

WRE 2017 – PROGRAMME

- 1:30pm **President's Opening Remarks**
Sir Richard J Evans, President of Wolfson College
- 1.35pm **Opening Keynote:**
How can you be simple without being simplistic? – Writing for the general public
Dr Ha-Joon Chang
- Oral Presentations (I)**
- 2.00pm Russia-EU Relations (2008-2016): Realism, Complex or Fragile Interdependence? (Huawei Zheng)
- 2.10pm The Representation of Female Perpetrators of the Holocaust in the British Press, 1945-Present (Kate Docking)
- 2.20pm Constructing New Qur'anic Language and Wisdom on the Metaphysics and Teleology of Homosexual Disposition (Azfar Anwar)
- 2.30pm Remembering the Second Chechen War: The Evolution of Collective Memory in Chechen Refugee Populations of Georgia (Kyle Walter)
- 2.40pm Austerity And Protest: The Cases of Portugal and Spain During The Great Recession (Tiago Carvalho)
- 2.50pm Analyzing The Effects Of Artisanal and Small-Scale Gold Mining on Agriculture For Policy Action; Evidence from Prestea Mining Region, Ghana (Francis Arthur)
- 3.00pm **Tea Break / Poster Presentation Session:**
- Superconducting Exchange Coupling between Ferromagnets (Yi Zhu)
- Understanding and Designing for the Effects of Manufacturing Variations in High Pressure Turbine Blades (Wen Yao Lee)
- Literature, Ethics and Politics in (post-)dictatorship Chile: Representations of Mariana Callejas (Adrian Laschinger)
- Regionalism and Globalisation: a GCC perspective (Amna Sadiq)
- Potential Dangers of ZnO Nanoparticles in Sunscreen Formulation (Henry Agbe)
- Vibro-acoustic Modelling of a Car for Active Noise Control Purposes (Luis Andrade)
- East Asian Multilateralism: An Exploration of the US-China Influence (Mason Ji)

Parkinson's Disease and Potential Therapeutics (Mudrika Tripathi)

How should Women's History be integrated within the Schools History Curriculum? (Susanna Boyd)

Terahertz Spectroscopy Analysis of Solid State Formulations (Talia Shmool)

Muslim Personal Law and Bengali Muslim Women in India (Utsa Sarmin)

European Confederation and Monarchical Reform in the work of the Abbé de Saint-Pierre, 1713-1740 (Jin-Woo Choi)

4.00pm **Poster Flash Presentations**

Oral Presentations (II)

4.20pm Anglophone Southeast Asian literature and transnational aesthetics (Kelly Yin Nga Tse)

4.30pm Prevention of Playing Related Injuries in a Specialist Music School: using Action Research to change Policy and Practice (Sarah Upjohn)

4.40pm Modeling Autistic neurons by cellular reprogramming. "A dishful of an autistic brain" (Aicha Massrali)

4.50pm Dairy products intake, diabetes and obesity – is there a link? (Eirini Trichia)

5.00pm Genotype-phenotype relations in human genomics (Lara Urban)

5.10pm The Role of Oncostatin M Receptor Overexpression in the Tumour Microenvironment of Cervical Squamous Cell Carcinoma (Valtteri Tulkki)

5.30pm **Closing Keynote:**
It's not a sprint – Milestones along my career as a scientist
Professor Jane Clarke FMedSci FRS

5.55pm **Prize Presentation**

6.00pm **Closing Remarks**
Matthias Wong, Chair of WRE 2017

6.05pm **Reception**

7.15pm **Formal Hall** (for guests, presenters and registered attendees)

KEYNOTES

Keynote 1: Dr Ha-Joon Chang, Reader in the Political Economy of Development, Faculty of Economics, University of Cambridge

How Can You Be Simple Without Being Simplistic? – Writing for The General Public

Keynote 2: Professor Jane Clarke FmedSci FRS

It's Not A Sprint – Milestones Along My Career As A Scientist

I was born to be a scientist, but didn't start my PhD until I was 40.

