

PROGRAMME

- 10.30 am Registration
- 11.00 am **President's Opening Remarks**
Professor Jane Clarke, FMedSci FRS
- Oral Presentations (I)**
- 11.15 am In the Right Place at the Right Time: mRNA Trafficking in the Fly Brain Development (Mohammad Mofatteh)
- 11.30 am The Meanings of the Family Meal in Post-War Britain (Katrina Moseley)
- 11.45 am What does Decolonisation mean for Cambridge? (Joe Cotton)
- 12.00 pm **Poster Flash Presentations**
- 12.20 pm **Lunch**
- 1.30 pm **Keynote address 1: Living with uncertainty**
Professor Dame Ottoline Leyser DBE FRS
- Oral Presentations (II)**
- 2.00 pm Exploring the Emotional Dimensions of Prison life (Ben Laws)
- 2.15 pm Irish Travellers: The Politics and Poetics of Place in the City (Anthony Howarth)
- 2.30 pm Alteration Mechanisms of Spent Nuclear Fuel (Beng Thye Tan)
- 2.45 pm Wielding the Future: Historians and the Execution of Charles I (Matthias Wong)
- 3.00 pm Store Operated Calcium Entry in Oligodendrocyte Precursor Cells Differentiation (Saifur Rahman)
- 3.15 pm Population Risk Factors for Late-Stage Presentation of Cervical Cancer in Sub-Saharan Africa (Tessa Stewart)
- 3.30 pm **Poster Presentation Session/Coffee break**
- RNA Seq Analysis of Plasmodium Falciparum Extracellular Vesicles (Kioko Mwikali)
- Data-Driven Learning for Lower-Level ESL Learners: A Quasi-Experimental Study in Southern China (Xin Xu)
- Risk Factors for Loneliness in the Oldest Old (Hanyuying Wang)
- Power and Powerlessness: Political Commentators in the Digital Age (Tellef Raabe)

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How to Interact: Understanding how a Family of Proteins Involved in Cell Death Communicate (Liza Dahal)

Yoshimoto Banana: Importing Japanese Literature in the West (Jade Heyman)

Why Formative Learning Can Be a Remedy for Improving Students' Learning Situation in China? (Yuchun Zhong)

Cervix in a Dish (Lama Alzamil)

Phased Array Antennas in Wide Area RFID Systems (Ajeck Ndifon)

The Role of Petal Cell Shape in Plant-Pollinator Interactions in Wild Tobaccos (*Nicotiana App.*) (Gabriela Doria)

Singapore's Education Policy: Breaking the Link Between Family Background and Educational Attainment (Muhammad Farouq Bin Osman)

The Class(Less) Society - A Comparative Qualitative Analysis on the Meaning of Social Class (Thomas Hackl)

Oral Presentations (III)

4.15 pm Brain Inflammation: A Key Player in the Progression of Parkinson's Disease? (Antonina Kouli)

4.30 pm The Agenda Setting of International NGOs: Power Analysis and External Forces (Luyang Zhao)

4.45 pm Quantum Ramsey Theory (Taras Kolomatski)

5.00 pm Bilingual Cognition and Attention Deficit/Hyperactivity Disorder: Is There a Bilingual Effect on the Appearance of Traits? (Curtis Sharma)

5.15 pm Evaluating Justice: Indigenous Communities and Environmental Litigation (Sakshi S.)

5.30 pm **Keynote Address 2: Is the tail wagging the dog? Perversity in academic rewards**
Dr. Danny Kingsley

5.55 pm **Award Ceremony for Terry Hart Prizes for Best Presentation and Best Poster**

6.00 pm **Closing remarks**

Aliandra Lazzari Barlete, Chair of the 2018 WRE

6.10 pm **Networking Reception**

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

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KEYNOTES

Keynote Address 1:

Living with uncertainty

Professor Dame Ottoline Leyser DBE FRS, Professor of Plant Development and Director of the Sainsbury Laboratory at the University of Cambridge.

