Alexandra Holmes, Biological Sciences
Characterisation of Potential Anti-Chlamydial Drug Targets

Chlamydia trachomatis is a species of clinically relevant obligate intracellular bacteria. Chlamydial infections are the leading cause of sexually transmitted disease and non-congenital blindness, a large-scale health risk and financial burden. As currently used antibiotics are inadequate at controlling these infections, there is a pressing need for improved therapies. Therefore, new leads towards treating these infections have the potential for a large societal impact.

Due to a reduced genome and lack of biosynthesis pathways, this species is unable to make its own nucleotides. These are molecules which are essential for producing energy and DNA. Therefore, C. trachomatis needs to acquire these nucleotides via an alternative mechanism. It depends on the two transporters, Npt1Ct and Npt2Ct. Transporters are proteins in the cell membrane that move molecules into and out of the cell. Blockade of these transporters could lead to nucleotide starvation and represent a novel anti-chlamydial therapy. Despite their clinical relevance, little is known about these transporters.

Drug development increasingly depends on information about the shape of the transporter and how it binds and transports molecules. To gain a better understanding of these aspects of Npt1Ct and Npt2Ct, the protein structures were computationally modelled using a similar transporter as a template. Following this, relevant nucleotides were computationally docked into these models to define important regions and amino acids.

This work provides a foundation for further study of the structure, function and mechanism of these transporters, which contributes both to scientific knowledge, and could facilitate the development of anti-chlamydial treatments.

Chelsea Pamplin, Biological Sciences

It has recently been shown that a protein called RE1-silencing transcription factor (REST) is upregulated in healthy brains with age but not in those with Alzheimer’s disease, suggesting a protective function of the protein. Specifically I researched the impact REST has on the cyclin-dependent kinase 5 (CDK5) pathway and oxidative stress-induced cell death both of which are well established as pathological aspects of the disease. To do this I developed two objectives:

- To investigate whether increasing REST expression decreases levels of two CDK5 activators, p35 and p39.
- To examine how REST expression and CDK5 activity affect cellular response to oxidative stress. Oxidative stress refers to an adverse state whereby cells cannot sufficiently prevent or repair damage caused by reactive oxygen species (ROS) such as hydrogen peroxide. The ageing process is characterised by a progressive decline in the efficiency of all physiological functions, including cellular ability to regulate ROS; this is reflected by studies describing age-dependent increases in oxidative damage. Thus it is hypothesised that by decreasing CDK5 activity REST could provide protection against Alzheimer’s disease through improving cellular response to oxidative stress. It is important to mention that REST affects the levels of around 2000 genes therefore this protective effect is likely through multiple pathways, however providing evidence of neuroprotection through CDK5 regulation is important as this forms the basis of a causal link to what was previously a suggestive association between REST and Alzheimer’s disease.
Session 16E │ Student-centered Curriculum, Feedback & Research

Oscar Hidalgo, Maths and Physical Sciences
Inverse Problems and International Competition

Frequently, researchers encounter problems in which the cause is unknown. Potentially, the research could not go further or present difficulties unless the cause is found. That is when Inverse Problems can take place. An Inverse Problem is the process of calculating the factors that produce an event or result from a series of observations. The field of Inverse Problems is a relatively new subject in science with just a little over one hundred years of study. However, it has demonstrated to be of great importance due to its wide range if applications in areas of optics, radars, machine learning, etc. Through Inverse Problems, scientists have found answers to questions such as: Can we hear the shape of a drum? The main challenge with these questions is that the equations that answer them cannot be solved directly. For this reason, this research will investigate how to find functions that can approximate the solutions in small intervals. The principal method to do so will be creating a function that consists of the union of pieces of other cubic polynomials. The polynomials, which are easier to handle, will be found through data already gathered in order to obtain a good approximation. In this way, it will be possible to find solutions to some of the inverse Sturm-Liouville problems which are used to determine the properties of a material such as its conductivity and potential.