I will discuss my journey in science and reflect on the obstacles and the joys of a scientific career.

What lessons would I pass on?

ORAL PRESENTATIONS

Presentation 1: Huawei Zheng – MPhil Student, School of Interdisciplinary Area Studies, St Antony's College

Russia-EU Relations (2008-2016): Realism, Complex or Fragile Interdependence?

This research project is a study of the Russia-EU relations (2008-2016) and aims to engage with the debates among international relations theories. In particular, the research focuses on the search of an analytical model that best approximates the Russia-EU relations and best explains the behaviours of Russia and the EU during the given period. The Russia-EU relations during the Ukraine crisis will be examined as the key empirical case study. It is argued that neither realism nor complex interdependence could fully address the Russia-EU relations. Therefore, fragile interdependence, as a theoretical framework, is developed to better depict this interdependent relationship. Furthermore, the theory of fragile interdependence offers better measurement of both interdependence and conflict, and examines how the degree of interdependence can affect the intensity of conflict. In this way, fragile interdependence adds to our understanding of the two key concepts in international relations. This theoretical model could also be generalized to other important bilateral relationships that show similar characteristics of fragile interdependence, such as the US-China, and China-Japan relations.

Presentation 2: Kate Docking – MPhil Student, Faculty of History, Wolfson College

The Representation of Female Perpetrators of the Holocaust in the British Press, 1945 Present

During National Socialist Germany, women worked as guards in concentration camps, were nurses and doctors in 'euthanasia' centres, and also worked as secretaries for Nazi officials. In performing such jobs, these women helped to perpetrate the Holocaust. Since the end of the Second World War, female perpetrators of the Holocaust have been portrayed in a variety of different British newspapers. This paper explores the ways in which the press has represented these women, from 1945 until the present day. It analyses how traditional notions of femininity, such as the idea of women as naturally 'good', have influenced their newspaper depiction. More widely, the paper aims to address how society views 'evil' women and the ways in which women who violate social norms are conceptualised.

Presentation 3: Azfar Anwar – MPhil Student, Oriental Institute, St Antony's College

Constructing New Qur'anic Language and Wisdom on the Metaphysics and Teleology of Homosexual Deposition

This paper will construct a new Qur'anic rhetoric on homosexual disposition – one that is counterintuitive to current mainstream Islam's attitude towards homosexuality. This approach, inspired by the Muhammad Abduh's and Rashid Redā's Tafsīr al-Manār, will argue that the positions of Qur'anic verses which make reference to the People of Lot, can be derived from Qur'anic wisdom behind the divine creation of homosexual disposition, thus creating a relatively new Islamic attitude towards the latter. This new approach will transform and progress debate on the Qur'anic attitude towards homosexuality, and on the Qur'anic distinction between the act of sodomy and same-sex disposition. This new attitude could then potentially be a springboard for future discourse, particularly ethical discourse, on Islam's relationship with homosexuality.

Presentation 4: Kyle Walter – MPhil Student, School of Interdisciplinary Area Studies, St Antony's College

Remembering the Second Chechen War: The Evolution of Collective Memory in Chechen Refugee Populations of Georgia

The research conducted focuses on the ways in which memories of the Second Chechen War differ inter-generationally, as well as in varied locations within Georgia. Through an analysis of present literature on the collective memory debate, to interviews conducted with Chechens living in Tbilisi and Pankisi Gorge, the perceptions of the Russian state, their inherent connection to their Chechen roots, and their personal assimilation to Georgian culture are questioned to determine how the traumatic experience of war has shaped their current realities. Varying levels of participation and direct contact with war have played a significant role in defining the way in which Chechen youth in Georgia express themselves, and the ethnic Chechen majority of Pankisi Gorge has been determinate in the continuation of cultural and linguistic practices amongst refugee populations.