As scientists, we like to think we are on the inexorable march to the Truth. We are following a clear path guided by the pure light of logic. But as Einstein famously said “If we knew what we were doing it would not be called research”. Research involves stepping into the unknown. It involves making up hypotheses about what might be going on, testing them and usually finding out they are wrong. This is uncomfortable. People do not like uncertainty and they don’t like being wrong, which is why the clear lit path is such an attractive myth. High quality research depends on us finding ways to embrace the unknown and enjoy being wrong. This is not only essential for the process of research, but it is more generally an important tool for navigating a career in science.

Keynote Address 2:

Is the tail wagging the dog? Perversity in academic rewards

Dr. Danny Kingsley, Deputy Director, Scholarly Communication and Research Services at Cambridge University Library, University of Cambridge.

The academic reward structure focuses heavily on the publication of novel results in high impact journals. This talk considers the problems this narrow focus is creating in research and its dissemination and how these activities go against some of the basic tenets of science itself. It suggests that Open Research offers a way to improve the veracity of scientific claims and then looks at some of the recent examples of a move away from the status quo over the past 18 months.

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ORAL PRESENTATIONS

Presenter 1: Mohammad Mofatteh, PhD Candidate, Medical Research Council Laboratory of Molecular Biology (MRC-LMB)

In the Right Place at the Right Time- mRNA Trafficking in the Fly Brain Development

Transportation of different chemical molecules inside nerve cells is crucial for a functioning nervous system. Many neurodegenerative diseases such as Alzheimer's disease, ALS, and Huntington demonstrate disruption of the cargo transportation. Therefore, understanding detailed mechanism of cargo trafficking in healthy brains can help us to realise defects in the diseased brains. However, we are technically limited to study cellular transportation in a compact nervous system such as human and mouse, let alone the ethical issues involved. During my PhD, I have taken a novel approach to study the cellular transportation in the embryos of the fruit fly, *Drosophila melanogaster*. I focused on messenger RNA molecules, which are copied from DNA and give rise to proteins. Using fluorescent laser scanning confocal microscopy, I found the messenger molecule encoding for a cytoskeletal protein, Ankyrin2 (Ank2), which is transported in the embryonic neurons. The important protein encoding for Ank2 is conserved from worms to humans. I used the genome engineering CRISPR-Cas9 approach and deleted a small segment of the Ank2 mRNA and discovered severe abnormalities in the nervous system development. I believe my project can shed some light on the importance of subcellular cargo transportation in the development of the nervous system.

Presenter 2: Katrina Moseley, PhD Candidate, History

The Meanings of the Family Meal in Post-War Britain

This paper considers the complex relations between food and family life for a generation of women growing up in Britain in the 1950s and the 1960s. Within the food studies literature, it is common to acknowledge that the family meal is something of a cultural 'myth'; a widely held but false belief about the nature of family life in the past. However, attention to popular mythologising has left little room for an important historical question: how was the family meal experienced in the past, if not always (or inevitably) as a scene of family togetherness? In this paper, I draw on evidence from my own 'food-themed' life history interviews with women to call time on the 'myth of the family meal' as a useful category for historical analysis. Situating foodways and food events instead as sites of emotion, interaction and value transmission, I show that the family meal could mean (and continues to mean) a multiplicity of different things to women. More broadly, this paper argues for a new academic focus on relationships made in and through food in the past and the present.

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Presenter 3: Joe Cotton, MPhil Student, Sociology

What Does Decolonisation Mean for Cambridge?

Decolonisation initiatives at Cambridge have grown in both support and publicity in recent years, with several departments now hosting working groups, forums and topical lecture series. But what does decolonisation mean in an educational context, and what are the aims of these various initiatives? To answer these questions, this study will identify, analyse and compare “decolonising” practices across Departments of Human and Social Sciences at Cambridge University. These practices are principally student-led but also involve faculty staff, and concern both the curriculum and the classroom; including pedagogical approaches, living and learning environments, examinations and research, and admissions and outreach. Many advocates argue that decolonisation requires us to think about the role of the university in reproducing social inequalities and perpetuating prejudices and discrimination towards minorities. Often, these processes are hidden from view and are all too easily overlooked or ignored. In describing the processes and understanding the experiences of oppression perpetuated by educational institutions, as well as comparing practices that work to their reversal, this study aims to promote social justice in education and wider society.

