk in the case of ‘Low Debt’ portfolios when comparison to ‘High Debt’ portfolios.



IMRAN NAVED
AEROSPACE
ENGINEERING

Imran Naved is a DPhil student in Oxford Hypersonics Group at the University of Oxford. His research interests are mainly tied to the thermal management of hypersonic vehicles, specifically transpiration cooling. Transpiration cooling is a method of cooling where a coolant gas is injected through a porous material, which then extracts heat from the material by convection, and then ejects onto the surface, forming a thin film of gas around the vehicle. Within this larger project, his focus is conducting a systems level study on the implementation of transpiration cooling as an active cooling system for a hypersonic wing leading edge, specifically the fore-plane canards of the SKYLON spaceplane.



DEVELOPING NEXT GENERATION ACTIVE COOLING SYSTEMS FOR HYPERSONIC SPACEPLANES

Hypersonic vehicles are exposed to very high heat fluxes and heat loads during re-entry or sustained flight. This requires thermal protection systems to manage these heat fluxes and keep wall temperatures below critical values. Transpiration cooling is an active cooling technique that is envisaged for future hypersonic vehicles. It relies on a gaseous or liquid fluid which is fed through a porous wall material. The coolant leads to internal convective cooling between the porous material and the fluid, and a protective film that keeps the hot external gas away from the surface. Transpiration cooling provides alternative flexibility in the design of future hypersonic vehicles. The highlight of which is the ability to re-use the entire thermal protection system, and activate cooling only when required.

In particular, transpiration cooling has been identified as a leading candidate to mitigate the heat flux enhancement due to shock-shock interactions. My presentation will describe a combination of experiments and numerical simulations conducted in the Oxford Thermofluids Institute to investigate the application of transpiration cooling for this system with some preliminary results of these investigations.



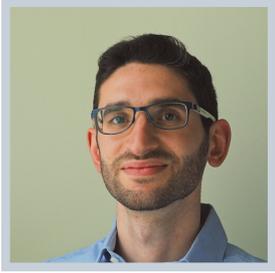
IMAN
MASMOUDI
ISLAMIC STUDIES

Iman Masmoudi is an MPhil Student at the University of Cambridge studying Classical Islamic History and Culture as a Paul Williams Fellow from Harvard. She earned her honors BA in Social Studies and Near Eastern Languages and Civilizations at Harvard where she wrote a prize-winning thesis on her presentation topic at this conference. She was also a Mellon Mays Undergraduate Fellow and a Weatherhead Fellow with which she conducted projects with various NGOs and Research Centres in Malaysia, The Republic of Georgia, Tunisia, and Mauritania. Iman is the President of TŪNIQ, a manufacturing cooperative offering ethical clothing from sheep to shop.



THE BROKEN CHAIN: UNDERSTANDING THE MODERN CRISIS OF ISLAM THROUGH THE RUPTURE OF TRADITIONAL EDUCATION

This study proposes a new way of understanding the modern crisis of Islam as a pedagogical and epistemological conflict, rather than a political or religious one. I first explore the premodern approach to Islamic pedagogy, one of the most consistent and well-developed fields in the Islamic intellectual tradition, through a study of medieval texts on knowledge transmission. I supplement this study with a brief anthropological examination of a traditional learning community in Mauritania. I then investigate the historical process of modernization and bureaucratization of this pedagogical system across the Muslim world through an overview of relevant secondary literature in addition to my own study of French-occupied Tunisia, conducted through archival research and interviews, in order to show the development of modern state-controlled Islamic education. Finally, I make the argument that these two approaches to the transmission of religious knowledge are based on divergent understandings of what Islam is and how it can be known and lived. I suggest that this fundamental shift may help us in understanding modern approaches to living Islam, most notably, violent anti-traditionalism. Using a variety of methods, I make a historical and theoretical argument, viz. that the intervention of modernizers, colonizers, and state actors into the premodern Islamic educational system has produced a new form of Muslim subjectivity which is disembodied, bureaucratized, and functionalized, rather than organic, personal, and living.



DR. AMIR ZAYEGH
MEDICINE

Amir Zayegh is an Australian trained Neonatologist (a paediatrician specialised in the care of premature or sick infants) who began working as a consultant neonatologist at the John Radcliffe Hospital in September 2019. He is also completing a Masters in Practical Ethics at the Oxford Uehiro Centre for Practical Ethics. His research interests include medical ethics in children and adults, and clinical interests include neonatal brain injury and use of bedside ultrasound.



DEFINING SUFFERING IN INFANTS AND YOUNG CHILDREN: A MULTILEVEL VIEW

The relief of suffering is one of the most fundamental goals of Medicine. Despite this, the nature of suffering has received surprisingly little attention in medical literature, especially when it comes to infants and young children. An inconsistent definition and language of suffering harms infants in multiple ways. It can lead to inadequate recognition and treatment of pain and discomfort, poor communication and mistrust between clinicians and families, and leaves room for both clinicians and parents to smuggle in (mostly unconsciously) their views and biases when weighing up treatment options.