Marcella Manfredonia, Lifelong Learning Centre
Does the implementation of a Plan, Do, Review activity in a Reception class assist children in their choices and direction and ultimately create more self-regulated learners?

This research looks at self-regulation in Early Years children. It looks at a child identified as having difficulties in self-regulating during free-flow activities and at two others who have less so. The research has attempted to implement an activity to assist those who have difficulties and enhance the independent learning skills of those who do not. Some examples of independent activity and learning are observed and known to be essential at the very start of the independent learning journey. The simple activity was designed and created based on present classroom provision. The activity enables pupils to make a pictorial plan of areas that they think they would like to access, to do this and then be encouraged to review their experience with as much support from the educator as required. Early Years classrooms are encouraged to promote independent learning and self-regulation. Twenty-one written observations are used alongside a fiita score to assess how many times, participating children change their activity in a given time with a perception of their scale of involvement based on a scale designed in line with Laevers level of involvement scale (Laevers 1998;2006;2007). These are analysed alongside interview responses from staff in the setting. The study recognises that no self-regulatory strategy will work well for all. It also recognises that where positive changes in response to the activity were observed and it did seem to aid choice and direction there was not enough evidence to state that this ultimately creates more self-regulated learners.

Fraser Payne, Medicine and Health
How medical students understand, value and use the feedback that they receive on their consultation skills in primary care settings.

Feedback on consultation skills is a key feature of medical education, although the quality of feedback and the extent to which medical students recognise and value such feedback is
variable. This study explored how medical students understood, valued and used feedback during their clinical placements in primary care, to develop their practice.

An exploratory methodology and qualitative study design were used. Third year medical students who had undertaken a six week placement in primary care were recruited as participants (n=5). Participants undertook semi-structured interviews which were audio recorded and then transcribed verbatim. Thematic analysis was used to identify key themes from the interview data.

Participants demonstrated a developed understanding of feedback and felt the primary care setting fostered both increased opportunities for feedback and higher quality feedback. Feedback was provided by a range of sources including general practitioners, nursing staff and informally from patients during placements and participants valued multi-source feedback. Participants identified that the clinical setting and placement duration allowed for greater rapport between students and placement supervisors; this in turn led to more matured relationships which helped facilitate an open dialogue for feedback. Participants recognised that they had a role in ensuring feedback informed their practice and acknowledged that emotional responses to negative feedback disrupted this process.

This study has implications for how curriculum developers prepare students to use feedback to inform their clinical practice, and for clinical educators in both primary and secondary care settings in how they facilitate opportunities for feedback during placements.

Session 17D | Applying Models & Simulations

Cameron Calcluth, Maths and Physical Sciences

Using quantum molecular dynamics as a tool to understand biological processes

We already know that the structure of biomolecules is largely responsible for how they work. However, studying the motion of individual atoms and how those motions influence the function of the molecules is an emerging science. Recent techniques allow us to look directly at these fundamental motions that dictate their function. In particular, two-dimensional infrared spectroscopy is a tool to look at vibrations of complex molecules in real time.

When the right wavelength of infrared light is fired at a chemical bond the bond will vibrate however it stops vibrating within one picosecond. Although the fundamental equations are known, the problem of dealing with quantum mechanics in a complex system is far from solved due to the nondeterministic nature of measurement. A paper on Quantum Molecular Dynamics was published last year by Hasegawa at the University of Kyoto. A computer program will be produced which will use these methods, Lagrange multipliers and statistical physics to simulate these bonds to find out what is happening. I will then be able to answer the question of whether these simulations correspond with reality. So far no results have been obtained due to its highly complex nature, but I will have results by the time of the conference.

