



The
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Of
Sheffield.

POSTERS IN PARLIAMENT 2018

**BC
UR** BRITISH
CONFERENCE OF
UNDERGRADUATE
RESEARCH

20 FEBRUARY 2018

Welcome to the sixth Posters in Parliament exhibition of research undertaken by undergraduate students from across the country. These students represent the next generation of innovators and academics.

Their discoveries are already helping to further our understanding of the big challenges facing the world today. This event is part of the British Conference of Undergraduate Research. BCUR grows every year, giving more and more undergraduate students the opportunity to experience real research from the cutting edge of their field. Many of them go on to publish their work in highly-rated journals and then develop their research even further as postgraduate research students.

This year, Posters in Parliament is organised by The University of Sheffield, who will also be hosting our main conference in April. Sheffield has a long-established commitment to research-led learning and provides opportunities for all undergraduate students to undertake their own research.

2018 sees the exhibition moving to a larger space in Portcullis House, to enable even more Universities to take part. For the first time, it also includes a workshop for students to enable them to make the very most of their experience here.

**Professor Stuart Hampton-Reeves
Chair of the British Conference of Undergraduate Research**

I am delighted that The University of Sheffield is sponsoring Posters in Parliament this year. Featuring work from 27 universities, the event provides a superb insight into the important and varied research undertaken across the UK.

The rich relationship between teaching and research is a key foundation for student learning at Sheffield. Exposing students to the excitement of developing, testing and explaining ideas is an essential part of all our degrees. Building on the principles of research-led teaching, we are committed to enabling and encouraging students to become active researchers who engage with the wider world in their learning.

The University has long-held a view that we should highlight the often exceptional work of our undergraduates by encouraging them to disseminate their research far beyond our own institution - an ethos we undoubtedly share with other universities across the UK. Posters in Parliament is a fine example of this in action, providing a unique platform for students to showcase the most innovative work taking place within our universities. Congratulations to all of the talented undergraduate researchers participating in today's exhibition. I am sure all attending will agree that this event is of significant value to both students and institutes.

**Professor Wyn Morgan
The University of Sheffield Vice-President for Education**

POSTERS IN PARLIAMENT 2018

EXHIBITION BACKGROUND

Posters in Parliament is inspired by the US Posters on the Hill event in which the best students are sent by their universities to present their work to the House of Representatives and the Senate. Legislators and policy makers are able to see first-hand some of the innovative research taking place around the country. Posters in Parliament was established by the University of Central Lancashire (UCLAN) and is part of BCUR. BCUR was founded in 2010 by a coalition of universities and held its first annual conference at UCLAN in 2011. Now in its 8th year, the conference is larger than ever and is considered a leading channel through which undergraduates can present their high quality research. The University of Sheffield is delighted to be hosting BCUR on 12th - 13th April this year.

ACKNOWLEDGEMENTS

BCUR is grateful to the Houses of Parliament for hosting this event and would like to extend thanks to the following who have contributed to this year's exhibition: Sky Yarlett, Parliament Education Outreach Team (lead organiser within Parliament), all those involved in the Poster judging process: Kathryn James - Lancaster University; Professor Julio Rivera - Carthage College USA; Stephen Rose - Independent Education Consultant; Nick Hillman - Director of HEPI; Professor Wyn Morgan - Vice-President for Education, University of Sheffield; Sky Yarlett - Senior Student Engagement Officer. Thanks also go to Lauren Hawkrigge - UCL, The Royal Society for Chemistry (programme sponsorship) and The University of Sheffield 301 Undergraduate Research team - Tracy Mayes, Amy Mollekin and Chloe-Jade Simmons.

TODAY'S PROGRAMME

Jubilee Room

10:45 - 11:45 Workshop for Participating Students

Attlee Suite, Portcullis House

13:00 - 14:00 Exhibition One

14:30 - 15:30 Exhibition Two

16:00 - 16:30 Speeches and Prize-giving

**BLACKPOOL & THE FYLDE COLLEGE,
UNIVERSITY CENTRE****Alex Dawson-Brown • EXHIBITION ONE****Psychological Distance and its Relationship with
Project Risk Perception**

Psychological distance is a phenomenon claimed to have distinct effects on the way individuals perceive risk. With risk management playing a fundamental role in the project management profession, this study explored the existence and impact of psychological distance in project-based scenarios.