Presentation 5: Tiago Carvalho – PhD Candidate, Sociology, Wolfson College

Austerity And Protest: The Cases of Portugal and Spain During The Great Recession

In 2011, as a consequence of the Great Recession, both Portugal and Spain saw the emergence of anti-austerity movements and protests. Despite the many similarities between these countries the cycles of protest were different regarding its intensity, claims, repertoires, actors and outcomes. Taking this contrast into account, the paper analyses the evolution of the anti-austerity political field of contention in these two countries between 2008 and 2015. This involves describing the links between institutional and non-institutional actors, both to understand how protests are shaped by institutional actors, but also how protests impact institutional politics. Exploring the formative context and the phases of mobilization and institutionalization of this cycle of contention, this paper argues that the differences between countries should be understood in relation to the dynamics of the politic field and how this shapes democratic politics. The paper is based on a multi-method approach (combining protest event analysis, participant observation and interviews) and entails a systematic paired comparison of the links of these actors in Portugal and Spain throughout the anti-austerity cycle of protest.

Presentation 6: Francis Arthur – MPhil Student, Oxford Department of International Development, St Antony's College

Analyzing the Effects of Artisanal and Small-Scale Gold Mining on Agriculture for Policy Action; Evidence from Prestea Mining Region, Ghana

This paper explores the effects of artisanal and small-scale gold mining on agriculture in Prestea mining region, Ghana, and suggests policy actions. A cross-sectional survey with both qualitative and quantitative research design was employed. Simple random and purposive sampling techniques with 386 participants were used. The study found that artisanal and small-scale gold mining is constantly destroying grazing fields of livestock, food crops and tree crops (such as cocoa and palm oil trees), and has also caused reduction in food availability and shortages of agricultural foodstuffs. These are as a result of the destruction of farms or farmlands and the shift of occupation from agriculture to small-scale gold mining. It, therefore, renders many farmers landless and causes them to lose their household income. However, recognizing the significance of agriculture to both individuals and the nation, agricultural strategies have to be developed to protect farmers and the agricultural sector in the mining regions. The government, mining and mineral commission, and agricultural agencies must provide practical measures to ensure the sustainability of the environment and agricultural production systems in the mining regions in Ghana.

Presentation 7: Kelly Yin Nga Tse – DPhil Candidate, Faculty of English, St Antony's College

Anglophone Southeast Asian Literature and Transnational Aesthetics

This paper examines the constitution of a transnational aesthetics in contemporary Anglophone Southeast Asian literature. In particular, it focuses on the Malaysian writer, Tan Twan Eng's novel, *The Gift of Rain* (2007) as a representative Southeast Asian text that seeks to transcend the category of the nation. Longlisted for the Man Booker Prize, the novel represents not only a product of the author's transnational trajectory, but also a postcolonial reconstitution of the past as transnational history. Centrally, Tan's historical narrative follows its half-Chinese and half-British protagonist, Philip Hutton, as he recounts his personal history before and during the Japanese Occupation of Malaya, then a British colony. The past that Philip recalls pertains chiefly to his queer relationship with his Japanese master, Hayato Endo, a secret agent who instructs teenage Philip in the Japanese martial art of aikido prior to and during the Occupation in the early 1940s. In critically reading *The Gift of Rain*, this paper argues that Tan's dramatization of Japanese imperialism in Malaya contests an easily sanctioned version of history by adopting a transnational mode of address. In so doing, he envisions cross-cultural connections for post-conflict communities in a global context.