In this paper I propose a multilevel view of infant suffering which includes subjective and objective components. The strength of such a model is that it is inclusive because it accepts several ways in which clinicians and caregivers can claim infant suffering, while encouraging clarity and consistency when making claims of suffering. This breadth and consistency is helpful in encouraging different approaches when responding to different forms of suffering. It also creates a moral impetus to improve how we detect and treat suffering. Finally, it can reduce claims of suffering being used by decision makers to smuggle in their own values into determining best interests for the infant.



SAQUIB
HUSSAIN

ISLAMIC STUDIES

Saqib Hussain is a doctoral student at the University of Oxford, holding a scholarship from the AHRC. He has studied for several years in Damascus and Cairo, focussing on Arabic and Qur'anic exegesis. His DPhil research is on the term "wisdom" in the Qur'an, and its possible connection to late antique notions of natural law and apocalypticism. More broadly, he is interested in the relationship between the Qur'an and its antecedent religious traditions, particularly Biblical, patristic, and rabbinic. He has forthcoming chapters on Qur'anic textual criticism in the edited volume *Unlocking the Medinan Qur'an*, on the prophets Jonah, Job, Elijah, and Ezra in the edited volume *Biblical Traditions in the Qur'an*, and on David and Solomon in the proposed edited volume *Theology of Prophecy in Dialogue*.



THE QURANIC DECALOGUE

Several classical mufassirūn and many modern Qur'an scholars have recognised that *Sūrat al-Isrā'* presents its own version of the biblical Decalogue, or Ten Commandments. Although there have been several studies devoted to this qur'anic Decalogue, most have simply compared it to its biblical precursor in Exodus and Deuteronomy. This reveals a significant and inexplicable gap between the biblical and qur'anic versions. However, instead of taking the biblical Decalogue as our point of departure, if instead we focussed on the way the Decalogue had developed in later books in the Hebrew Bible, in the New Testament, in early Jewish literature, and most importantly in the Patristic tradition, then the qur'anic Decalogue is seen to be an organic continuation of the biblical and para-biblical traditions. Furthermore, such a comparative study sheds light on what might be meant by the phrase that concludes the qur'anic Decalogue: "That is from what you Lord has revealed to you of wisdom" (Q 17:39). As I will show, there was a clear Decalogue-natural law-wisdom nexus in late antiquity, in light of which this verse is endorsing the idea expounded by the church fathers that the Decalogue is natural law.



**ABDULKHALIQ
ALSAADI**
MOLECULAR
MEDICINE

Abdulkhaliq Alsaadi is a DPhil student and Clarendon scholar at the University of Oxford. Abdulkhaliq did his undergraduate studies at the University of Leicester, from which he graduated with a BSc degree in Medical Genetics. During this time, Abdulkhaliq developed a scientific interest in cancer genetics. To pursue his interest further, Abdulkhaliq secured an MPhil Research Award in Oct 2014 to join the laboratory of Dr Marc de la Roche at the University of Cambridge, investigating properties of intestinal stem cells. Currently a DPhil student, Abdulkhaliq's research focuses on identifying Fallopian tube stem cells, which have not been identified to date. His unpublished work featured in a BBC News coverage and was the subject of his interview with the Diane Oxberry Trust.



IDENTIFICATION AND CHARACTERISATION OF FALLOPIAN TUBE STEM CELLS USING PATIENT-DERIVED ORGANOIDS

The human Fallopian tube is an organ of prime importance to human reproduction and fertility. Despite this, our understanding of general Fallopian tube biology is nascent and lagging in comparison to other organs. How the Fallopian tube regenerates is a central question that remains unresolved; in other words, Fallopian tube stem cells have not been identified or characterized. Traditionally, researchers grow patient or animal-derived cells in 2D culture on plastic dishes, using a minimal growth medium. Such culture conditions are not only poorly reflective of in vivo conditions, but also exhaust stem cells, precluding studies on them. Recently, organotypic culture methods (or organoids) were pioneered to enable growth of cells in a three-dimensional scaffold of Extracellular Matrix. Organoids are maintained using advanced culture medium containing recombinant proteins that selectively stimulate stem cells to self-renew and differentiate. The result is the re-creation of the organ in the lab, from its resident stem cells, to give rise to self-organizing and self-renewing 'mini-organs' or organoids. Here, we use single cell RNA-sequencing and patient-derived organoids to identify and characterize Fallopian tube stem cells, and show that a small percentage of cells within these organoids possess the potency to give rise to all other cell types.



DR. SURIYAH BI
GEOGRAPHY

Suriyah completed her BA (Hons) in Human Sciences at Magdalen College, University of Oxford (2014) during which she received a scholarship to study at Stanford University's Sophomore College. She then completed her MA at SOAS (2015), after which she pursued her PhD at University College London, which she has recently successfully defended (July 2019). During the final year of her PhD Suriyah was a Research Fellow at Yale University under Professor Marcia Inhorn's supervision. Suriyah is currently lecturing at the School of Oriental and African Studies (SOAS) University of London. Her research interests include: migration, transnational migration, gender studies, anthropology of Islam, British Muslims, social mobility and social policy. Outside of academia, Suriyah has worked as a Parliamentary Researcher and has founded the Equality Act Review campaign to protect and improve the Equality Act 2010.