Geoff Powell • EXHIBITION TWO**Barriers Preventing the Use of Machine Learning in
an Aircraft Support Project**

Aircraft support organisations find it difficult to accurately forecast cash flow, impacting profits. Machine learning has grown in capability and now has the ability to more accurately produce forecasts than humans. This study generates knowledge by understanding machine learning implementation barriers on a large aircraft.

BOURNEMOUTH UNIVERSITY**Grace Elizabeth Connors • EXHIBITION ONE****Subject: man... Object: woman: How Gender
Stereotypes in The Fall Harm Women**

Fronted by DS Stella Gibson, played by Gillian Anderson, BBC's *The Fall* explores the place of women in the world. I will argue, using Kahlor and Eastin's critical analysis of television's role in culture, that *The Fall* harms women by cultivating an acceptance of violence towards women.

Emily Rogers • EXHIBITION TWO**Family Meal Time Frequency Can Boost Fruit
and Vegetable Consumption in School-aged
Children and Their Parents**

Fruit and vegetable (F&V) consumption is low amongst primary school children; this is considered a contributing factor to the high prevalence of obesity in year 6 pupils. This study assesses whether family meal time frequency could help to boost F&V consumption in 9-11-year-olds and their parents.

HULL COLLEGE GROUP

Rebecca Addinell • EXHIBITION ONE

The Role and Status of Craft in Contemporary Society

My research investigates how craft stands in relation to popular culture and mass production, its relationship with fine art, as a method of influence and as a tool to heal.

Laura Jones • EXHIBITION TWO

To What Extent Did Punk Rebel Against Gender Norms?

Punk is notorious for its challenge to social and cultural mainstream values and confronts capitalist hegemony through DIY strategies. This research looks at the extent to which punk has destabilised conventions concerning gender roles establishes whether punk has rebelled against the gender norms.

LONDON METROPOLITAN UNIVERSITY

Ali Aburigh • EXHIBITION ONE

Human Rhinovirus Third Generation Vaccine Development: Investigation of Conserved Viral Protein 2

Human rhinoviruses are the primary infectious source and causative agents of the common cold, accounting for 50% of asthma exacerbations. This project sought to design a conserved immunogen for rhinovirus vaccination, powerful enough to overcome the therapeutic challenges posed by strain diversity.

Norman Guzzardi • EXHIBITION TWO

Going Green: Recycling Plastics to Design and Develop of 3D-printed Catalytic Stirrers

The aim of this project was to recycle plastic to 3D print chemical lab ware, such as stirrer bars with impregnated catalyst, therefore helping reduce plastic waste and aiding chemical reactions.

LONDON SCHOOL OF ECONOMICS & POLITICAL SCIENCE

Mayowa Igbalajobi • EXHIBITION ONE

Empty Promises? Nigeria's 10-Year Development Plans

This research paper is focused on understanding the primary aims of Development Plans in Nigeria, and more crucially whether they worked across the targeted sectors. The paper also engages with the discourse of global development planning for colonial nations with Nigeria as a primary focus.

Hannah Bailey • EXHIBITION TWO

China's Two Faced Rhetoric: Mobilising Citizens and Calming Foreigners?

International relations theories depict China as a rising power, confronting the dominant power—the US. My research provides empirical evidence for how the rising power depicts rhetorically its expansion in world influence both to its domestic audience and to foreigners.

NEW COLLEGE DURHAM

Richard Hall • EXHIBITION ONE

A Comparison of Playing Positions in College Footballers Using Global Positioning System (GPS)

This research was conducted to find out the comparison of different player positions (defenders, midfielders and attackers) in college footballers, to see which playing position is the most physiological demanding. By measuring the parameters: total distance, player load and maximum speed.

James Parkin • EXHIBITION TWO

To What Extent Is Contemporary Art and Design Influenced by Past Movements?