Presentation 8: Sarah Upjohn – PhD Candidate, Faculty of Education, Wolfson College

Prevention of Playing Related Injuries in a Specialist Music School: Using Action Research to Change Policy and Practice

I am a physiotherapist working within a specialist music school for pre-conservatoire level young musicians aged 9 – 18. Initially employed there to treat playing-related musculoskeletal disorders, I soon realised that the injuries I was treating were largely preventable, and I wanted to work towards preventing them. Much research has been carried out within Music Conservatoires, looking at health promotion strategies and strategies to reduce the incidence of playing related injuries in undergraduate and post graduate performers. The general conclusion is that although these strategies are helpful, they have no impact on injuries acquired prior to commencing conservatoire level study. The recommendation is that injury

prevention work needs to start in a pre-conservatoire setting. In 2011 I joined the first cohort of Doctorate of Education students at the University of Cambridge, with the intention of developing an injury prevention programme at the school. Based on an audit of physiotherapy records which revealed five main risk factors for injuries at the school, this innovative Action Research project is a qualitative design which has utilised the cyclical, reflective and reflexive nature of Action Research to introduce innovative changes to policy and practice within the school, and to generate interest at national level.

Presentation 9: Aicha Massrali – PhD Candidate, Psychiatry, Wolfson College

Modelling Autistic Neurons by Cellular Reprogramming. “A Dishful of an Autistic Brain”

Autism spectrum conditions (ASC) are neurodevelopmental and entail social-communication disability alongside unusually narrow interests and difficulties adjusting to unexpected change. The causes associated with the conditions are still being investigated. Although ASC is known to be highly heritable, genome wide association studies have not been successful in identifying ASC-specific candidate genes. The complex and multifactorial nature of ASC and the inaccessibility of post-mortem tissues have hindered progress in research. Recently, a paradigm-shift in psychiatric disorders (including ASC) has emerged, the ground-breaking technology of induced pluripotency awarded Yamanaka and Gurdon the Nobel Prize in Physiology and Medicine in 2012. Yamanaka developed a method to reprogram adult fibroblast cells to a state of pluripotency like that of embryonic stem cells using four transcription factors. The derived induced pluripotent stem cells (iPSCs) can then be differentiated into any cell type, giving scientists the opportunity to model neurological conditions by using cells derived from the patient. In my project, autism-derived iPSCs are differentiated into cortical neurons to mimic the cellular and functional circuitry exhibited in ASC pathophysiology during fetal brain development. This allows to deepen our understanding of autism etiology, provide biomarkers for early detection and identify potential drug targets.

Presentation 10: Eirini Trichia – PhD Candidate, Nutritional Epidemiology, Wolfson College

Dairy Products Intake, Diabetes and Obesity – Is There A Link?

Dietary guidelines focus extensively on reducing saturated fat consumption despite the inconclusive evidence for some foods which contain saturated fat, such as dairy products. Conversely, accumulating evidence suggests that fermented dairy products such as yoghurt are inversely associated with cardio-metabolic disease, although relevant mechanisms have not been established and issues of measurement errors in self-reported methods of dietary assessment remain concerning. Based on these gaps, the aim of my research is to disentangle the relevant pathways through the investigation of the associations of dairy products with cardio-metabolic risk and adiposity. Preliminary results from the analysis of population-based data in the Fenland study including 12,435 adults show that higher consumption of milk was associated with lower body fat, while greater high-fat cheese consumption was related with higher body fat. Additionally, my on-going research will use metabolomics data to derive potential objective biomarkers for the assessment of dairy products intake, and the use of genetic data will also help to elucidate potential pathways related to dairy consumption and to investigate causality of associations with disease endpoints using Mendelian randomisation approaches. Combining traditional nutritional epidemiology approaches with modern tools such as metabolomics and genomics will contribute to formulate optimal dietary guidelines.

Presentation 11: Lara Urban – PhD Candidate, EMBL – EBI, Wolfson College

Genotype-Phenotype Relations in Human Genomics

The efficient application of sequencing technology to DNA, RNA and epigenetic modifications of the genome allows us to accurately map genetic variation between and among species on a cellular level. We now begin to understand how genetic variation affects the phenotype, i.e. our appearance, abilities and susceptibility to disease. However, the multifaceted contribution of different genetic, epigenetic and other factors to our phenotype and the involved mechanisms remain to be unravelled. In my PhD, I work on deciphering associations between phenotype and genotype. Therefore, I combine biological knowledge with the application of statistics and machine learning to the constantly growing abundance of biological data. I currently focus on human genetic data to understand the effect of rare genetic variants, i.e. patterns in the DNA that occur in a small percentage of humans, on susceptibility to and development of diseases. I analyse data of patients suffering from cancer, blood diseases and stem cell diseases, made available by various international medical consortia.