Presenter 4: Ben Laws, PhD Candidate, Criminology

Exploring the Emotional Dimensions of Prison Life

There is a notable lack of research on the emotional dimensions of the prison experience. In direct response to this gap, this paper introduces findings from ethnographic research on the emotions of both male (n=25) and female (n=25) prisoners from two different establishments (HMP Ranby and HMP Send). The principle contention here is that in two senses is that prisoner emotions can be conceptualised in ‘fluid’ terms. First, the analytical framework introduced is guided by a metaphor of emotions as ‘fluids’ in a container. For instance, emotions like sadness and anger were often ‘bottled up’ (emotional suppression), ‘diluted’ (through distraction and escapism) or ‘distilled’ (emotional processing) by prisoners. Second, there is fluidity between the forms of emotion regulation strategies used by both genders. This concordance provides an important contrast to prior accounts. The framework attempts to increase our understanding of prisoners’ affective states and the various benefits and weaknesses of emotions regulation strategies deployed by prisoners. This could, furthermore, reveal underlying differences in prisoners’ levels of emotional development that can have implications for pathways into, and away from, crime.

Presenter 5: Anthony Howarth, PhD Candidate, Anthropology

Irish Travellers: The Politics and Poetics of Place in the City

It is widely assumed that Irish Travellers, as their name suggests, are nomadic. Therefore, their sense of place is fleeting, consisting of a series of intermittent and insignificant stays on the side of the road. My study challenges this assumption through examining what Travellers’

spatial narratives consisted of and how these relate to their sense of place in the city of London. The research consisted of sixteen months fieldwork living with a Traveller family in an unauthorised encampment. From this it became apparent that Travellers do have a strong sense of place. In fact, they form intimate attachments to the places that they live and think of themselves as local residents. Through demonstrating this, my research highlights that the myth of the place-less Traveller is inconsistent with the group's actual experience. It also shows that defining Travellers as nomadic, as the British Government do, is something which has denied them a place in British society. Therefore, in the tradition of applied research in anthropology, it is hoped that the findings from my study can be used to remedy this problem through informing government policy.

Presenter 6: Beng Thye Tan, PhD Candidate, Earth Sciences

Alteration Mechanisms of Spent Nuclear Fuel

The migration of radionuclides from underground nuclear waste repositories will involve formation of uranium secondary minerals when groundwater reacts with the spent nuclear fuel. Potential secondary phases of uranium minerals have been fabricated to develop an understanding of the local structural controls on ^{17}O NMR parameters. These can be used to identify such environments in amorphous phases, which can precede the development of well-defined crystalline mineral phases during spent fuel dissolution. Solid state ^{17}O MAS-NMR spectra of uranium minerals obtained in a 9.39 T magnetic field spinning at 18 kHz have been analysed to determine primary and secondary neighbours to the oxygen atoms present in the mineral. Very detailed differences in the uranyl bonding can be determined. Mineral compositions of interest are those containing calcium (Ca^{2+}), carbonate (CO_3^{2-}), and silicate ((SiO_4^{4-})) which are often present in ground water.

Presenter 7: Matthias Wong, PhD Candidate, History

Wielding the Future: Historians and the Execution of Charles I

When Charles I was executed, the diarist Philip Henry recorded 'such a grone by the thousands then present, as [he] never heard before and desire [he] may never hear again'. Charles's public beheading was shocking: never had a reigning king been put on trial for treason by his own subjects, and then executed before a public crowd. Charles was God's representative on earth, a legitimate monarch and head of the Church. In the months following, Englishmen commemorated Charles as a martyr, a Jesus-like character who died for the sins of his country. Charles's passing also brought monumental changes to English politics and the birth of the English Republic. This paper examines the impact of an unprecedented act – the execution of a reigning king – on the psyche of the English nation, specifically on the way historians wrote about the future. How did the future look like to these writers before the execution? And how did such a disruptive and unexpected event change these ideas? By comparing histories written before and after the regicide, this paper will show how historians were forced to

reconsider notions of cyclical time and providence, and more broadly ideas of societal progress and evolution.

