

**CAREERS**



University of  
Reading

# 2021

The Undergraduate Research Opportunities Programme presents

## **UNDERGRADUATE RESEARCH SHOWCASE**

17 November 2021



## Hello and thanks for your interest in the UROP Undergraduate Research Showcase 2021!

Throughout this digital booklet you will find details on the fantastic research that was carried out by our students over the summer. For each student you will find a brief written submission about their research and a link to their screencast so please make sure you follow this link to find out more and hear from the students themselves!

What is the research showcase? The research showcase is our annual event to celebrate the work of UROP students. Traditionally a physical poster exhibition, we have made adjustments over the last couple of years to run this as a digital event. All of our students have taken their time to produce written submissions and screencasts so please do spend as much time as you are able to in order to view their work.

What is UROP? The Undergraduate Research Opportunities Programme or UROP for short, is a research internship scheme exclusively for University of Reading students. It matches up students with researchers at the university, with students gaining an insight to the world of research and the staff getting some support on their research projects. The UROP projects last for 6 weeks over the summer and we have seen over 800 students and researcher collaborate since 2006.

Want to take part? If you are a staff member interested in running your own project you can find out more at [www.reading.ac.uk/urop](http://www.reading.ac.uk/urop). Applications open from October to December each year with projects to run the following summer.

Students wishing to take on a UROP project must be in their penultimate year and can apply to take part when projects are advertised between February and April.

If you have any questions about the showcase or the UROP scheme please contact me on the details below.

**Tom McCann**  
UROP Manager  
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You will find each of the student submissions below.  
They are sorted in alphabetical order by the first name  
of the student and colour coded by the research theme  
that the project sits within.

 Agriculture, Food & Health

 Environment

 Heritage & Creativity

 Prosperity & Resilience

## ADAM DOWER

### *Artificial Intelligence in Leadership Practice: A Systematic Literature Review on its Occurrence and Use*

**Supervised by:** Dr Lebene Soga and Dr Yemisi Bolade-Ogunfodun

**Research theme:** Prosperity & Resilience

Artificial intelligence (AI) is a growing phenomenon within industries and organisations, with the current perception that AI will be the future of how businesses operate. However, there is currently no research paper that looks to organise and analyse the current literature to enable leaders to successfully utilise AI to its maximum capacity within their organisation.

Consequently, the requirement for this paper is to support leaders in implementing AI within

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their organisation, as this was found to be pivotal in achieving the performance improvement. Therefore, the research found that, if leaders are to accompany AI implementation with clear communication of performance benefits and adequate training for employees, it will reduce employee resistance to AI. This, when accompanied with the leader having the correct technological understanding to utilise AI, was seen as pivotal in achieving the sought-after organisational performance benefits, that AI is expected to bring.

## ADAM GILLARD

### *Summarising and Classifying Puzzle Solutions in Text Adventure Games*

**Supervised by:** Dr Martin Lester

**Research theme:** Heritage & Creativity

This project was about developing a sandbox to test code validation programs through converting old-school 80's text adventure games to work with existing programs. By doing this, we can analyse and classify the difficulty of the various puzzles in adventure games.

This area of research is important because the technology devolved has the potential to speed up development of applications in the digital sector (Facebook, Twitter, Uber etc.)

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The key findings from my research are while these text-based games are suitably complex to test code validation algorithms while staying manageable from a development perspective, there are some underlying difficulties with both the games themselves and the engine they are built on that complicate further study.

## ADEM GULDEREN DERSIVISH

### *How to effectively lead remote and hybrid teams in a sustained crisis? A systematic review of the literature*

**Supervised by:** Dr Ana Margarida Graça

**Research theme:** Prosperity & Resilience

The Covid-19 pandemic forced the workplace to adapt in an unprecedented way. With effective working still being an essential for all businesses. Especially during the economic dip that happened during late February – early March of 2020. Leaders found that they had to acclimatise to a remote/hybrid workforce. However, there was little consolidation of the literature regarding leadership practices for sustained crisis.

This project had the aim of reviewing the literature on effective leadership and what it means in varying

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leadership styles such as functional leadership and emergent leadership.