EXPERIENCES OF MUSLIM STUDENTS DURING TROJAN HORSE AFFAIR SCANDAL

The Trojan Horse Affair scandal alleged that there was a hardline extremist Islamism plot to take over British state schools in Birmingham. While community groups and government officials battled to take control of the narrative, the pupils who were ultimately at the centre of the scandal, were not considered. This paper attempts to write in the experiences of the students, and critically assess the ways in which the affair affected them at the time, and how it could go on to affect their social mobility and life outcomes in future. The paper is based on research conducted in 2015, with students at one of the schools implicated in the Trojan Horse Affair. Through seven one-to-one interviews and a group discussion, the research finds that students portrayed their selves in a state of constant psychological reconciliation due to the heightened mediatization, racialization, and securitization of Islam and Muslims, during and after the Trojan Horse affair. This caused increased levels of anxiety in students, which peaked around the constant surveillance through the gaze of the media, teachers, and Ofsted inspectors, creating a double-edged Panopticon. The paper particularly underscores student concerns for potential social exclusion and discrimination they may experience as a result of the school affiliation.

'INSIGHTS INTO ACADEMIA'

What are the actual realities of an academic career? To learn more about this, we invite you to join our moderated panel discussions with experienced researchers from a broad range of disciplines.

FORMAT

Based on the questions that you submitted before the conference, we will be discussing three areas of questions:

1. Entering academia
2. Progressing through academia
3. Life as an academic

Each topic will be discussed for 30 minutes. First, the moderator will introduce the topic and ask the panellists to present their general thoughts. Then, we will open up the floor for 15 minutes to give you the opportunity to ask in-depth questions. We encourage you to derive maximum benefit from this session by seriously thinking about the aspects of an academic career that you know little about, are unsure of, or find off-putting, and by preparing good questions.

PANELLISTS

There will be two separate panels, split by academic disciplines:

The sciences panel will feature Dr. Mohamady El-Gaby (Neuroscience), Prof. Afaf El-Sagheer (Chemistry), Dr. Wahbi El-Bouri (Engineering) and Dr. Asli Kalin (Primary Care). Contemporaneously, the social sciences & humanities panel will host Prof. Masooda Bano (Development Studies), Karim Elmehairy (Education), Dr. Muhammad Meki (Economics), and Dr. Usaama al-Azami (Islamic Studies). The two panels will be taking place in the T.S. Eliot Lecture Theatre, Merton College, and the adjacent Daubeny Lab, Magdalen College. Please follow directions on the day.

To enable you to address your question to the panellists most suited to answer it, you can find their brief biographies on the following pages.



Panellists

HUMANITIES & SOCIAL SCIENCES



**PROF. MASOODA
BANO**

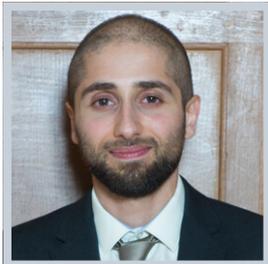
DEVELOPMENT STUDIES

Masooda Bano is Professor of Development Studies at the Department of International Development, University of Oxford, and William Golding Senior Fellow at Brasenose College. She lectures on Research Methods and Development Studies for the MPhil in Development Studies, and supervises MPhil and DPhil theses. Her primary area of interest rests in studying the role of ideas and beliefs in development processes and their evolution and change.

Karim is finalizing a Doctorate of Philosophy (DPhil) in Education at the University of Oxford, working with the Learning and New Technologies Research Group (LNTRG). He has started-up, launched and operated a variety of technology-based and non-technology based products, the last of which is Learnapp, a social network for learning.



**KARIM
ELMEHAIRY**
EDUCATION



**DR. MUHAMMAD
MEKI**
ECONOMICS

Muhammad is a development economist, and currently a post-doctoral researcher affiliated with the Department of Economics and Pembroke College, Oxford. In 2020 he is due to begin a new academic position, as a fellow at the Oxford Centre for Islamic Studies and a lecturer at the Oxford Department for International Development. He completed his PhD in 2018 from the Department of Economics, Oxford (St John's College). In his research, he is interested in the effect of equity-like financial contracts, which involve profit and loss sharing and / or shared ownership, on the investment and growth of small firms in low-income countries.

Dr Usaama al-Azami is the Departmental Lecturer in Contemporary Islamic Studies at Oxford University. He read his BA in Arabic and Islamic Studies at the University of Oxford, and his MA and PhD in Near Eastern Studies at Princeton University. Usaama al-Azami is primarily interested in the interaction between Islam and modernity with a special interest in modern developments in Islamic political thought.



**DR. USAAMA
AL-AZAMI**
ISLAMIC STUDIES

Panellists

SCIENCES



**DR. MOHAMADY
EL-GABY**
NEUROSCIENCE

Mohamady obtained an MSc and a PhD in Neuroscience from University College London and Cambridge University respectively. He is currently a Postdoctoral Research Associate and Tutor in Neuroscience at Oxford University. His research aims to elucidate learning-related computations at the cellular level, by bringing together concepts and techniques from molecular biology, network physiology and experimental psychology. He also teaches Neuroscience to undergraduate students at Oxford University, both in college tutorials and departmental lectures.