Presenter 8: Saifur Rahman, PhD Candidate, Pharmacology

Store Operated Calcium Entry in Oligodendrocyte Precursor Cells Differentiation

Myelin sheaths wrap around axons and facilitate the conductive processes of neurons. Under several circumstances, axons become demyelinated, e.g. in multiple sclerosis. Through the remyelination process, the entire myelin sheath is restored. In the CNS, this process is mainly triggered by oligodendrocyte precursor cells (OPCs). Successful remyelination depends mainly on the OPCs recruitment into the demyelinated area, their subsequent engagement of denuded axons, and finally their differentiation into mature oligodendrocytes. Generation of Ca^{2+} signals in non-excitabile cells involves rapid depletion of internal Ca^{2+} stores followed by external Ca^{2+} entry through store-operated Ca^{2+} entry (SOCE). The SOCE channel has role in modulating several neuronal functions, including neural progenitor cells (NPCs) proliferation. However, the basic molecular mechanisms of SOCE and its machineries (e.g., STIM, Orai, etc) during early OPCs development and physiological functions remain poorly understood. Using OPCs isolated from neonatal rat brain and a combination of pharmacological, biochemical and imaging approaches, I found that inhibition of a channel protein (Ora1) implied in SOCE promotes OPCs differentiation. The remaining goals of this project are to unravel phenotypical variation of SOCE channel proteins, and their role in OPCs migration and differentiation followed by validation of the in vitro findings through in vivo system.

Presenter 9: Tessa Stewart, Undergraduate Student, Clinical Medicine

Population Risk Factors for Late-Stage Presentation of Cervical Cancer in Sub-Saharan Africa

Cervical cancer is the most prevalent malignancy in sub-Saharan Africa (SSA) with many women only seeking professional help when already experiencing symptoms. This implies late-stage malignancy and higher mortality rates, though a paucity of histological staging data exists. This study assesses population-level exposures of SSA women to the numerous risk factors for HPV infection and cervical cancer, against late-stage presentation of cervical cancer. Open-access databases were mined for variables closely representing each risk factor, and a proxy for late-stage presentation was used (ratio of incidence-to-mortality, IMR). Variables showing significant correlation to the IMR were used in stepwise multiple regression to determine a predictive model. Countries with high cervical cancer mortality rates relative to their incidence have an IMR nearer one, suggesting a larger proportion of late-stage presentation. Western Africa had the lowest median IMR (1.463), whereas Southern Africa had the highest median IMR (1.761). Significant predictors of IMR were GDP (coefficient = 2.189×10^{-6} , $p = 0.065$), HIV infection (-1.936×10^{-3} , $p = 0.095$), not using a condom (-1.347×10^{-3} , $p = 0.013$), high parity (-1.744×10^{-2} , $p = 0.008$), and no formal education (-1.311×10^{-3} , $p < 0.001$). Using an IMR enables identification of risk factors for late-stage cervical cancer in SSA women.

Presenter 10: Antonina Kouli, PhD Candidate, Clinical Neurosciences

Brain Inflammation: A Key Player in the Progression of Parkinson's Disease?

Parkinson's disease is primarily a movement disorder, but almost half of the patients also develop dementia. Dementia in Parkinson's is associated with abnormal protein deposits in the brain, but we think that brain inflammation is also involved. The immune cells of the brain are called microglia and play a key role in brain maintenance. However, when microglia become chronically activated they can cause brain cells to die. In my PhD project, I am investigating microglial activation, as well as, abnormal protein deposits in the brains (after death) of Parkinson's patients compared to healthy people. My work so far has shown that microglial activation is increased in memory-associated areas in Parkinson's compared to healthy brains. Importantly, we found that in Parkinson's brain inflammation is strongly linked to memory decline, whereas the amount of abnormal protein deposits is not. To further explore the role of neuroinflammation in Parkinson's dementia, we are doing a brain scanning study (PET imaging) to measure inflammatory change in the brain, and one of the key proteins involved in Parkinson's dementia (tau). In this study, we are dividing newly-diagnosed Parkinson's patients into two groups, "high" and "low" risk of dementia. This will allow us to explore for the first time the relationship between the risk of early Parkinson's dementia and neuroinflammation, as well as abnormal proteins in the brain.