Presentation 12: Valtteri Tulkki – PhD Candidate, Pathology, Wolfson College

The Role of Oncostatin M Receptor Overexpression in the Tumour Microenvironment of Cervical Squamous Cell Carcinoma

The main cause of cervical squamous cell carcinoma (SCC) is the viral integration of human papillomavirus (HPV) to the epithelial cells that leads to genomic instability. This instability leads to gain and over-expression of Oncostatin M receptor (OSMR) in advanced SCC which is associated with significantly worse clinical outcome (1). Cervical SCC cells that over-express OSMR show enhanced responsiveness to its major ligand Oncostatin-M (OSM), which in turn, mediates multiple pro-malignant effects, including a pro-angiogenic phenotype, increased cell migration, invasion, epithelial to mesenchymal transition, metastasis and immune cell recruitment (2, 3). OSMR overexpressing cells are able to trigger OSM secretion from monocytes and macrophages in vitro, to create a niche that promotes the angiogenic switch through hypoxia signalling pathways. OSMR overexpression is linked with the expression of several genes associated with tumour associated macrophages and an immunosuppressive tumour microenvironment (TME) in SCCs. In order to study the role of OSMR in SCCs and the TME, we have examined the effect of syngeneic mouse SCC cell lines with either overexpression or loss of OSMR in wild-type and OSMR knock-out mice by using 18 marker immune cell fluorescence-activated cell sorting (FACS) panel to characterize multiple populations of lymphocytes and myeloid cells. These studies will underpin our assessment of OSMR as a potential therapeutic target in SCCs.

POSTER PRESENTATIONS

Poster 1: Yi Zhu – PhD Candidate, Department of Materials Science and Metallurgy, Wolfson College

Superconducting exchange coupling between ferromagnets

Recent discoveries from superconductor (S)/ ferromagnet (FM) heterostructures include π -junctions, triplet pairing and critical temperature control in FM/S/FM superconducting spin valves (SSVs). In all cases, the magnetic state of the device, generally set by the applied field, controls the superconducting response.

We have demonstrated the converse effect, with the superconducting state directly controlling the magnetic state of GdN/Nb/GdN SSVs via a temperature-dependent exchange interaction. A model for antiferromagnetic exchange interaction based on the coupling of the superconducting condensation energy to the magnetic state can explain the dependence of this effect on temperature, and on the superconductor (Nb) layer thickness. This superconducting exchange interaction is fundamentally different from the various exchange coupling phenomena which underlie conventional spintronics, and provides a potential mechanism for the active control of the magnetic state in superconducting spintronics.

Poster 2: Wen Yao Lee – PhD Candidate, Engineering, Wolfson College

Understanding and Designing for the Effects of Manufacturing Variations in High Pressure Turbine Blades

In the highly competitive aviation industry, the field of aerospace propulsion leads the world in delivering high performance aerodynamic components that maximise efficiency and minimise cost. This means that certain jet engine components need to be designed and manufactured to accuracies no larger than the width of a human hair in order to meet fuel consumption targets. Having said that and considering that all manufacturing processes are subjected to a certain degree of uncertainty, manufactured parts sometimes do not conform to design specifications and manufacturing processes are often blamed for designs that do not meet performance requirements. The novelty of my research is to develop a method for designing components that are optimised not only for performance but also to be robust against likely manufacturing variations. This presentation will encompass the first phase of the project where the accuracy of manufactured components is assessed and their impact on performance analysed using simulations where the flow of air around the components is modelled using computational models.