Afaf studied Chemistry at Suez Canal University (Egypt) and did her PhD at Southampton University with Professor John Mellor then moved back to Egypt to become a lecturer. She was promoted to Associate Professor in 2009, then Professor in 2014 at Suez University. Afaf is now working as a chemical biology research fellow/long term academic visitor (Chemistry Department at Oxford) on the use of click chemistry to assemble novel long modified biocompatible DNA and RNA constructs for modified gene synthesis, and on new methods of DNA synthesis and its applications in biology and medicine (diagnostics and therapeutics).



**PROF. AFAF
EL-SAGHEER**
CHEMISTRY



**DR. WAHBI
EL-BOURI**
ENGINEERING

Wahbi El-Bouri is a postdoctoral research assistant in the Cerebral Hemodynamics Group at the University of Oxford. He is also a Research Fellow and Tutor in Engineering at Keble College. Wahbi's research interests are primarily related to the brain. In particular, how does the microcirculation affect blood and oxygen transport in the brain? What happens when things go wrong? Can we link what we can measure in humans e.g. MRI scans to what we cannot see (the capillaries) in order to help us better understand the mechanisms of disease? He is also actively involved in outreach initiatives in the wider university.

Asli an academic clinical fellow in General Practice at the Department of Primary Care. After studying medicine at Oxford and Cambridge, she completed core medical training in Oxford and did a Masters in Public Health at Harvard. She is currently working clinically 2 days a week and is conducting qualitative research in health technologies as well as leading the global health module of the new MSc in Translational Health Sciences.



**DR. ASLI
KALIN**
PRIMARY CARE

AFROSE DOR	Shifts of Attention within Working Memory, in Ageing and Anti-NMDA Receptor Encephalitis Patients
AMINA WAHEED	Literature Review on Systemic Sclerosis Treatment
ASMA LEBBAKHAR	Equality and Diversity in UK secondary schools
AYESHA MUSA	Investigating Ca ²⁺ signalling through canonical and novel ligand gated ion channels in the sympathetic stellate ganglion in health and hypertension
EBRAHIM PATEL	What is the optimal railway network?
HABIBULLAH MUHAMMAD-KAMAL	Ayurvedic Interventions for Managing Type-2 Diabetes
HANNAH RANA	Thermal analysis of planetary landers for lunar exploration
DR. KHOSRUH RAHMAN	Revitalising Islamic Environmental Ethics and Education – A Way Forward to Tackle the Environmental Crisis
MAARIYAAH SHAHEEN	Interdisciplinary Duel: Evaluating Neuroscience and Education as a concept
MAAZ KHAN	3D diffusion-weighted MRI tractography of the arcuate fasciculus in healthy young children
MERVE CETINKAYA	The Relationship between Sufism and Well-Being in terms of Mental Health: The Example of Sufism in Britain
MHARAB CHOUDHURY	PDE activity in human primary myometrial cells
MINAHIL MUJAHID	The Effect of Isoliquiritigenin on the HERG Potassium Channel
NADIA ZAMAN	Validation of a Novel System to Automatically Analyse Diaphragmatic Electromyography as a Measure of Neural Respiratory Drive
REFIKA ARABACI	Cultural, national, and global identities and their relationships with citizenship education in the English secondary schools
SHABINA BEGUM	Child and Forced marriage in the UK and Malaysia
TAYYABA KOMAL	Structural Guided and novel P. vivax Vaccine Candidates for malaria Vaccine Development
WAHEED-UL-RAHMAN AHMED	Untangling the genetics behind varicose veins
YUSUF CHAUDHARY	Challenging the Decline Narrative: Muslim Scholars and the Islamisation of the Mongol Ilkhanate

INTERACTION OF ATTENTION AND WORKING MEMORY

AFROSE DOR

Attention can bias resources to particular representations in working memory (WM) allowing them to be more readily accessible and maintained with greater fidelity. This interaction of attention and WM can be investigated using a 'retrocue' experiment and error sources can be examined using probabilistic mixture modelling. Here I report such results in young healthy controls (YHCs), elderly healthy controls (EHCs) and for the first time in anti-NMDA receptor encephalitis patients (NMDA patients). Previous studies provide an inconclusive picture as to the presence of a retrocue benefit in EHCs and the basis of their WM impairment. I found that the retrocue benefit is observed in EHCs, even with the use of an incidental retrocue, and they do demonstrate greater feature misbinding compared to YHCs in this task. Post-treatment NMDA patients do not exhibit any significant overall WM insufficiencies. However, my results hint at an attentional deficit implied by greater guessing errors and the lack of a retrocue benefit. This remains to be confirmed with larger patient cohorts. Our results add to the growing literature on WM shortfalls in EHCs and long-term neuropsychological deficiencies in NMDA patients.

LITERATURE REVIEW ON SYSTEMIC SCLEROSIS TREATMENT

AMINA WAHEED

Introduction: Systemic sclerosis (SSc) is a rare chronic disorder of connective tissue affecting the skin and internal organs, such as the skin, lungs, heart, blood vessels and kidneys. The molecular mechanisms behind SSc are not entirely understood, but recent advances highlight the involvement of TGF- β and PDGF pro-fibrotic pathways. This disrupts tissue architecture resulting in significant morbidity and mortality³. Therefore there is a clear need for identifying efficacious antifibrotic treatment. Imatinib is a tyrosine kinase inhibitor with established use in certain malignancies. There is existing evidence that imatinib inhibits pro-fibrotic pathways. The aim of this literature review is to summarise the current evidence and possible future development of imatinib as antifibrotic treatment in SSc.