This research will focus on the bonds of proteins. Although we can understand how the majority of these proteins work, we don't understand the quantum mechanics behind the processes. This research could unlock a new perspective of how these biomolecules work which could lead to breakthroughs in chemistry, biology and medicine. It could also be used as a new method to identify and understand how these proteins interact with their surroundings, leading to further knowledge about how they work as a whole.
Nicholas Egunjobi, Engineering  
The Computational Modelling of Boiling for Nuclear Reactor Thermal-Hydraulics

This study aims to understand and predict the complex phenomena involved in the nucleate boiling of two-phase flow, prevalent in both the thermal management and safe operation of nuclear reactors. Industrial nucleate boiling is currently predicted with computational modelling tools, however, caution is taken for these tools as they are accurate under specific conditions which is unfounded in normal operations.

The desire for complete modelling tools spans over decades of research and brings forth a vast number of experimental and theoretical studies. This, as well as an increasing number of computational tools, have been developed in order to understand the boiling phenomena. As such, there is a debate on the use of empirical models, currently used in industry and are seen as a panacea due to their reliability in specific conditions. In contrast, mechanistic models, aim to quantify the parameters under various conditions for further understanding.

This study proposes a mechanistic model based on the Klausner (1993) experiment for the analysis of thermal-hydraulic data to be validated by comparing against previous results. This can subsequently be incorporated into computational fluid dynamic codes to improve the accuracy of prediction.

The model was validated and proved to have an accurate prediction of thermal-hydraulic data, for instance, parametric bubble departure diameters decreased with increasing mass flux and decreasing heat flux in accordance with parametric trends present in literature. The study confirmed that mechanistic modelling is the route to take to improving the understanding of the boiling phenomena and obtaining accurate thermal-hydraulic data predictions.

Session 17E │ Evolutions in Management & Business Technology

Esther Hernandez, Arts, Humanities and Cultures  
Criminal Victims: An Analysis of Sino-Korean Migration, Gender and Human Rights Violations, 1990 until the Present Day

As early as 1990, North Korea was targeted by an extensive human rights campaign, yet allegations of gender-based violence, some as recent as 2018, remain overlooked in favour of stories about nuclear weapons. This nation fascinated the West, but ordinary civilians were rarely invited to offer their opinion. Indeed, around 200,000 North Koreans are hidden in China, however few have told their story, causing inaccuracies in our conception of this nation. Instead, our impression was constructed around political opinions.

This research focuses on women in North Korea and China from 1990 until today and questions why they were at particular risk. It examines gender discrimination in North Korea, trafficking and refugee status in China in order to understand how to prevent further abuses. This research focuses on female experiences to increase their visibility and create a more accurate picture of everyday life in North Korea.

The literature review of defector testimony and analysis of quantitative data indicated that sexism and gender-based violence were ingrained in North Korean society. Secondly, Chinese data revealed that legislation, such as condemning trafficked women as ‘illegal immigrants’
increased risks to refugees, despite their protected status internationally. This indicates that trafficking and gender inequality are significant problems for North Koreans, yet these problems were overshadowed by military concerns, thus normalising abuse against refugees. These findings demonstrate that refugee policy should prioritise vulnerable groups over international interests. This would increase the safety of vulnerable individuals and actually improve the lives of ordinary North Koreans.

Giorgio Govedaris, Education, Social Sciences and Law
Are corporations adequately held accountable for their violations of human rights?

This presentation assesses whether corporations are adequately held accountable for their violations of human rights. Part 1 examines the extent to which corporations are held accountable for their violations of human rights under the international human rights law, domestic human rights and notable human rights caselaw. Part 2 examines whether corporations should be held to a higher standard of account by possessing human rights obligations. Part 3 evaluates various reform strategies in respect of improving corporate human rights accountability in order to determine which strategy may be implemented to improve corporate human rights accountability.

This presentation argues that corporations are not adequately held accountable for their violations of human rights under the law. As a result, corporations should possess human rights obligations to improve the extent to which they are held to account for their violations of human rights. Finally, corporate human rights accountability may improve through the implementation of a mix of self-regulation through codes of conduct, soft law initiatives, hard law initiatives, and educational initiatives.

Session 18A | Medical Drugs and Systems
Matthew Padgett and Samantha Boon, Medicine and Health
The effects of inducing neuroplasticity using Theta Burst Stimulation in the Posterior Parietal Cortex on a range of cognitive tasks.