This systematic review will advance the state of knowledge and practice on leadership in remote/hybrid work settings and provide a combination of theoretical and practical insights.

This has been an invaluable experience for me, having the privilege to work alongside Dr Ana Graça, learning about how to develop a body of research for a paper and to evaluate resources importance.

## AGNIESZKA MROZINSKA

### *Using the simple C. elegans model to investigate the impact of microplastic on social behaviour*

**Supervised by:** Dr Eva Kevei and Dr Nandini Vasudevan

**Research theme:** Agriculture, Food & Health

Microplastic are plastic polymer debris, derived from degradation of larger plastic pieces; they are omnipresent in environment and tend to aggregate in terrestrial and aquatic environments. They make their way into food chain and drinking water and were even found in the human placenta. Although we are all aware the plastic is not 'fantastic', we lack the understanding of how exactly microplastic exposure can affect organisms.

C. elegans is a well-established model organism, with many orthologs to human proteome and

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molecular signalling. Worms were even shown to exhibit oxytocin-dependant behaviours in response to the progeny. Therefore, I choose this model to study the impact of microplastic exposure on social and sexual behaviours.

We have found that although microplastic exposure cause significant motor deficits, it does not inhibit progeny-dependent food leaving behaviour of adult hermaphrodites. More data is required to make valid conclusions on effects of microplastic exposure on nematode mating abilities.

## AIMEE STEVENS

### *Student Experiences of a remote placement year as part of a four year degree*

**Supervised by:** Dr Amanda Branson and  
Dr Alana James

**Research theme:** Agriculture, Food & Health

We aimed to understand how students at Reading University perceived their experiences of completing a placement year remotely; what made this better and what damaged it? To conduct this research, a thorough literature review around remote working, placement experience and employability was performed. This informed items used within the online survey distributed to participants, and interview schedule. Following this, thematic analysis was applied to identify the

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key areas impacting student experiences during their remote placement year. The themes identified were: time and task flexibility, communication and relationships within the workplace, and working location. Each theme included elements that both added to, and weakened the value of remote working. It is hoped that these findings will be used to further understanding of how working and learning remotely can be improved, however it is necessary for wider scale research to be performed.

## ALBERT MITCHELL

### *Investigating the Climatic Cooling Potential of London at High Resolution*

**Supervised by:** Dr Zhiwen Luo

**Research theme:** Environment

The goal of the project was to gain objective knowledge about the Climatic Cooling Potential in London at a resolution high enough to show variations at the community level. The current data can only inform building design at the conception stage, based on imprecise averages with little regard for the immediate microclimate. Consequently, we are producing unnecessarily inefficient buildings. Considering the context of climate change and the

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pledges by the UK government to reduce carbon emissions, significant improvements in the energy cost of both construction and maintenance of buildings are required. The proposed research would give construction industry professionals the information that they need to plan and execute designs for more efficient naturally ventilated buildings for which the maintenance energy cost is low.

## ALEXIA PARAU

### *Exploring University students' experience with wellbeing: what can be done by University departments to help support Student Wellbeing?*

**Supervised by:** Dr Alana James

**Research theme:** Agriculture, Food & Health

The topic of student wellbeing is extremely important, in a turbulent time amid the context of a global pandemic, the NHS mental health services being under immense pressure, university students are at the heart of a novel way of learning being hit the hardest. Past research has found that the proportion of Psychology university students who report clinical levels of anxiety or depression may be higher than the general population.

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The project, therefore, aimed to give students the opportunity to share their experiences about their respective wellbeing whilst at University and deliver feedback about what they feel would be beneficial for departments to do to provide additional support. Being a university student myself, I found this project prioritising student wellbeing thoroughly captivating and I found the experience of talking to students about this topic highly rewarding.