Methods: PubMed headings "systemic sclerosis", "scleroderma", "imatinib" and all synonyms were used for the search. 14 studies were selected out of 88 results, based on the eligibility criteria.

Results: Of the 14 studies, 9 showed imatinib had positive efficacy in the treatment of SSc, through improved lung function and reduced modified Rodnan skin score. 5 showed negative efficacy, due to lack of tolerability and improvement, and also one case of death.

Discussion: There is conflicting information for the use of imatinib in SSc, with imatinib being efficacious for some, but not others. A dose-dependent relationship seems to exist for imatinib toxicities. The heterogeneity of patient populations across trials places limits on comparability in outcome.

Conclusion: Overall, current evidence suggests that imatinib is a useful therapeutic agent to improve manifestations related to SSc. More extensive research is required to establish safe dosage. Research suggests it is possible to distinguish the patients that may benefit from imatinib treatment by looking at gene expression profiles. Studies have also shown that NOTCH signalling can be exploited to increase imatinib uptake into fibroblasts and, therefore increasing efficacy.

EQUALITY AND DIVERSITY IN UK SECONDARY SCHOOLS

ASMA LEBBAKHAR

The phenomenon of globalisation and the free movement of people within the EU mean that the 21st century Britain is more diverse than at any point in its history. This brought the issue of equality to the political scene and discussions about diversity were taking place. The requirement for the implementation of equality and diversity in terms of sex, race, disability, pregnancy, as well as religion and belief, in education has engendered a growing interest amongst researchers. Education influences considerably the development and the outline of a society; therefore, the school has a crucial role in supporting our diverse society and contributes a great deal in the development of students' attitudes, values and knowledge. The concept of equality and diversity has to be implemented in a learning environment as a whole: teaching and learning, students' interaction, school life, extracurricular program and decision-making. The objective of equality and diversity in education is to promote positive attitudes towards the increasing diversity in the school. learn and experience the language, histories and cultures of minority groups present in the school. The aim of this study is to undertake an enquiry to investigate the provision of equality and diversity in secondary schools in England. This enquiry will explore teachers' awareness of the social context they work in and the perception of their enactment of the concept of Equality and Diversity education in their practice. Then, it will look at the skills and competencies of professionals needed in this new environment in order to facilitate an inclusive classroom and understand diversity. Finally, it will also explore teachers' perception and experiences in teaching equality and diversity in the classroom.

WHAT IS THE OPTIMAL RAILWAY NETWORK?

EBRAHIM PATEL

We present a straightforward algorithm to optimise a railway network. Starting from some assumptions and a basic understanding of the mathematics, we show that the network can be optimised by considering only network structures such as circuits. The algorithm is applied to an abstraction of the British railway network, which concludes with a novel proposal for the structure of the optimal railway network.

AYURVEDIC INTERVENTIONS FOR MANAGING TYPE-2 DIABETES

HABIBULLAH
MUHAMMAD-KAMAL

Background: Ayurvedic medicine is used in South Asia and migrant communities in the UK to treat type-2 Diabetes. Assessing the effectiveness and safety of ayurvedic medicines for Type-2 Diabetes is therefore important for clinicians.

Aim: To ascertain the safety and effectiveness of ayurvedic Interventions for the management of type-2 Diabetes.

Methods: MEDLINE (1946-2018), EMBASE (1985-2018), AMED (1985-2018), the Central Trials of the Cochrane Database (1996-2018) and additional reference lists of previous reviews were searched for randomized controlled trials of any duration investigating known ayurvedic herbs Fenugreek or Bitter Melon for glycaemic control, adverse events and health related quality of life in T2DM patients. Independent screening and extraction was completed by 3 authors. Heterogeneity was quantified using I² and explored using subgroup analyses based on herbal preparation, timing of outcome measurement, comparator (active vs placebo) and location. Publication bias was assessed by funnel plot and Egger's test.

Results: 11 papers out of 2030 were analysed with 10 meta-analysed. These enrolled 917 participants total. In general, these interventions decreased blood sugar levels; any herbal treatment PPBG (SMD -1.57; 95% CI -2.61, -0.52; I² = 96%), Fenugreek PPBG (SMD -1.63; 95%CI -2.98, -0.29; I² = 97%;), Bitter Lemon PPBG (MD -46.16; 95%CI -67.72, -25.23; I² =37%). Pooled results were sensitive to investigations of heterogeneity, showing significant differences between subgroups- notably with significant decreases with active comparators (MD -7.13; 95% CI -11.29, -2.96; I² =99%). Risk of adverse events did not change with intervention (RR 1.40; 95% CI 0.94, 2.08; I²=0%;). Health related quality of life was not reported. There was not enough power to reliably detect publication bias, however it was not indicated from funnel plots.

Conclusions: There is evidence in this review to suggest blood glucose lowering effects of Ayurvedic interventions. More high quality RCT's are needed on side effects, adverse events and health related quality of life.