Inducing neuroplasticity as a treatment for neuropsychological disorders is not adequately understood. Previous studies have utilised Theta Burst Stimulation (TBS) in the motor cortex (stroke) and in the prefrontal cortex (cognitive decline). However, inducing neuroplasticity via TBS in the Posterior Parietal Cortex (PPC), involved in motor and cognitive functioning, is poorly understood. Therefore, inhibitory (continuous) and excitatory (intermittent) TBS was administered to the right and left PPC across 4 sessions, 1 week apart, to twenty healthy undergraduates (aged 18-22) in a single blind, 2 (Continuous/Intermittent TBS) x 2 (Left/Right PPC) design, across a range of cognitive tasks, with eye (EyeLink 1000) or button box recordings taken. Reaction time and/or accuracy were measured before and after stimulation. Results showed no effects of stimulation, or sham stimulation, indicating the direction of
plasticity did not inform resultant behaviour, and was not due to learning effects. However, performance changes did reveal hemisphere and task differences. Inhibition data demonstrated an interaction between stimulation and trial, and between stimulation and hemisphere on prosaccade trials. Further, SLT data showed a marginally significant interaction between stimulation and hemisphere. Finally, N-Back data showed a novel interaction between condition and hemisphere, with increasing task difficulty. Further research must examine the role of TBS in mediating cognitive function, and individual differences to stimulation. Furthermore, additional research is needed into the function/laterality of the PPC. Increasing knowledge of TBS effects on cognitive function has ramifications for the treatment of neuropsychological disorders, such as stroke and depression.

Elizabeth McKee, Medicine and Health
Standing on the shoulders of giants: The process of carrying out a meta analysis in health behaviour change research

Health behaviour change research involves investigating a constellation of psychological factors that may affect the health behaviours in which people engage. A vast amount of research has been published since the last systematic review of the literature 25 years ago. Working in collaboration with the authors of the previous review, members of the University of Leeds health and social group hope to illuminate what we have learned from this body of new research in a hope that it will develop both clinical practice and academic understanding of the key determinants of health behaviour change. Whilst work is still ongoing, this session will discuss the review's purpose, methodology, past and current challenges and future implications.

Session 18B | Political Issues

Anton Witchell-Chibber, Arts, Humanities and Cultures

As conflict continues to engulf parts of the Middle East and North Africa, the discourse relating to Libya has often been overshadowed by events in Syria and Iraq. Yet, since 2011, the country has remained fraught by violence. For policymakers to push Libya’s warring factions towards national reconciliation, it is vitally important to understand how Libya descended into civil war. Equally, it is crucial that the consequences of NATO’s intervention in Libya in 2011 serve as a cautionary tale in the cost of liberal interventionism. My research asks two questions: to what extent was the initial intervention in Libya a success, and why in its aftermath did Libya develop into a failed state?

Using reports by human rights organisations such as Amnesty International and Human Rights Watch, alongside news bulletins, my research considers the failures of intelligence by the pro-interventionist powers in the threat level to the population of Benghazi, which formed the crux of the humanitarian argument to intervene. It explores the political alternatives to military intervention, which were ignored by the international community in favour of regime change. Finally, the research focuses on the struggles of post-Gaddafi Libya, questioning if Libya’s political collapse was foreseeable or if the pro-interventionists are guilty of inadequate post-war planning. It will be concluded that the lack of a centralised security apparatus gave rise to the proliferation of Qadhafi’s weapons stockpiles and left justice and political policy in the hands of the militias, who were co-opted into the establishment.
Jessica Millard, Arts, Humanities and Cultures  
Deconstructing and Reconstructing: Afro-Modernist Discourse and Free Jazz Expression