## ALICIA BRADLEY

### *The diets of our extinct ancestors*

**Supervised by:** Dr Chris Venditti and Dr Jo Baker

**Research theme:** Environment

Understanding how the hominin diet has changed over time may reveal important information like Hominin body mass, feeding strategy, and the paleoclimate at the time. Further, diet has been inextricably linked with the development of increased brain size, bipedalism and social and cultural evolution. This study demonstrated that Hominin enamel thickness increased as the  $\delta^{18}\text{O}$  stable carbon isotope % in the soil decreased. This may be due to a more positive  $\delta^{18}\text{O}$  value indicating

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a drier climate in the area, with C3 plants growing here requiring less oral mechanical processing. However, it is important to note that when time was incorporated, this result was no longer significant. This project has taught me valuable research skills, including how to write a comprehensive literature review and to run Phylogenetic Generalised Least Squares Models on Bayestrans. Overall, this project has increased my confidence in biological research by providing me with invaluable research experience.

## ALISON LORENZO-COX

### *Sustainable biocontrol and the role of wildflower habitats in apple orchards*

**Supervised by:** Charlotte Howard and Dr Mike Garratt

**Research theme:** Agriculture, Food & Health

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This placement was aimed at assisting a PhD student with their research into the effect of wildflower margins on arthropod communities, specifically focusing on several aphid species and their predators. The research is important for understanding how wildflower insect habitats can be useful as a sustainable biological control tool for

apple growers in the United Kingdom. The research project spanned across five apple orchards in Kent where farmers had an established wildflower margin. This placement provided the opportunity to be a part of first-year field trials assessing the diversity and abundance of pest/enemy species at different transect distances from the margin itself.

## AMINA EL-BEIK

### *Exploring pharmacists' resilience, wellbeing and burnout due to the COVID-19 pandemic*

**Supervised by:** Catherine Langran and Kat Hall

**Research theme:** Agriculture, Food & Health

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Understanding healthcare resilience has never been more important with the increasing pressures present on the NHS this past year due to the COVID-19 pandemic. This study examines how all patient-facing pharmacists in the UK experienced working through the COVID-19 pandemic. This helps us to better prepare for future healthcare crises by understanding healthcare resilience.

This qualitative study looked at pharmacists' responses to three questionnaires taken at various points throughout the pandemic.

It explored the positives, negatives, and facilitators they experienced. After, we applied thematic analysis to the data. This study highlights the importance organisations have in developing workforce resilience.

This research forms part of a wider global resilience team (GRiT) who are looking to develop resilience within pharmacy. Similar studies are being conducted globally allowing them to examine how pharmacists in different countries have been impacted uniquely by the COVID-19 pandemic.

## AMINA HASSAN

### *Mind your language! A study in discourse in Chemistry textbooks*

**Supervised by:** Dr Philippa Cranwell

**Research theme:** Environment

Students often find it difficult to extract information from a page of a textbook. The importance of understanding language in a Chemistry textbook and the manner content is presented could shape the future of teaching and education. There are two key fields which could help us to delve into the topic: semantic gravity and semantic density. Semantic

gravity is how much detail there is. Semantic density is about how many meanings there are associated with a word as used in context. An important finding was that different exam boards present the information differently at GCSE and A-Level which could be used to explain why university students sometimes experience gaps in their knowledge.

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## ANASTASIYA SAVCHENKO

### *ENVISION – Monitoring of Environmental Practices for Sustainable Agriculture Supported by Earth Observation*

**Supervised by:** Dr Yorgos Gadanakis and Dr Georgios Pexas

**Research theme:** Agriculture, Food & Health

The UROP Envision project aims to create a remote platform for the farmers, Paying Agencies and Certification Bodies to examine sustainable practices and agriculture parcels in the EU and the UK. My tasks included gathering data on the impact of the Covid-19 pandemic on-farm activities, as well as data on farmers' participation in coproduction activities for digital agriculture solutions. The data was gathered using a systematic literature review method, which included search criteria and the use of online databases: Web of Science, Scopus, and Google Scholar.

I assisted with the evaluation and editing of a survey about farmers' knowledge and participation in coproduction activities for digital solutions in agriculture, which is intended to supplement the findings of the literature review.

During UROP, my scientific writing abilities were improved, and I gained practical experience with appropriate tools, such as Qualtrics XM and Nvivo, to facilitate survey design and thematic analysis of literature review findings.