My poster, created for my FdA Contextual Influences brief, explores to what extent the contemporary works of Paul Kenton are influenced by past art movements such as Neo-Expressionism and Realism, and includes a response piece created by myself, combining elements of both the past and the present.

NEWCASTLE COLLEGE

Adam Harper • EXHIBITION ONE

Formability Characteristics of Perforated Steel for Die Forming Processes

This research investigates reliability issues regarding die forming of perforated steel sheet. Die forming processes with perforated sheet steels produce large amounts of scrap, making the process uneconomical. This research provides valuable insights for the industry.

Hannah Stuart • EXHIBITION TWO

An Investigation into the Effectiveness of the Current Concussion Guidelines in the English Rugby Union

Concussion is a common issue within contact sports. This study explores the effectiveness of the current concussion guidelines in the English Rugby Union. Research from the project will highlight any changes that need to be made to the current concussion guidelines, and will provide players and physiotherapists with greater knowledge on the topic.

NOTTINGHAM TRENT UNIVERSITY

Kershia Broughton • EXHIBITION ONE

The Effect of Electrical Stimulation on Muscle Oxygenation and Blood Flow

The use of electrical stimulation has demonstrated enhanced blood flow in lower limbs. This has been associated with faster recovery rates post exercise due to increased oxygenation and removal of metabolites. This research will assess the proposed mechanisms and aid in improving recovery modalities.

Laura Green • EXHIBITION TWO

Exploration of Virtual Reality within Education

Virtual reality immerses an individual into a stimulated environment in which they can view and interact with three dimensional imagery. Integrating mathematical concepts into three dimensions can become a learning tool for students.

OXFORD BROOKES UNIVERSITY**Max Jones • EXHIBITION ONE****Barriers to, and Recommendations for, Sustainable Water Usage: The Case of the Malta Tourism Policy (2015-2020)**

This research examines the policy management challenges of Maltese water scarcity. Through key informant interviews, the supply-demand dichotomy appears a key influence upon Maltese water stress, with greater integration needed between the pillars of sustainability to aid intergenerational equity.

Hanna Rose • EXHIBITION TWO**Why is there a Gender Imbalance in the Number of Engineering Professionals and How Could Policies be Implemented to Resolve This?**

Gender diversity remains a key issue in the engineering sector with females accounting for only 9% of all engineering and technology employees (IET, 2015). The dissertation aims to investigate the reasons for this and to suggest solutions and policies that could help to increase this number.

PLYMOUTH UNIVERSITY**Abigail Ramadhar • EXHIBITION ONE****Topical Negative Pressure Dressing for a Low Income Country**

A low cost Topical Negative Pressure Dressing prototype was developed to allow patients in low income countries access to a reliable method of wound treatment. Gravity was made for under £6 and operated up to 4 hours 50 minutes. Gravity was taken to Kenya by a Doctor for evaluation by technicians.

Abbie Ball • EXHIBITION TWO**Are People Good at Judging When to Stop Learning New Information?**

Previous studies have found that people restrict the amount of information they see to maximise their learning, subsequently worsening it. The current study found a replication, as well as a small link between people's understanding of their own memory ability and restricting behaviour.

QUEEN MARY UNIVERSITY OF LONDON

Hana El-sbahi • EXHIBITION ONE

How can we use Distance Learning to Teach Medicine in Syria?

The weaponisation of healthcare in Syria, and the country's subsequent brain drain, has created a gap in medical training at a time when it is paramount. We explored distance learning as an avenue for educational empowerment, shifting the focus from a political revolution to a technological one.

Tianna Jordan • EXHIBITION TWO

Does God Really Make us Good?: Examining the Effects of Religious Involvement and Religious Salience on Displays of Morality.

This research examined if religious involvement affects moral judgments, but further, if increasing religious salience temporarily influences moral judgment. Experimental examination of these variables helps provide preliminary answers to the question: is religion what makes us good?