Presenter 11: Luyang Zhao, MPhil Student, Politics and International Studies

The Agenda Setting of International NGOs: Power Analysis and External Forces

This research mainly focuses on the decision-making process of international NGOs to put forward a certain project or launch certain campaigns. This research concentrates on Greenpeace, a radical international NGO, which has established their international networks across the globe, while it adopts different working strategies and adjusts their projects in different areas under a general guidance from Greenpeace's global campaigns. This research will compare its main projects in East Asia and Europe, and analyze in detail the campaigns of ceasing nuclear powers in UK and Germany, in which two areas this topic has been rather overlooked or out-cried respectively. This research will try to sort out the prejudgment as regards the legal, political, social and cultural context, that Greenpeace reached to measure the probability of success for a particular campaigning project before moving to the final decision of launching. The research methods involve interview, archive analysis, comparative case study and other positivist approaches. The initial hypothesis is that the agenda setting of Greenpeace is a realistic process of selecting and compromising, and a rational procedure of balancing the cost and benefits. International NGOs also needs a certain contextual basis as an assistance to further strengthen the norms and values it advocates, but not create a topic out of nothing.

Presenter 12: Taras Kolomatski, MPhil Student, Pure Mathematics and Mathematical Statistics

Quantum Ramsey Theory

Philosophically, Ramsey theory studies how order must arise from chaos; concretely, classes of systems in which being above a threshold size guarantees the presence of regularity, independent of apparent disorder. The finite classical Ramsey's theorem states that, for example, given a number k , there is a number n , such that any group of n people will admit a subset of k people that are either all pairwise acquaintances or all complete strangers; formally, these are cliques or anti-cliques in the graph corresponding to socialisation. The infinite classical Ramsey's theorem states that we will be able to find an infinite such subset in any 'infinite group of people'. In classical information theory, the confusability graph represents possible information loss as symbols are transmitted through a noisy channel. Error correction studies efficient communication. Knill and Laflamme (1997) laid the foundation of error correction in quantum information theory, motivating the definition of a quantum graph. Quantum error correction informs the design of quantum computers. Recently, Weaver (2016) proved a quantum analogue of the finite classical Ramsey's theorem. Taming infinities via functional analysis, we (Kennedy, Kolomatski, Spivak, 2017) proved a natural analogue of the infinite classical Ramsey's theorem: an infinite quantum Ramsey theorem.

Presenter 13: Curtis Sharma, PhD Candidate, Theoretical and Applied Linguistics

Bilingual Cognition and Attention Deficit/Hyperactivity Disorder: Is There a Bilingual Effect on the Appearance of Traits?

The advice most commonly given to bilingual families in which there is a child with a developmental disorder such as Dyslexia, Autism, and Attention Deficit/Hyperactivity Disorder (ADHD), is that they should restrict communication with that child to the majority language only, that is, the language of the country of current residence. Research on the interaction of ADHD and bilingual cognition is nascent, with only 3 studies published to date; with none having broached the idea. In the absence of relevant research, medical practitioners, psychiatrists, psychologists, educators, and parents, in many cases, end up taking this "safe" but uninformed option. Many if not most of these children already suffer some degree of isolation, be it in educational or social settings, and this exclusion at home will likely have further adverse effects on them. Using parental questionnaires, I have gathered data from almost 400 primary school children to compare language experience and appearance of ADHD traits in a non-clinical population. This is the first time such an investigation has been done and the data so collected forms the largest known database of its kind. I will look for correlations between bilingual experience and levels of ADHD traits to find out whether bilingualism worsens these symptoms, affects them not at all, or possibly even mitigates them. I will also and look at the effects of age, gender, and socioeconomic status. The possibility that bilingual cognition may mitigate the symptoms of ADHD is a reasonable one, as those very

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cognitive abilities that are said to be impaired in individuals with ADHD, have been found to be enhanced in individuals who speak more than one language.

Presenter 14: Sakshi S., MPhil Student, Land Economy

Evaluating Justice: Indigenous Communities and Environmental Litigation

A discernible gap between economic and legal valuation of environment has been revealed by materials brought before specialist environmental courts worldwide. While economic valuations have a significant role in quantifying environmental harms, the literature available on methods and legal tools adopted by courts to this end is scant. This vacuum also signifies a failure to capture non-monetised social valuation of environment resources that is of critical interest within the framework of environmental justice. Interesting departures from conventional decisions, like *Garrett v Williams* (2007, New Zealand) that ordered restorative justice for aspects of environmental damage that monetary damages failed to address, signify potential for accommodating non-use values in legal discourse. The thesis will examine claims made by a wide range of petitioners, including indigenous communities, to understand the nature of evidence and the quantification of damage brought in support of their claims before operationally independent environmental courts of New Zealand and Australia. The thesis will then look at the outcome of litigations to examine the final methodology adopted, which may betray the valuation that has been most favoured. The emphasis would also be on the text of the decisions that attempt to answer deeply political and ideological questions of assessment of environment, economic or otherwise, keeping in mind the overarching principles of environmental rule of law.