Poster 3: Adrian Laschinger – MPhil Student, Latin American Studies, Wolfson College

Literature, Ethics and Politics in (post-)dictatorship Chile: Representations of Mariana Callejas

The poster is based on my MPhil Dissertation in Latin American Studies. I investigate the relationship between literature and society in Post-Pinochet Chile. The analysis of the symbolic struggles in the discourse of memory and collective trauma in society will be based on the historical case study of the writer and secret service agent Mariana Callejas and her reception in contemporary Chilean media and culture. Drawing on sources from media, literature, television and film the work raises fundamental questions surrounding the ethics of art production in authoritarian regimes and their aftermath. I will show, more specifically, how the different narratives of the historical case relate to the general discourses of truth, justice and complicity in post-dictatorship Chile. The narratives, so my argument, draw

strategically on special forms like the testimony and crime fiction to challenge complicity and amnesty or, in more conservative cases, to back hegemonic discourses of oblivion. Besides the construction of Callejas as an allegory of civilian complicity, these narratives might also be interpreted as documents in a struggle for the redefinition of literature and its ethics after the position as a moral institution has been shattered by figures like Callejas.

Poster 4: Amna Sadiq – DPhil Candidate, Oriental Institute, St Antony's College

Regionalism and Globalisation: a GCC Perspective

The world is witnessing a global transformation categorised by the increasing interdependence of countries. There are at least two broad processes featuring this transformation: regionalism and globalisation. It was only a matter of time until the interaction of both processes developed into a subject of great academic interest and debate. The two main hypotheses are that either regionalism is challenging globalisation, or that regionalism is encouraging globalisation (Hurrell, 2007; Hnát, 2008; Viner, 1950; Bhagwati, 1999). However, there has been little investigation to understand the interactions from the perspective of the developing economies. This study aimed to focus attention on the experience of regionalism in the GCC. It found that GCC regional integration did not challenge states' incorporation in the global economy, but rather this was enhanced. This was inherited from the structure of GCC economies that are export-oriented economies, in which the international trade makes great share of their national GDPs. The establishment of the GCC did not challenge this economic structure; that the organisation lacks a supranational authority besides the homogeneous lack of domestic and regional market force to challenge trade patterns. Accordingly, the research found that; there is a strong link between the structure of members' economies and the nature of regionalism's interaction with globalisation based on the case of the GCC. Therefore, further comparative studies on this area must be adopted to evaluate the casual relation approached on other areas.

Poster 5: Henry Agbe – PhD Candidate, Materials Science and Metallurgy, Wolfson College

Potential Dangers of ZnO Nanoparticles in Sunscreen Formulation

The unique optical and electronic properties of metal oxides (ZnO) are exploited in sunscreen formulations. ZnO Metal Oxide Nanoparticles (NPs) impart both aesthetic value and UV light absorption capabilities to sunscreens. However, their potential toxic effects on human skin make it imperative for investigations. This work demonstrates detection and quantitative of superoxide free radicals ($\cdot\text{O}_2^-$). These radicals can have deleterious effect on skin tissue. Photocatalysis of ZnO-NPs generate 49% superoxide anion radicals and fine Nanoparticles suspension. These can have adverse effects on skin and may lead to Oxidative stress, inflammation and DNA damage.

Poster 6: Luis Andrade – PhD Candidate, Engineering, Wolfson College

Vibro-Acoustic Modelling of a Car for Active Noise Control Purposes

The design of quiet cars has become an important issue in automotive industry, as new materials and manufacturing techniques have been improved in order to isolate the car cabin from external noise sources. However, the use of these passive methods for noise control have a direct impact in cost increment and reduction of performance. Over recent years, active noise control techniques are being developed to reduce the noise levels without the need of modifying the automotive structure or design. In order to apply such techniques, the sound pressure levels at audible frequencies must be known as this is an input signal required

in the control system. Though this data can be measured in real time, it is not viable to apply active noise control when a large number of sensors are required, and therefore, the aim of the present work is to predict the sound pressure levels from the vibrating energy in the structural components of a vehicle. The automotive panels have been modelled using a FE-based software to compute the resonant modes below 2kHz. These data have been employed in a Statistical Energy Analysis (SEA) to determine the ensemble averaged energy transferred from panels to other structural components. Furthermore, an improved FE-SEA analysis has been employed to determine coupling loss factors. The structural vibrating energy can then be linked to the rise of sound pressure by extending the SEA to the coupling with the acoustic volume. The sources of noise and transmission paths are being investigated to include non-linearities in the SEA model.