SOUTHAMPTON SOLENT UNIVERSITY

Billy Cousins • EXHIBITION ONE

Sport in the Nick - Investigating the Role of Sport in Prisoner Rehabilitation

The male prison population has increased 5-fold between 1900 and 2016, whereas the general population has increased 2-fold (Allen and Watson, 2017). Successful rehabilitation will provide the former inmate with the correct tools to function as a law-abiding citizen within the general population.

Sebastian Graves • EXHIBITION TWO

What Happened to the Male Victim? - Gender Bias in Sexual Assault Law

I have conducted my research around three key themes: Firstly, the law as it stands to male victims of female-male sexual assault. Secondly, the philosophy of the wrong of rape and sexual assault. Finally, the gender-bias within statute and society and how it affects the male victim.





 The University of Sheffield
Firth Court.

STAFFORDSHIRE UNIVERSITY**Kelly Bridge • EXHIBITION ONE****Is a Peaceful Environment a Human Right?**

How is a citizen's Human Right to respect for a family life under Article 8 of the Human Rights Act impacted by noise pollution? Is noise pollution merely a nuisance, or is there a risk to a citizen's physical health?

Eveline Koch • EXHIBITION TWO**Influence of Microorganisms on Primary Biogenic Amine Production During Decomposition in Water**

The presence of aquatic microorganisms increased the production of cadaverine and methylamine by murine cadavers. Additionally, visual assessment using Body Aquatic Decomposition Score proved unreliable while putrescine showed promise as a marker of decomposition regardless of water type.

TEESSIDE UNIVERSITY**Andrew Howe • EXHIBITION ONE****Development of a Synergistic Catalytic System for the Mitsunobu Reaction**

The Mitsunobu reaction can form a wide variety of substrates and is capable of forming stereoselective bonds. This approach of recycling phosphine oxides in situ was applied to the Mitsunobu reaction, with the aim to combine it with a method to selectively oxidize the hydrazodicarboxylate by-product.

Alexander Farrington • EXHIBITION TWO**The Lived Experience of Adjustment to Prostate Cancer Following Diagnosis**

To reach an optimal state of adjustment physically, mentally and within different environments, prostate cancer patients experience an adjustment journey. This research aims to discover the barriers and facilitators, which can arise during the adjustment journey through a phenomenological approach.

UNIVERSITY COLLEGE LONDON

Enya Gomes Clynych • EXHIBITION ONE

Analysis of Spent Coffee Grounds as a Feasible Feedstock to Meet Bioethanol Production Demands

With the world's continuously increasing need for energy, new sustainable fuels must be developed in order to meet global demand. Coffee is the second most traded commodity in the world and London's coffee waste alone could fuel 6% of UK cars, reducing emissions to help meet 2020 requirements.

Zane Mitrevica • EXHIBITION TWO

How the Brain Produces Behaviour: Connectomic Analysis of Aversive Olfactory Integration in the Fruit Fly

Avoiding harmful olfactory stimuli is critical for survival of humans and fruit flies alike, and the neural circuits mediating such behaviour are also fundamentally similar. We used a whole-brain electron microscopy volume of a fly to learn more about behaviour based on single-synapse connectivity.

UNIVERSITY OF ABERDEEN

Kyle Thompson • EXHIBITION ONE

Novel Drug Targets for Pulmonary Arterial Hypertension: Sex Matters

Pulmonary arterial hypertension (PAH) is a devastating condition that leads to heart failure. Female bias of PAH and differential response to drugs between the sexes is known. We investigated the impact of sex on the expression of drug targets for PAH to increase understanding of the disease.

Imelda Uwase • EXHIBITION TWO

Can Traditional Barley Varieties Offer an Agricultural Adaptation to Cope with Climate Change and Phosphorus Depletion?

My project investigated the effects of atmospheric CO₂ concentrations and soil phosphorus (P) availability on the plant productivity of traditional Scottish barley and modern barley.

UNIVERSITY OF CENTRAL LANCASHIRE**Naomi Fallon • EXHIBITION ONE****What Affects Student Wellbeing?**

Well-being is a complex, multi-faceted concept that incorporates individual, community and societal circumstances. This study examined the different factors affecting the well-being of university students and revealed significant differences in the current well-being of certain sub-sets of students.