POSTER PRESENTATIONS

Poster 1: Kioko Mwikali, MPhil Student, Wellcome Trust Sanger Institute

RNA Seq Analysis of Plasmodium Falciparum Extracellular Vesicles

Plasmodium falciparum is a parasite that causes the overwhelming majority of human malaria mortality. The interaction between the parasite and the human host during infection, development and persistence is unsurprisingly dynamic and delicately balanced, and is only imperfectly understood. One of the ways through which Plasmodium falciparum (Pf) interacts with the human host is through the release of small bubble like sacs called extracellular vesicles (PfeVs) into their environment. PfeVs are augmented in severe malaria and have the potency to activate cells of the immune system and endothelia. PfeVs have been only recently identified, and contain both parasite proteins and host RNA. Interestingly, when added to parasite cultures, PfeVs promote the formation of gametocytes, the sexual stage of the parasite life cycle that is transmitted from humans to mosquitoes. However, the exact parasite cargo selectively loaded into the lumen of the PfeVs that induce sexual commitment is essentially not known. In this study, I will use the sequencing approaches and resources available at the Sanger Institute to determine whether the parasite RNA enriched in PfeVs is associated with Plasmodium falciparum sexual commitment. Our understanding of the contents of PfeVs will provide new targets for malaria therapies and diagnostic strategies.

Poster 2: Xin Xu, MPhil Student, Education

Data-Driven Learning for Lower-Level ESL Learners: A Quasi-Experimental Study in Southern China

This research considers how Usage-based perspective, or UBP contributes to valuable insights into the nature of SLL and relevant pedagogical applications. This paper uses the term UBP to refer to theories or approaches to SLL that foreground two characteristics: the first is the patterned nature of language usage; secondly, the social and cultural context of usage. Through a comparative analysis of two empirical studies, this paper arrives at three conclusions: (a) patterns of linguistic constructions of a second language can be learned and profoundly influenced by input frequency cognitively; (b) Underlying the environment of language cognition is social usage: these patterns of frequency, contingency, and prototypicality are all embodied in the everyday interactions of the speech community, where language is socially constructed; (c) There is no more appropriate forum for the meeting of cognitive and social approaches to language than usage-based approaches.

Poster 3: Hanyuying Wang, PhD Candidate, Institute of Public Health

Risk Factors for Loneliness in the Oldest Old

The association between individual level factors and loneliness among older people has been widely studied, but few have examined the risk factor for loneliness among the oldest old

population. Moreover, evidence from longitudinal studies on effects of risk factors on fluctuation in perceptions of loneliness have been limited. This study aims to explore the cross-sectional relationships between potential risk factors and loneliness in the oldest old, and to investigate longitudinal prediction of change in loneliness over a 7-year follow-up. Data were drawn from wave 3 - 5 of the Cambridge City over 75s Cohort study, a population-based cohort of people aged 75 or over in Cambridge, which has been running since 1985. 665 respondents answered loneliness question at wave 3. Mean age was 86 years, and approximately 70% were women. Widowhood, living alone, less frequent family contact, not feeling satisfied with levels of contact with family and friends, not going out as much as like, having sight or hearing problems, and depression were significantly associated with loneliness net of all covariates. Approximately 37% of participants remained none-lonely, 9% were consistently lonely and the rest experienced loneliness changes. Depression and physical functioning limitations were found to predict the deterioration of loneliness.