THERMAL ANALYSIS OF PLANETARY LANDERS FOR LUNAR EXPLORATION

HANNAH RANA

The European Space Agency (ESA), in collaboration with other space agencies, have worked to develop technology to further advance the horizons of lunar exploration. With the upcoming Luna-27 mission, a collaboration with the Russian Space Agency, this research presents several thermal design considerations that need to be made in order to permit suitable landing, ensure thermal environment protection, and enable successful extraction of resources from the moon. The latter of these research efforts form part of the larger aim of establishing sustainable methods for utilizing resources on the moon, bringing us one step closer to realising a 'Moon Village'.

REVITALISING ISLAMIC ENVIRONMENTAL ETHICS AND EDUCATION - A WAY FORWARD TO TACKLE THE ENVIRONMENTAL CRISIS

**DR. KHOSRUH
RAHMAN**

The environmental crisis represents one of the most significant challenges facing humanity. There is a growing realisation that the roots of this crisis are both metaphysical and philosophical in nature. It is in this light that Islamic Environmental Ethics is becoming a growing academic discipline exploring the environment themes contained within the Qur'an. This research provides an overview of how this branch of knowledge is starting to re-shape our world view and the efforts that is taking place in translating the eco-ethics of Islam into practice.

INTERDISCIPLINARY DUEL: EVALUATING NEUROSCIENCE AND EDUCATION AS A CONCEPT - INSIGHT INTO CURRENT AND FUTURE INTERVENTION OF IMPROVING NUMERICAL ABILITY IN PRIMARY SCHOOLS

**MAARIYAAH
SHAHEEN**

Neuroscience has been criticised for adding a scientific attire to its interdisciplinary counterparts. Conversely, neuroscience has proven itself in providing a connective tissue between theory and application, namely in the field of education. The relationship between neuroscience and education and how this relationship is submissive to the progression of learning and education in the classroom is explored. By outlining present and future methods of neuro-based intervention, both the success and failure of interdisciplinary solutions such as group based intervention, non-invasive brain stimulation and the role of technology are critically analysed. Broadly, the question is beyond neuroscience and education and spans across to the very nature of scientific application and how we understand its role as a weapon of instruction or destruction for its counterpart. To better understand this relationship, an insight into current and future interventions of improving mathematical ability are investigated. This includes the exploration of current numerical ability impairments and more broader immaturities across the population and how such deficiencies are being addressed in primary schools. The future prospects of improving this is assessed against the current and prospective neural models for improving numerical ability.

3D DIFFUSION-WEIGHTED MRI TRACTOGRAPHY OF THE ARCUATE FASCICULUS IN HEALTHY YOUNG CHILDREN

MAAZ KHAN

Introduction and Objectives: Epilepsy is one of the most common neurological disorders, affecting approximately 1% of all children. A subtype of epilepsy arises from the temporal lobe – this is often intractable in children, meaning it does not respond to a minimum of two or three different types of anti-epileptic drug. For these patients, surgical resection is required, which results in an 80% seizure reduction in 71% of cases. However, due to left-lateralisation of language processing, this can cause a decline in verbal memory, resulting in language impairment. This effect could be minimised by avoiding resection of the arcuate fasciculus. These fibres can be estimated non-invasively using diffusion-weighted imaging and tractography.

Methods: Raw diffusion-weighted MRI data using the multi-shell HARDI and CUSP protocols were obtained from n=30 children of 108-131 months of age. These DICOMS underwent pre-processing (denoising, motion-artefact correction, Eddy current-induced distortion correction, topup and skull stripping) in order to remove artefacts. The T1-weighted image was used to produce manual regions-of-interest in the anterior inferior frontal gyrus (pars opercularis and pars orbitalis) and posterior superior temporal gyrus, and regions-of-avoidance in the fronto-temporal space and median plane. The intracranial cavity binary mask was used for sub-voxel whole-brain seeding. The T1, T2 and DWI data and masks were used to perform tractography using various models, namely, ball-and-sticks (FSL), constrained quaternion interpolation (CRKit) and multi-shell multi-tissue constrained spherical deconvolution (MRtrix), and the model-free generalised q-sampling imaging technique (DSISudio). These tracts were post-processed to exclude aberrant fibres.

Results: In all 30 children, tracts of the arcuate fasciculus were produced accurately.

Conclusion: We have produced estimates of the course of the arcuate fasciculus tracts in children. These can guide future neurosurgical resection procedures to minimise verbal memory decline in children with intractable temporal lobe epilepsy.

THE RELATIONSHIP BETWEEN SUFISM AND WELL-BEING IN TERMS OF MENTAL HEALTH: EXAMPLE OF SUFISM IN BRITAIN

MERVE
CETINKAYA

Previously published studies have focused on exploring the effects of spiritual practice on different well-being variables. This large body of research has predominantly concentrated on practice as a key element of spirituality. In this research, an empirical study of spirituality will be undertaken in order to identify the relationships that exist between Sufi practice and mental well-being; it employs interviews with British Sufis in different contemporary groups. The research explores Sufi spirituality among British Sufis. Previous research into spirituality has been derived from Christian or Buddhist religious norms and beliefs. Sufi groups have not featured in these inquiries into spiritual well-being, and this absence will be the focus of the proposed study. In particular, there will be a focus on how Islamic-based spirituality, as expressed by British Sufis, may contribute to well-being.