Michael Woods • EXHIBITION TWO**Watermeetings Hillfort & The Pendle Hill Landscape Partnership**

The aim of this investigation was to use both Resistivity and Magnetometry; 2 types of geophysical survey to find evidence to prove the hypothesis that the promontory at Watermeetings was the site of a Late Bronze Age/Iron Age hillfort.

UNIVERSITY OF EAST LONDON**Hayley Edwardson • EXHIBITION ONE****The Power of Knowledge Exchange**

Knowledge Exchange fosters exchanges of experiences and critical input from researchers, professionals and members of the public in order to seek and propose solutions for problems of common interest. This approach was used to support research on Low Birth-Weight enabling discussions to foster Public Health improvements through partnership working. The Knowledge Exchange Workshop created a space to illustrate gaps, identify priorities and plan the next steps forward.

Agata Korsak • EXHIBITION TWO**The Wellbeing Prison: Design Toolkit**

The Wellbeing in Prison research publication is guidance for prison designers outlining existing issues and environmental psychology evidence in prisons, essential in improving wellbeing of prisoners. Alternative solutions are suggested in order to support rehabilitation and reduce re-offending.

UNIVERSITY OF EXETER

Irina Stolyarova • EXHIBITION ONE

Thorium: A Pathway to Clean Nuclear Energy

Researching the potential of Thorium as nuclear fuel in Liquid Fluoride Thorium Reactors and raising awareness for a safer and more abundant alternative fuel to current nuclear power plants.

Chloe Bland • EXHIBITION TWO

Sex Differences in Exercise Capacity in Children and Adolescents with Cystic Fibrosis

Females with cystic fibrosis (CF) have a higher mortality than their male counterparts. Exercise capacity (VO_{2max}) is a predictor of mortality in CF. VO_{2max} is significantly different between sexes in non-CF children; however, it has yet to be determined whether sex differences in VO_{2max} exist in CF.

UNIVERSITY OF LEEDS

Fiona Powell • EXHIBITION ONE

Caring For the Future: Investigating Trends in Housing Wealth over Time as a Key Driver of Social Care Funding

This research examines housing wealth trends over time as a key driver of long term adult social care demand using quantitative data analysis and a review of existing literature. One key finding was the importance of inheritance in the concentration of housing wealth.

Nabeel Alhassan • EXHIBITION TWO

FTSE 100 Leadership Teams: Does a Gender Diverse Boardroom Impact Firm Performance?

Conventional wisdom says 'Yes!'. So why are there 8 x CEOs named David but only 7 x female CEOs in the FTSE 100? Using a novel dataset, this research empirically evaluates the impact boardroom gender diversity has on firm performance from 2006 to 2016. Two econometric models are developed.

UNIVERSITY OF READING**Judson Lee • EXHIBITION ONE****Scanning For Mutant Variation: 3rd Generation Mutagenised Faba Beans (*Vicia faba*)**

A collection of 1,500 unique X-ray mutagenised faba bean (*Vicia faba*) lines were screened for desirable changes in yield, seed size, shape, and weight. Statistical analysis was used to identify outliers worthy of further characterisation, and samples were prepared for further compositional analysis.

Marc Mohajer • EXHIBITION TWO**A Mobile Measurement of Ultrafine Particles in Two Distinctive Urban Areas**

Air pollution is linked with 40,000 early deaths in the UK, which costs the UK £20 billion annually. Apart from the source control, interventions through appropriate urban design are important mitigation measures to reduce urban air pollution exposure. However, there is a lack of scientific evidence to quantify the relationship between urban morphological parameters and air pollution exposure. There is no 'Rule of Thumb' guideline for healthy city design.

UNIVERSITY OF SHEFFIELD**Katherine Assersohn • EXHIBITION ONE****How Does Rainfall Affect the Internal Microclimate of Long-tailed Tit (*Aegithalos caudatus*) Nests?**

Understanding the waterproofing properties of bird nests is important to infer how a changing climate may impact bird species. We conducted insulation quality experiments on the complex nests of long-tailed tits, finding that the internal microclimate is resilient to external changes in rainfall.