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## ANDRÉ DEEN-SWARAY

### *Design Pedagogy in the Development of Transdisciplinary Learning in the Built Environment*

**Supervised by:** Dr Carolina Vasilikou

**Research theme:** Environment

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This project highlights the opportunity to reflect and analyse the efficiency and effectiveness of 'Design Pedagogy' in its current state. Design Pedagogy refers to the methods used in teaching with relation to its impact on the learners and their application of knowledge. This area of research was a chance for me to investigate the role of collaborative practices and transdisciplinary and vertical learning in the built environment. The research enabled the comprehension of a world where collaboration of

different disciplines can produce better results in a rapidly changing world; whereby the importance of adapting the way ideas are taught is due to the way ideas are formulated and how they are combined.

This analysis owes itself to the research through academic readings and the perspective gained from focus groups which proved the importance of humanising teaching and feedback alongside the increasing importance of the student role in the education experience.

## BEN MORLEY

### *Mathematical modelling to decipher the role of platelets in resolving liver injury*

**Supervised by:** Dr Joanne Dunster and Professor Jon Gibbins

**Research theme:** Agriculture, Food & Health

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Inflammation is an immune response to infection or injury to the body. Inflammation can be useful for aiding healing and fighting against infection. Usually, inflammation can resolve by itself healthily however in certain scenarios inflammation can become self-perpetuating and chronic. This project focuses mainly on inflammation in the liver. Several conditions are involved with or are exacerbated by chronic inflammation such as viral hepatitis,

non-alcoholic fatty liver disease, non-alcoholic steatohepatitis, fibrosis, and cancer.

In this project we use a series of equations that describe the factors that affect cells and substances that contribute to inflammation in the liver, this series of equations constructs a model of inflammation. As the role of platelets in the liver is multifaceted, we use the model to better understand the platelets effect in the liver.

## BENJAMIN JENNINGS

### *Does Extra-Sensory Perception Affect Eye Size in Amniote Vertebrates?*

**Supervised by:** Dr Jo Baker

**Research theme:** Environment

The eye is an invaluable resource to the survival of many species. Conducting research like this allows for us to learn why in some species they are getting smaller, less complex and even lost. This research gives us insights into why there is such a variety in eye size within the amniote vertebrate clade and whether Extra-sensory perception (ESP) affects eye size.

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It was found that ESP has no significant affect on eye size for the species within this study. And that ESP has no impact on evolutionary rate of eye sizes, but that some ESP species have eyes significantly smaller or larger than predicted by a regression model, meaning there could be some relationship between ESP and eye size just one that isn't present in all vertebrates.

## CARMEN TINNING

### *Investigating the representation of 3D scenes in moving observers*

**Supervised by:** Professor Andrew Glennerster and Maria Elena Stefanou

**Research theme:** Agriculture, Food & Health

This project focused on how 3D spaces are represented by the brain when an observer moves through the space. There are two main theories used to explain how the brain does this: the first model assumes brains generate a 3D model of a scene. Modern neural networks are the second model and assume the brain knows how images change as the observer moves, without building a 3D model. In order to differentiate performance using each model; experimental participants were

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placed in a high fidelity immersive virtual reality indoors scene wearing a head-mounted display used to track user movement. In VR the user has a start location of home they are then transported elsewhere in the room and movement back to the original position is recorded. The performance of the task under different conditions indicated that users could complete the task without image matching but showed systematic errors based on the experiment conditions.

## CATHERINE MAZZI

### *Green chemistry in undergraduate practical classes: how can experiments be adapted to reduce their environmental impact?*

**Supervised by:** Dr Jessica Gushart and Dr John McKendrick

**Research theme:** Environment

Reducing environmental impact and increasing sustainability are of ever-increasing concern to society and these ideals are also important to many students. The principles of Green Chemistry provide guidance on how to make chemical processes more environmentally friendly and embedding these principles into undergraduate teaching will raise student awareness of how we can make a positive difference in Chemistry and related subjects. Achieved was the assessment of the current impact of experiments and identify

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areas where small changes could improve overall sustainability, whilst teaching students the key skills required for practical chemistry. Crucial was developing a method by which we can assess our current impact and suggest changes that can be made to make our lab classes align closely with green chemistry principles. Materials such as infographics and posters were produced to introduce students to green principles and bringing awareness of what we can do to move towards a sustainable future.