During the socio-political and economic turbulence of 1960s America, an apparently ‘modern’ time, African American artists and intellectuals engaged with free jazz expression — a performative stance that sought to break away from the stylistic conventions associated with popularised conceptions of bebop, hard bop, and modal jazz. This was done in a way that challenged the aesthetic values and cultural expectations that white European defined ‘modernism’, a term often anchored to a specific geography and period, had imposed and sanctified. This research aimed to introduce and evaluate an alternative framework for considering the progress — whether that be musical, cultural or political — that African American free jazz artists had declared; a framework which takes into consideration existing conversations about aesthetic agency, black moral authority, spirituality and identity and narrative construction to allow for the pluralities of African American experience to be considered fully and without limitation or anecdotal bias. Through archival research and oral history investigations, conclusions of Afro-modernism suggest that considering free jazz within its own cultural history and tradition supports the deconstruction of false race hierarchies and narratives of subordination that saw black artistic expression previously mediated by white criteria. It also makes apparent that countercultural modernity enabled African Americans to reconstruct these narratives in way in which they represented and made valid their cultural memory and artistic history; it gives back to practitioners agency in regards to intent, process, and product that has previously been subordinated by assumed narratives and as such, has impact past this field.

Session 19A | Change

Anna Gower, Arts, Humanities and Cultures  
Can poststructuralism help us to understand the locations and functions of state borders in international relations?

Neoliberalism and globalisation have altered border practices to the extent that state borders must accommodate for the flows of people that sustain the global political economy (Ashley, 1988). This thesis aims to foster a more complex and multi-dimensional understanding in international relations of where state borders are to be found and what they do. Poststructuralism rejects the terms of study in international relations and how we perceive politics. Biopolitics has been developed from a poststructural approach and is the idea that species life is the referent object of politics (Agamben, 1998). This dissertation draws on two biopolitical concepts to argue the value of poststructuralism resources in reimagining the locations and functions of state borders. Firstly, the “generalised biopolitical border” (Vaughan-Williams, 2012 p.97) is advanced as a way of broadening our understanding of the locations of state borders. Secondly, the concept of a biometric border is proposed as a method of understanding borders not as static lines on a map but rather as being dynamic and able to perform functions (Amoore, 2006; Muller, 2011). Throughout, Germany is used as a case study to demonstrate how contemporary border practices require new and fresh imaginations of state
borders. While this dissertation argues the value of these biopolitical concepts, it also engages with them critically, arguing that further research is required to understand how bordering processes impact populations of different ethnicities or race. It suggests a decolonialist approach to bordering processes helps us to understand how biometric technologies have been ‘calibrated’ to Whiteness.

**Edie Fisher, Education, Social Sciences and Law**

**Power Through Song? An Empirical Study of Soft Power Influence within the Great Powers of Europe, through the lens of Voting Trends in the Eurovision Song Contest**

World War Two and the Cold War saw the power structures and epicentres of the 20th century shift. As Russia grew in power, former Great Powers faltered as they attempted to adapt to new power structures. Joseph Nye’s theory of soft power encapsulated the move from hard military power, to persuasive soft power. His theory focuses on three sources: culture, political values, and foreign policy. However, whilst there is agreement the sources, there is no consensus on how to measure soft power. This study posits that the Eurovision Song Contest is a viable measure of Nye’s theory. As a quasi-political and cultural phenomenon, the contest offers an interstate platform to exercise soft power. In this study I used a negative binomial regression with random effects to test my theory that the contest can be used to measure soft power within the Great Powers of Europe. My findings were that major power status has a negative effect on points received. Furthermore, it was also found that countries with a lower Human Development Index score receive substantially more points, suggesting that Eastern - who, on average, have lower scores than the West – are more likely to receive more points. Combined with the theory of bloc voting, the results suggest that Eastern countries receive a higher vote share. Within the Great Powers, Russia can be seen to be exercising the most influence within the contest. These results, coupled with the historic mirroring, suggests that Russia is currently the strongest power in Europe.