Islamic spiritual practices may help to improve and protect the well-being of individuals. It might be an alternative for Mindfulness or Cognitive behavioural therapy for Muslim or non-Muslims. The presentation highlights the relationship between Spirituality, Secularisation and Sufism in Britain, as well as presents the multiplicity approach of traditional Sufism regarding Human development.

PDE ACTIVITY IN HUMAN PRIMARY MYOMETRIAL CELLS

MHARAB CHOUDHURY

Phosphodiesterases (PDEs) in cAMP signalling in human primary myometrial cells. To characterise the spatial and temporal dynamics of PDE activity in human primary myometrial cells. To determine which PDE isoform is predominant in the regulation of cAMP's activity in human primary myometrial cells. The data will show which PDEs, out of 4,7 and 8, is most active using two sensors, AKAP79 and Epac-S.H187 My project is part of the wider group of novel research that aims to find out if inhibiting certain PDEs can delay labour to help solve the issue of Preterm labour.

THE EFFECT OF ISOLIQURITIGENIN ON THE HERG POTASSIUM CHANNEL

MINAHIL MUJAHID

Xin Su Ning (XSN) is an herbal anti-arrhythmic medicine formulated with 11 Chinese medicinal herbs. It has been shown to prolong action potential duration and to block potassium and sodium channels of isolated cardiac myocytes, which implies the property of class I & III anti-arrhythmic medicine. Isoliquiritigenin (ISL) is a constituent compound of XSN that has been shown to have anti-inflammatory, anti-angiogenic and anti-cancer activities. In this study, we aim to extend the current understanding of the anti-arrhythmic mechanism of XSN by identifying any effect of ISL on the hERG potassium channel.

CULTURAL, NATIONAL, AND GLOBAL IDENTITIES AND THEIR RELATIONSHIPS WITH CITIZENSHIP EDUCATION IN THE ENGLISH SECONDARY SCHOOLS

REFIKA ARABACI

Common concerns for many contemporary governments around the world are fast-paced globalisation, increasing immigration, and the rise in extremist, nationalist, xenophobic, neo-liberal or neo-conservative movements due to the widespread irregular migration and terrorist attacks. Most of the diverse societies have failed to establish social and community cohesion to combat the linked issues of civil disorder, terrorism, alienation, and fragmentation of belonging (Healy 2018). An increase in independence movements and the re-emergence of far-right political parties across the world can be seen among other reasons for these problems. In the UK, increase in nationalist discourses can be followed more specifically taking Brexit issues into consideration and promoting Fundamental British Values (FBVs) through schooling. Both can be considered as a declaration of national identity to promote community cohesion. Hence, many research studies have focused on identifying the underlying causes of these problems around the world. Both the cause and solution are often found in education as well as in the relationship between an individual and the state, and living together in communities –local, national, and global-, namely the concept of citizenship. Thus, Citizenship Education (CE) can be regarded as a direct application for those issues. Specially its role at one of the most important identity transition periods in a human life (ages 11-14), and in the place where they are mainly perceived as citizen-in-waiting status. This research aims to identify how Key Stage 3 (KS3) pupils perceive and understand their cultural, national and global identities and what are their relationships to CE in the English secondary school system. Furthermore, the research will try to find out how these identities inform their perception of citizenship.

CHILD AND FORCED MARRIAGE IN THE UK AND MALAYSIA

SHABINA BEGUM

Child and forced marriage is a form of violence against women and girls. It is usually a symptom of a larger problem, this being linked to notions of what is known as 'honour based violence', but the reality being that it is a form of an extremely dishonourable form of abuse.

In the UK forced marriage is illegal, furthermore civil remedies are also available in the form of Forced Marriage Protection Order in order to protect victims and to prevent forced marriages from taking place. In England and Wales the minimum age at which a person is able to consent to a marriage is 18 years old; a person between the ages of 16 - 17 can marry but they will require parental consent. The position in Malaysia differs both on the issue of age of marriage and also on the remedies available.

As Malaysia has a dual justice system of civil courts and Shariah courts, I was able to explore the stance of child and forced marriage from both a civil and Shariah law perspective. My findings are based on research which I undertook in Malaysia in 2017, where I spoke to lawyers, religious scholars and academics about the issue of child and forced marriage.

This presentation will focus on comparison of the legal landscape on child and forced marriage in England and Wales and Malaysia. It will also look at some of the debates which the religious scholars have advanced in Malaysia and what if any lessons we can learn from them in the UK.