## CHARLOTTE PROCTER

### *The Marlow Warlord: Warrior on Horseback?*

**Supervised by:** Dr Ceri Falys

**Research theme:** Heritage & Creativity

This project involved studying the skeletal remains of a 6th century Anglo-Saxon middle-aged man found near Marlow in the mid Thames basin. The individual appeared to be of high status indicated by the elaborate grave goods and well-preserved sword. However, this individual has unusual morphology to his right hip and leg and therefore, the aim of this project was to investigate the cause of the abnormality. The research carried out was to establish the skeletal changes caused by habitual

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horseback riding and if these were the same as the abnormalities seen in the Marlow 'warrior'. The results show that although the individual has many of the skeletal markers of horseback riding, they can be caused by other activities. Very little research has looked at the skeletal effects of horseback riding in British populations meaning little knowledge can be gained until further studies are carried out. I really enjoyed this project.

## CHLOE MAYNE

### *Assessing the impact of Bumblebee health on pollination service and crop yield*

**Supervised by:** Dr Deepa Senapathi

**Research theme:** Agriculture, Food & Health

Bees (Hymenoptera: Apoidea) play an important role in global food security as the world's primary crop pollinators. However, anthropogenic factors including agro-chemical pesticide use, pathogens and diseases are threatening the health of wild bees and the essential ecosystem services they provide. While individual factors have been well studied, significant knowledge gaps remain in regards to the interaction of multiple factors. Therefore, this UROP project aimed to explore pesticide and pathogen interactions by exposing

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Bumblebee colonies to one of the following solutions: a) pesticide, b) pathogen, c) pesticide and pathogen, d) control. In a series of individual and colony level cage experiments, I recorded the foraging behaviours of both 'healthy' and 'unhealthy' bees to quantify the impacts of bee health on pollination services and crop yield. Whilst observing bumblebee behaviour, in response to environmental stressors, I gained an insight into the potential challenges that wild bee populations face across human-dominated landscapes.

## CHRISTINA SARIDOU

### *Sci 'n' tech: Use Technology to Develop a E-Study Guide for Health Science Students*

**Supervised by:** Dr Silvia Amadesi

**Research theme:** Heritage & Creativity

This project aims to develop a new study guide for students from a student perspective. The student-to-student mentoring experience results in design of a 'Support for Chemistry' E-guide for first year undergraduates studying health sciences at the University of Reading. This study was being conducted based on students' feedback suggesting that learning new chemistry topics, has been challenging. Therefore, the project ensures that key chemistry concepts and processes are understood and helps students to acquire a transformed way of understanding and interpreting chemistry concepts

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that will underpin subsequent knowledge for health sciences.

Through this research project I gained exposure to and experience working in academia, developing research skills and awareness about small group, open discussions and qualitative data analysis methodologies used in qualitative research. From the project I have also personally learned the importance of self-discipline, organisation and time-management which have contributed to my personal development.

## DAISY BING

### *The Plutonium Problem: Narratives of Nuclear Insecurity*

**Supervised by:** Dr Joseph O'Mahoney

**Research theme:** Prosperity & Resilience

The aim of this project was to analyse the ways the nuclear fuel cycle and plutonium reprocessing came to be seen as a threat to international security during the mid-1970s. This was done to contribute towards a larger study, which analyses the global reaction to India's 1974 nuclear explosion. We wanted to find out how this Indian nuclear test changed the non-proliferation regime across the world, and how norm violations can result in the global norm changing.

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I was tasked to first collect newspaper articles and put these into a database. I developed a coding frame and coded these sources using this frame, specifically focusing on how plutonium reprocessing was represented in newspapers over time.

After analysing the findings, we produced a variety of results. However, the overall findings followed our expected narrative; norm violations make that one thing much more salient and increases the interest within the public.

## DANI WHITINGTON

### *Exploring the potential for Agri-tech to contribute to the environmental sustainability of arable agricultural systems.*

**Supervised by:** Dr Alice Mauchline

**Research theme:** Agriculture, Food & Health

In 2050, the global population will reach 9 billion. It is a human right to have access to quality food and this is going to be hindered by climate change and environmentally damaging agricultural practices. Therefore, we need to find solutions for improving at the environmental sustainability of agriculture and to increase food production.