Poster 7: Mason Ji – MPhil Student, International Development, St Antony's College

East Asian Multilateralism: An Exploration of the US-China Influence

The US and China will play important roles in shaping multilateralism in the future. The US and China have a complex relationship. On the one hand, the two are major economic partners and have cooperated on some security issues in Asia and beyond. On the other hand, the two can be seen as competing parties in Asia and on the global stage. History has had a marked impact on the US-China relationship. China's path to the UN was difficult, and memories of past difficulties have deeply engrained themselves into the Chinese strategy at the United Nations. In terms of international security, a path forward is for the US and China to cooperate to a greater extent at the UN to bolster peacekeeping. Importantly, most of the main security and economic concerns that confront the US and China arise on the regional level. ASEAN, with its focus on Southeast Asia, makes an inadequate region-wide multilateral platform. In order to set up a more capable multilateral dispute resolution framework in Asia, countries in the region, with US-China encouragement, should work towards phasing out the outdated hub-and-spokes system of bilateral relations and towards bridging the gap between East Asian bilateralism and trilateralism and Southeast Asian multilateralism. Learning from the mistakes and experiences of ASEAN and the EU can help prevent a new regional multilateral order from falling into the same pitfalls its predecessors have. Ultimately, a change in countries' mentalities from one favoring bilateralism to one of tolerating and encouraging multilateralism is essential for creating a healthy multilateral structure for a more stable and peaceful Asia-Pacific. Keywords: US-China Relations, Multilateralism, United Nations, Asia-Pacific, ASEAN

Poster 8: Mudrika Tripathi – MSc Visiting Student, Department of Veterinary Medicine, Wolfson College

Parkinson's disease and potential therapeutics

Leucine-rich repeat kinase 2 (LRRK2) is a large protein with multiple domains, with the catalytic core comprising of a GTPase domain with Roc (Ras of complex proteins), COR (C-terminal of Roc) and a kinase domain. Mutations within LRRK2 have said to be involved in late-onset, familial and sporadic Parkinson disease (PD). Recently, it has been observed that the kinase domain phosphorylates the GTPase domain at various sites. However, how these sites alter the functions of LRRK2 is not very well understood. In this study, we investigate how phosphorylation at the site Th1404 influences LRRK2 GTPase function. A multiple turnover charcoal assay was performed for measuring the GTP hydrolysis of LRRK2 RocCOR WT and mutants T1404A/D/E in which T1404D showed an enhanced rate of GTP hydrolysis in vitro. In

vivo influence of T1404 was studied using Dictyostelium Roco4. Both developmental studies and phototaxis assay report that the T1404 mutants in Roco4 could not completely rescue the phenotype of Roco4-null cells as compared to the rescue by WT Roco4. These results suggest that T1404 influences the GTPase function in LRRK2, and the in vivo functions in full-length Roco4.

Poster 9: Susanna Boyd – MPhil Student, Education, Wolfson College

How should Women's History be integrated within the Schools History Curriculum?

Is it possible to simply 'add on' women's history as a module in the existing narrative? Should the categories of history be discarded so that we can start again with more female-friendly or gender-neutral concepts? What impact could these decisions have on teacher-pupil relations and gender-dynamics within the classroom? What type of curriculum would best serve the interests of pupils? Does it matter anyway, or are we all simply getting our knickers in a twist? This session does not promise to have all the answers, but it will offer the insights of a practising History teacher who is trying to find her way to them.