Poster 4: Tellef Raabe, MPhil Student, Sociology

Power and Powerlessness: Political Commentators in the Digital Age

Several institutions and participants influence public discourse: political parties, private corporations, interest groups, «think tanks» and «the commentariat» - consisting of political experts and news commentators. Columnists are permanent contributors to their respective papers, and are considered to be «political priesthood» (Nimmo and Combs 1992). There is, however, reason to believe that the commentators' role and possibly influence is currently undergoing significant changes. Bente Kalsnes (2016) found that «one of the main consequences of the social media logic is media actors' weakening role as gatekeepers of information, potentially turning media actors into curators of information». In my MPhil project I am investigating the forces that are changing existing power structures in the media industry.

Poster 5: Liza Dahal, PhD Candidate, Chemistry

How to Interact: Understanding How a Family of Proteins Involved in Cell Death Communicate

The cells in our body are born by cell division and they die by a physiological process of cellular suicide called apoptosis. Cancer can occur when there is an imbalance between the process of cell birth and cell death, i.e. increased number of cell division or decreased number of cell death. A particular family of proteins called the Bcl-2 family of proteins are involved in regulating apoptosis. Here, we try to understand how the network is regulated by investigating the kinetics of interaction between members of this family, i.e. how fast these proteins associate and dissociate with their partners. We find that how tight these proteins stick together is controlled largely by the lifetime of these protein complexes. This information enhances our knowledge of apoptosis and thus advances our understanding of cancer.

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Poster 6: Jade Heyman, MPhil Student, East Asian Studies

Yoshimoto Banana: Importing Japanese Literature in the West

Contemporary Japanese writers popular in Europe are vectors of Japanese identity and culture transmitted to Western countries through literature. Through analysis of the biases of our national structures when publishing contemporary authors from Japan, I intend to demonstrate how the import of literature through our publishing mechanisms of editing, translating and repackaging shape the work of fiction and its reception. Yoshimoto Banana (born Mahoko in 1964) is an emblematic figure of contemporary novelists. Widely read in Japan and abroad, with translations in more than thirty languages, she has been analysed in worldwide academia in regard to, inter alia, gender identity, 'pure literature' (junbungaku), and postmodernism. There is a tension between this universal categorization trend of the most popular Japanese authors as postmodernists and the repackaging of their books as (exotically) Japanese in European book industries. With a unique dual approach – both literary analytical and of the business structure of Publishing -, I aim to enlighten this paradox and to bring an innovative perspective on transmission of literature from Japan, highlighting factors influencing the publishing success of Japanese authors in Europe.

Poster 7: Yuchun Zhong, MPhil Student, Education

Why Formative Learning Can Be a Remedy for Improving Students' Learning Situation in China?

In a context of knowledge-driven globalization, an increased attention has been paid to the nature of learning and creating conditions for it to flourish. This study argues that a new learning mode should be established in current Chinese educational context. Formative learning is therefore proposed. More specifically, the aim of the presentation is threefold. First, it will introduce the educational condition in Chinese educational context from a historical perspective. Second, it will explore the nature of learning and notion of formative learning by pulling together learning insights from the literature and discuss the factors that influence how people learn. Finally, it aims to arouse the awareness of how people learn and helps them learn more efficiently and effectively during their learning process.

Poster 8: Lama Alzamil, PhD Candidate, Pathology

Cervix in a dish

The nature of the cervical epithelium, and the mechanisms by which Human Papilloma Viruses (HPV) drive neoplastic transformation at this site, have been the subject of speculation for some time. This region, where two distinct types of epithelial tissue merge, is suspected to be a stem cell niche, and expresses gene products that are also apparent in cervical carcinomas. (McNairn and Guasch, 2011). At present there are several hypotheses to explain the origin of cervical cancer. The most well-established suggests that reserve cells; a putative long-lived cell population located under the columnar epithelium of the endocervix and at the cervical

transformation zone, are a progenitor of both the squamous and columnar epithelia lineages. According to this theory, reserve cells, which are cytokeratin 17-positive drive squamous metaplasia of the cervix, a process in which the cell differentiates to form either the simple columnar layers of the endocervix, or the stratified squamous epithelium in the cervical transformation zone (Martens et al., 2004; Smedts et al., 2010). Elevated expression of cytokeratin 17 has been observed in high-grade cervical lesions and cervical cancer cases, suggesting a possible reserve cell origin (Regauer and Reich, 2007; Shroyer et al., 2014). Reserve cells might represent an abortive site for high-risk HPV infections, where deregulated viral gene expression can drive HPV-mediated neoplasia. An alternative view proposes that a different population of cells, known as the SCJ cuboidal cells, which express distinctive markers including cytokeratin 7 may also be involved, with some cervical cancers being shown to be positive for this marker (Herfs et al., 2012). One challenge in examining these ideas, is the lack of experimental model in the field. We aim in this project to establish an experimental tissue culture model system based on the organoid technology, both from human and mouse cervical cells, in which the growth and differentiation of cervical progenitor cells is sustained. In parallel, we will also examine clinical biopsy material using in situ staining approaches, along with mouse cell-fate models, in order to better understand this epithelial site.