One of the solutions could be agri tech which is using innovative technology to improve the efficiency of farming was decreasing the impact

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on the environment. This research analyses whether agri tech truly has the potential to improve the sustainability of arable agricultural practises.

It was identified that many farmers did not adopt agri-tech to improve the environment. Nevertheless, reduced biochemical use and rewilding of unproductive agricultural land were the environmental benefits of using agri tech. However, many farmers were unaware and unable to measure if agri-tech was improving the environment.

## DANIEL YOUNG

### *Forgotten Places: a digital exhibition on the local impact of the Greek war of independence (1821)*

**Supervised by:** Arietta Papaconstantinou

**Research theme:** Heritage & Creativity

My project looked into the involvement of the Ionian Islands in the Greek War of Independence. The Ionian islands at this time were a protectorate of the British Empire, and the Ionian participation is therefore closely linked to that of the United Kingdom. I looked into the context of Britain's acquisition of the islands and the process of establishing an administrative structure. I then considered local activities during the war and the

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opinions of both the British public and Parliament, and how each of these groups contributed to the Empire's eventual decision to enter the war directly.

This project is part of a wider exhibition looking at the roles of certain Greek regions that are commonly overlooked in discussions about the Greek War of Independence.

## DARRAH JONES-REDDY

### *The Importance of data collection in the post excavation of archaeological collections*

**Supervised by:** Dr Gabor Thomas

**Research theme:** Heritage & Creativity

Across the industry of heritage and archaeological research, we have been able to work from a vast amount of data due to those in the past preserving the artefacts and archaeology found at various different sites across the world. Without this preservation and data collection in the modern day, we are both doing a disservice to current research and research of the future. During my UROP placement I was auditing artefacts from an excavation dug almost 50 years ago.

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Throughout my placement I was actively collecting new data for research to be made on it, instead of actively researching myself. However, the data collection and preparation for research to be undertaken is equally as important. I gained many new skills, and discovered more about a career that I would definitely like to go into. It has also inspired me to do further academic study through pursuing a masters in the Medieval archaeology.

## DOMENICA TAVERNA

### *Queering the Ure Museum*

**Supervised by:** Dr Claudina Romero Mayorga

**Research theme:** Heritage & Creativity

My research of Queering the Ure Museum was an extremely important topic in its exploration of queer life in ancient history. We sought to bind the past and present through linking mythology to objects in the museum's collection that showcased queer identities in the past. Ultimately, we wanted to make these stories accessible to the public and

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highlight the fact that queerness is not a subsection of history but history itself. I approached ancient mythology with sensitivity and a fresh perspective to ensure the stories we told represented the LGBTQ+ community and enabled people to see themselves and their identities in our history.

## ELIZABETH MCCALL

### *Are students being over-assessed? An empirical analysis of the UK higher education (HE) sector*

**Supervised by:** Dr Minyan Zhu

**Research theme:** Prosperity & Resilience

There has been a recurrent debate in the recent years regarding whether students have been over- assessed in the HE sector. The potential impact of over-assessment on student experience and achievement may be a contributing factor in the scores received by universities in the annual National Student Survey (NSS). By collecting data and analysing the methods of assessment for economics courses at different universities in the UK as well as student achievement and satisfaction with other aspects of the course,

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this project aims to determine if empirical evidence exists for over-assessment. If such evidence is found, the project aims to assess its impact on variables such as university ranking and student experience and learning. Through this investigation, the researchers also hope to be able to make practical recommendations for the University of Reading to improve its NSS scores for feedback and assessment criteria. This project and its findings are discussed in further detail in the accompanying screencast and poster.

## ELIZABETH SUMNER

### *G-quadruplex DNA binding of novel Ruthenium complexes*

**Supervised by:** Dr Kane McQuaid

**Research theme:** Environment

The purpose of this project was to synthesis and analyse Ruthenium-based compounds that have the potential to bind to DNA and become potential therapeutic drugs. This is extremely important for treating cancer as this targets G-quadruplex DNA which is predominantly found in cancer cells – like knots in a rope. These compounds have the ability to stabilise this type of DNA which stops the cells from replicating and causes them to decrease. These compounds were cultivated to give red needle-like crystals which underwent single crystal X-ray

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diffraction to generate a 3D computational image of the structure. From these findings, the compound was bound to different strains of G-quadruplex DNA and is currently undergoing incubation to produce results within the year.