STRUCTURAL GUIDED AND NOVEL P. VIVAX VACCINE CANDIDATES FOR MALARIA VACCINE DEVELOPMENT

TAYYABA KOMAL

In humans, *P. vivax* malaria is the most widespread and difficult to control malaria mainly due to its dormant structures known as hypnozoites. With low transmission rates and a non-immune population, an ideal vaccine candidate should target not only infants but an entire population to facilitate *P. vivax* elimination. A multivalent vaccine could be of use in reducing the mortality and prevalence of *P. vivax* malaria against the immune evasion mechanisms of the parasite. A number of pre-erythrocytic antigens have been tested recently in our lab, finding various degrees of protection, where the Circumsporozoite protein (CSP) remains the leading vaccine candidate through the use of a Virus-Like Particle (VLP) platform based on the Hepatitis B surface antigen. In order to use some antigens in a challenge model assessing the efficacy of new *P. vivax* pre-erythrocytic candidates, these vaccine candidate antigens were expressed in *P. berghei* to generate the corresponding transgenic parasites. This method had allowed us to initially screen several vaccine candidates and to select the most promising ones for further clinical trials; Pv-PLP1 among one of them. Plasmodium Perforin-Like-Protein-1 (PLP-1) is highly expressed during the liver stage of infection, it is a target of cell-mediated immunity in naturally exposed individuals and its homologue has been shown to be protective in murine studies. Pv-PLP1 has shown promising initial preliminary data and we are aiming to improve the immunogenicity by the use of a Virus-Like Particle (VLP) platform based on the Hepatitis B surface antigen. This along with structural studies will help us to improve our knowledge and understanding on the hepatic cell-membrane rupture or modification made by a parasite for the successful entry into the parasites and can be used as an effective component of a multi-valent vaccine.

UNTANGLING THE GENETICS BEHIND VARICOSE VEINS WAHEED-UL-RAHMAN AHMED

Introduction: Varicose veins (VV) are defined as dilated, tortuous vessels; they impact a third of the UK adult population. Patients with VV present heterogeneously, from superficial skin changes (telengectasias/pigmentation) and swelling (oedema), to inflammation (lipodermatosclerosis) and open wounds (ulceration) in 10% of patients. VV often requires surgical management, however there is a high-risk of recurrence. VV is a complex disease, where genetic and non-genetic components contribute to overall phenotypic expression (physical trait). We aimed to delineate the genetic basis of VV, which is poorly understood.

Methods: We conducted hitherto the largest genome-wide association study of VV in a two-stage study of 810,625 individuals. In stage one, using the UK Biobank resource, we compared 22,473 VV patients and 379,183 controls. In stage two, replication and meta-analysis was performed in an independent cohort of 113,041 VV cases and 295,928 controls from the userbase of 23&Me (California, USA). In-silico analysis was conducted in FUMA, MAGMA, and XGR.

Results: 109 genome-wide significant ($P \leq 5 \times 10^{-8}$) loci were identified in UK Biobank, 45 of which successfully replicated in the 23&Me cohort. Twenty-seven loci have not been previously reported. FUMA positionally-mapped 128 genes at the replicated loci, with 84 having a combined annotation-dependent depletion score (CADD) > 12.37 , suggesting functional, deleterious variants. MAGMA analysis implicated pathways involved in cardiovascular system development ($P = 1.57 \times 10^{-08}$) and tube morphogenesis ($P = 9.35 \times 10^{-08}$). Furthermore, XGR revealed enriched pathways in downstream signalling in naive CD8+ T cells ($P = 0.0017$), and encoding structural and core extracellular glycoproteins (both $P = 0.007$).

Conclusion: We identified 45 variants conferring risk of VV, which provide insights into disease biology. Implicated genes are enriched in pathways involved in vascular development, immune cell activity and extracellular matrix function, and provide new targets for therapeutic development.

CHALLENGING THE DECLINE NARRATIVE: MUSLIM SCHOLARS AND THE ISLAMISATION OF THE MONGOL ILKHANATE

YUSUF
CHAUDHARY

Popular narratives regarding Mongol conquests of the Muslim world present them as ushering in a period of stagnation and decline as the Mongols conquered major regions and cities throughout the Islamic East, particularly after Hülegü's (r. 1256-1265) conquest of Baghdad in 1258. Contemporary historians have begun to significantly revise these narratives, showing that the Ilkhanate was a vibrant hub of intellectual and cultural exchange (Lane, 2003; Kamaroff, 2006; Pfeiffer, 2014). The emphasis of contemporary scholarship has, however, tended to be on how this relates to Ilkhanid political history and Islamisation. My research branches out from this and focuses on scholarly communities and the intellectual context of Ilkhanid-Persian vizier (prime minister) Rashid al-Din's (d. 1318) theological treatises. These understudied, and still mostly unpublished, works were written against the backdrop of the Ilkhanid conversion to Islam and provide an important insight into the intellectual community around one of the most influential figures of the late thirteenth and early fourteenth centuries. Both before and after the conversion of the Ilkhanate to Islam, the period saw an attempt by Muslim scholars – many of whose works are still studied today – and administrators in the Ilkhanate to politically, intellectually, and theologically, integrate the Mongols into the Islamic world, as well as reflect upon their role in the empire. My talk will provide an overview of my research, touching on the process of Islamisation, Islamic theological developments, the relationship between Muslim scholars and the Ilkhanid court, and intellectual transmission in the Islamic East. Through this, I situate the Mongol Ilkhanate in the broader context of Islamic history, challenging narratives of intellectual decline and stagnation in the eastern Islamic world and demonstrating the importance of the Ilkhanate for the intellectual trajectories of post-Mongol polities such as the Ottoman and Safavid empires.