**Session 19B | 3d printing? Technologies? Digital tech and markets?**

**Yeo Shu Hui, NTU**

**Session 20A | TBD**

**Charlotte Horner, Medicine and Health**

**If it doesn’t challenge you, it doesn’t change you**

**A Qualitative Exploration of Positive Student Experience at University: Can University aid in the Recovery of Depression?**

Depression in university students is associated with worsened academic performance and poorer social functioning (Eisenburg, 2007). Pressures to form friendships and achieve success create a largely negative environment (Yoon, 2017), but must it always be so? Whilst stressors exist, so too do opportunities for self-betterment as students find renewed purpose. Such aspects are neglected in literature, and the present study aimed to address this by examining the positive experiences of students who have recovered from depression at university with three questions:
(1): what aspects of university are useful in combating depression?  
(2): how are these aspects experienced by students?  
(3): can these experiences assist other students?  

Five students aged 18-25 were recruited via a Facebook post on the University of Leeds Current Student page and posters advertising the study on-campus. Upon recruitment, they were interviewed using a semi-structured interview schedule. Interpretative Phenomenological Analysis aimed to understand their lived experience of depression in a university setting, and themes were generated from these interviews, including Empowerment and Development of Identity.

Aspects of university life were identified to improve outcomes of depression. For example, university offered students an opportunity to develop their adult-identity, representing a milestone in personal development as the individual acquired skills to interact with the world without relying on others and increase their self-esteem (Secker, et al, 2003).

Suggestions were then made regarding future study, including conducting interviews with university mental health professionals to provide data from different perspectives, which could offer new insight into mental health recovery at university.

**Ersel Awan, Leeds University Business School**  
Modern Slavery in International Business

The research will contribute to the British Academy funded project "Pulling a thread: Unravelling the trail of modern slavery in the fashion and textile industry". In the Project we are assessing how businesses in the fashion industry implement the UK's Modern Slavery Act (MSA) across their international supply chain. This includes how they are understanding, addressing and incorporating the MSA considering that businesses tend to have close relationships only with the 1st tier of their supply chain. I will be expected to familiarise myself with the academic literature on forced labour along with the codes and practices of the UK, Vietnam and India. I will then use this information to contribute to the design and development of scenario workshops. These workshops will have participants from Industry, Government and Businesses and will need to be feasible in UK, India and Vietnam. In the second year I will conduct a follow up study with the participants of the workshops assessing the impact of the workshops on changing their opinion of modern slavery. This will be done through conducting interviews and questionnaires. The aim is to have a meaningful and insightful workshop that will create a change in the mindset of government and business officials and make them aware of the exploitation that is involved in many international supply chains.

**Session 20B | Gender, Sexuality & Religion**

**Laura Wallace, Education, Social Sciences and Law**  
Exploring the Irish Catholic Identity and its Influence on Adolescent Female Sexuality

More than one in five countries have an official state religion and often, many make the assumption that Catholicism is the state religion of Ireland. Despite the Irish constitution stating on its first page In the Name of the Most Holy Trinity, from Whom is all authority and to Whom,
as our final end, all actions both of men and States must be referred. (Bunreacht na hireann, 1945), Ireland is officially a secular country. This paper seeks to explore the notion that as an Irish citizen, one’s Catholic identity is often assumed and that within this assumption there are implications for those attending Catholic institutions. In particular, this paper will examine the relatively under-explored area of Irish sexuality within the Catholic-dominated school systems and how the baptism barrier can create an assumed Catholic identity for Irish adolescents. In turn, the Catholic identity then works to influence the discourses towards a heteronormative framework which others female sexuality and desire. The existing bodies of work carried out on Irish sexuality and Catholicism have been predominantly written by Tom Inglis, but very little exists outside of these studies. The originality in this study’s approach is that, by examining the Catholic identity as it intersects with Irish social values that relate to sexuality, it draws attention to Foucauldian theories of power-knowledge. As a result, the power-knowledge imbalance becomes problematic in the context of female adolescent sexuality. This paper seeks to contribute to the debate that Ireland needs to drastically overhaul current sex education.