Kate Hunter • EXHIBITION TWO**“We Are Linguistically International” - A Study into English Speakers' Perceptions of Character and Foreign Accents in Film**

My research involved investigating how people responded to different European accents of English being used in the context of animated film. The accents included French, German and a Yorkshire dialect of English and the participants were asked to rate and comment on the use of these in the animation.

UNIVERSITY OF SOUTHAMPTON

Saleh Jawad • EXHIBITION ONE

The Effectiveness of Resilience Training on the Mental Health of Medical Students and Junior Doctors

It is well documented that medical training and practice has detrimental effects on the mental health of doctors and students. Resilience training has been proposed as a possible solution. A systematic review was undertaken to analyse the effectiveness of these interventions.

Azra Khatun • EXHIBITION TWO

Open Access UK Sexual Health Clinics: Can Symptomatic Patients Be Managed Effectively?

Sexual health services should be free, accessible and confidential for all those that require the services. Anecdotally many places report problems on the capacity of services. Subsequently, this mystery shopper study assessed how UK GUM clinics managed symptomatic patients' during clinic visits.

UNIVERSITY OF SUSSEX

Vasilii Kokorev • EXHIBITION ONE

Faint-End Upturn of the Luminosity Function of Galaxies in Clusters

Galaxies tend to interact with each other gravitationally thus forming the largest known structures in the Universe known as the galaxy clusters. This project seeks to examine various Dark Matter halos and confirm a high number density of low luminosity galaxies in those groups.

Daisy Neal • EXHIBITION TWO

Debunking Autism Myths

Autism is surrounded by misconceptions with damaging consequences that need debunking. This research worked with people with autism to challenge myths. These misconceptions lead to misguided policy and allocation of funding, draining resources and increasing stigma of a poorly understood condition.

UNIVERSITY OF WALES TRINITY SAINT DAVID

Stephen Moyes • EXHIBITION ONE

Lampeter People's Market: Reflecting the Community Through Sound

The Lampeter People's Market was founded in 2012 with the intention of showcasing locally produced food and craft items. This project explores the nature of the market community with particular emphasis on the perceived soundscape of the market.

James Barker • EXHIBITION TWO

Green Spaces and their Therapeutic Properties

Green Spaces' are found within many urban environments. This study seeks to explore the purpose of community gardens with regards to the idea that nature plays a role in human life, and to explore the therapeutic nature of creating and maintaining green spaces.

UNIVERSITY OF WARWICK

Michael Hopper • EXHIBITION ONE

An Analysis of Attitudes and Feedback from Patient Users of Online Triage Software

Online triage is a way to contact GPs through an online form, we looked at the opinions of users of 'askmyGP' an online triage software and found the assumed benefits of online triage do not apply to all patients, and so online triage should be introduced in parallel to current triage methods.

James Blake • EXHIBITION TWO

Modelling Panspermia in the TRAPPIST-1 System

Lithopanspermia is the idea that seeds of life exist throughout the Universe and can propagate from place to place aboard asteroids. We simulate this process for the seven temperate planets recently discovered orbiting TRAPPIST-1, all lying much closer to their star than Mercury is to our Sun.

UNIVERSITY OF YORK

Deborah Daniel • EXHIBITION ONE

Is YouTube a Gateway to Upward Social Mobility? Bourdieu’s Capital Theory in YouTube Celebrity Culture

Celebrity culture on YouTube was explored. Operationalising upward social mobility, an overall gain in economic, social and cultural capitals was found. Indirect effects on social mobility was observed, as skills and experience gained from YouTubing, rather than the platform itself, shaped success.

Hayley Marsden • EXHIBITION TWO

“The things that make me different are the things that make me” (Winnie the Pooh): Exploring Risk and Protective Factors of Resilience in Children with Reading Difficulties

My study focuses on exploring the relationship and interplay of mind-set and attachment as protective (or potentially risk) factors of socio-emotional resilience in school aged children with and without reading difficulties.



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