Poster 9: Ajeck Ndifon, PhD Candidate, Engineering
Phased Array Antennas in Wide Area RFID Systems

Radio Frequency Identification is used to wirelessly identify objects which are tagged with a batteryless transponder. They have found numerous applications in retail, asset tracking and logistics and supply chain management. The problem with current systems is the use of many antennas in order to provide full coverage to the intended area of interrogation. Phased array antennas make use of several antenna elements, whose phases and amplitudes can be controlled to produce variable antenna patterns. As a result, fewer electronically controllable antennas can be used to interrogate RFID tags in large areas, where many standard antennas would be needed otherwise. This presentation demonstrates the use of phased array antennas in reducing the number of antennas used in wide area RFID systems, whilst still improving overall performance. They are also introduced as a prelude to smart RFID systems. A system of distributed antenna arrays has been designed and built to demonstrate this. A comparison is made to standard antennas, and phased arrays are shown to outperform them.

Poster 10: Gabriela Doria, PhD Candidate, Plant Sciences
The Role of Petal Cell Shape in Plant-Pollinator Interactions in Wild Tobaccos (*Nicotiana* spp.)

With almost 400,000 species, flowering plants are the most diverse group of plants on Earth. Flowering plant diversification has been driven by plant-pollinator interactions. My research focuses in understanding how flowering plants build traits that are important for attracting

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animal pollinators, specifically petal traits such as colour, pigmentation and surface texture. Using a combination of tools from molecular biology, morphology, systematics and pollinator behaviour, I am studying the evolution and development of petal cells in the wild tobaccos (genus *Nicotiana*, family Solanaceae), and how these affect the interaction flower-pollinator. The cells on the surface of the petal are the first point of contact between plants and their animal pollinators. The shape of these cells determines petal aspects such as the colouration, temperature and grip for pollinators. Understanding plant-pollinator interaction in this integrated way provides us tools that contribute to the design of strategies to protect plant and animal biodiversity. Moreover, it opens possibilities of collaboration with the agriculture sector to optimize crop pollinator attraction and to promote food security.

Poster 11: Muhammad Farouq Bin Osman, MPhil Student, Public Policy

Singapore's Education Policy: Breaking the Link between Family Background and Educational Attainment

The Organisation for Economic Co-operation and Development's (OECD) Programme for International Student Assessment (PISA) indicators consistently show that Singapore students outperform their peers in other developed countries in areas like mathematics, science and reading skills. However, 2015 PISA data also highlighted the important influence of family socioeconomic background in determining Singapore students' test performance, raising questions about the Republic's educational equity. This paper aims to investigate the policy tools in education that can be used to break the link between family background and educational performance. To this end, it will analyse literature review consisting of primary and secondary data about the impact of Singapore's education policies on low-income families. This paper will then explore policy alternatives from other countries which have been successful in providing all their students similar opportunities to benefit from education. It is hoped that this paper's findings will inspire more concerted efforts to ensure social mobility among all Singapore families.

Poster 12: Thomas Hackl, MPhil Student, Sociology

The Class(less) Society - A Comparative Qualitative Analysis on the Meaning of Social Class

While research on social class has been becoming more popular again in the last years, the current academic discourse still emphasizes to a great extent on the definition of social class and its classification. Common definitions of class are mostly derived from theoretical works, mass surveys or a combination of both. Qualitative research is desperately missing on this topic. To tackle this problem, focus groups were conducted on the interpretations of social class both with university students as well as with industrial worker in Austria and the UK respectively. The resulting definitions of class will then be compared with popular definitions of social class in the academic debate. This is expected to give a better understanding on how social class is envisioned today and how it influences different social aspects.