Poster 10: Talia Shmool – PhD Candidate, Chemical Engineering, Wolfson College

Terahertz Spectroscopy Analysis of Solid State Formulations

The central aim of this project is to explore the extent to which terahertz spectroscopy can be used to study amorphous materials, specifically polymer and drug-polymer systems. To date, the majority of the literature focuses on spectroscopy of the crystalline phase of materials. This work aims to contribute to the literature and to understand the fundamental properties of amorphous solids and pharmaceutical solid formulations. Terahertz spectroscopy can be used to quantify secondary molecular relaxation processes which are central to the crystallisation of amorphous solids. Additionally, it can be used for the characterisation of a wide range of materials, including pharmaceutical materials, such as poly lactic-co-glycolic acid (PLGA) used for drug delivery applications of biomolecules. The potential of terahertz spectroscopy in predicting the stability of the amorphous PLGA was examined. For all samples, the copolymer PLGA 50:50 was used. The molecular weight of the copolymer was varied to determine whether there is a difference in the relaxation dynamics between samples. A novel sample holder was designed and built, and the optimal method for sample preparation for the project was developed. According to the differential scanning calorimetry data obtained, the PLGA samples had a glass transition temperature (T_g) ranging from 321-325 K and no crystallisation endotherm. The amorphous nature of the samples was further confirmed by powder x-ray diffraction measurements. The temperature variable terahertz spectroscopy data revealed that for each of the investigated samples a monotonous increase of absorption with frequency was observed and the vibrational density of states (VDOS) peak was resolved. Additionally, the terahertz spectroscopy data could be divided into three areas: (i) at T_g the α -relaxations emerge; (ii) below T_g occurs $T_{g,\beta}$ associated with the β -relaxation; (iii) below $T_{g,\beta}$ the terahertz absorption is dominated by the VDOS. Such work is of strategic interest to the pharmaceutical industry in the context of the delivery of drug products.

Poster 11: Utsa Sarmin – MPhil Student, Development Studies, Wolfson College

Muslim Personal Law and Bengali Muslim Women in India

Muslims in India follow the Muslim Personal Law as legal guidance. The uncodified law, interpreted by the patriarchs of the community is in no sense gender progressive. Discrimination in the name of religion is rampant in all communities. What makes the case of

Muslim women more vulnerable is the absence of any legal support. My research will look into the exploitations faced by Muslim women of West Bengal – especially the Muslim majority district of Murshidabad-in the name of religion. The low socio-economic growth of the Muslim community of Murshidabad already renders them a backward position and being a woman of the community comes with certain disadvantages. The aim of the research is not to deal with the Uniform Civil Code-which takes a different trajectory-but to problematise the situation of the Bengali Muslim women-carrying a burden with three layers i.e. gender, poverty and religion. Although qualitative analytical methodology will be undertaken to look into the arguments of the primary texts, empirical methodology will be the main frame for the research.

Poster 12: Jin-Woo Choi – PhD Candidate, Political Thought and Intellectual History, Wolfson College

European Confederation and Monarchical Reform in the work of the Abbé de Saint-Pierre, 1713-1740

This poster presentation will introduce the theoretical proposal of the Abbé de Saint-Pierre for an international confederation to procure perpetual peace in Europe. The poster will feature four sections, the first of which will address the formative influence of Descartes' philosophy on Saint-Pierre's epistemology and method. Section 2 of the poster will set the political scene in which Saint-Pierre wrote his famous Project - the aftermath of the Wars of Louis XIV and the French Regency. Section 3, based on this political context, will investigate the correspondence between Leibniz and Saint-Pierre and show how Leibniz' main points of critique, especially concerning (1) Saint-Pierre's usage of the Holy Roman Empire as a model for the European Union, and (2) appeal to the authority of the Grand Dessein of Henry IV, was reflected in the third edition of Saint-Pierre's Project. Finally, section 4 will introduce other political works by Saint-Pierre which complement the Project for European Union. I will argue that it is only in combination with these other writings that the basic premises of Saint-Pierre's position on a European project can be understood.