From this project, I have developed my ability to work as a confident independent chemist within a research and development environment and want to pursue research within an industrial career.

## ELLEN JONES

### *Intersectionality of material, organisation and consumers; halls university students*

**Supervised by:** Dr Tim Lees and Dr Martin Green

**Research theme:** Environment

This project explored the interests and network which supports student accommodation. Using interviews, we explored the relationship between buildings, organisation (a university and halls provider) and students as consumers.

We discovered how diverse and complex the network of people behind the decisions is and how the buildings and the contract between the university and private halls provider strongly shapes the decisions made.

Within the complex network was a diversity of interests shaping how students were understood

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and, in turn, impacting upon the options for student accommodation. We also discovered how different participants viewed en-suite and the unforeseen impact it can have on the student experience.

It was also discovered, despite the clear focus on "student experience" across the network, students were the least connected, with little input into the network.

So what does this mean for the future of student accommodation, and how vital are buildings to the student experience?

## EMMA DE MECQUENEM-CLARKE

### *Investigation of the impact of an array of myotoxic venoms on myoblast cells*

**Supervised by:** Professor Sakthivel Vaiyapuri

**Research theme:** Agriculture, Food & Health

Snakebite envenomation is a major neglected tropical disease and public health issue; indeed, of the 5.4 million people affected annually worldwide, up to 130,000 die, while survivors often suffer from crippling long-term morbidities and face a considerable socio-economic impact, hence the need to find viable, financially-accessible treatments.

This research project involved seeking to further our understanding of metalloprotease activity by testing an array of 12 repurposed FDA-approved

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cancer drugs for metalloprotease inhibitory activity on 12 viper venoms.

Our principal exciting finding was that an orally-active expensive cancer drug, 'Drug B', which is unfortunately associated with clinically-significant adverse side effects, demonstrated strong inhibition of metalloprotease activity in all viper venoms tested; Drug B may therefore one day constitute a drug candidate for the treatment of snakebite envenomation.

## FAYE PIDGEON

### *Editing the Lyric Voices Anthology*

**Supervised by:** Dr Mary Morrissey

**Research theme:** Heritage & Creativity

My project centred on editing a new poetry anthology for a second-year module in the Department of English Literature – 'Lyric Voices'. The development of this text will be invaluable to students of lyric poetry at Reading and other universities, meaning it needed to be crafted and edited to a high academic standard with clear formatting and key information.

As well as editing and proofreading, I had to make executive decisions about what would and would not be modernised while maintaining consistency

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and readability. These decisions required an understanding of the mechanisms of manuscript and print production as well as the processes of linguistic change from the fourteenth to the sixteenth centuries.

I gained a lot from this project, but most importantly the knowledge that editing is the career path for me – and that defining the archaic language of Sidney and Shakespeare is not as straightforward as one would hope!

## GEORGIA UNWIN

### *Impact of a mitigation strategy on effects of climate change*

**Supervised by:** Dr Paul-Arthur Monerie

**Research theme:** Environment

Climate change already affects populations and environments worldwide, my project looks at the impact of reducing global emissions on the effects of future climate change. The ability to quantify the beneficial effects of a climate change mitigation scenario is very important for ensuring effects of climate change will be reduced to the extent where major impacts on life and environment can be avoided.

During my project large datasets were analysed and plotted in Python to visualise the impact of a

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climate mitigation strategy, specifically the SSP5-3.4-OS scenario. The focus was the impacts on temperature and precipitation, both globally and regionally, including looking at monsoon rainfall and the difference between land and sea surface temperature impacts.

I thoroughly enjoyed completing this research project, despite the few setbacks that occurred, it greatly increased the confidence I have in my own abilities and has inspired me to consider applying for PhDs post university.

## GEORGINA COX

### *Does a coffee a day keep the cardiologist at bay? A cross sectional trial*

**Supervised by:** Dr Charlotte Mills

**Research theme:** Agriculture, Food & Health

500 billion cups of coffee are consumed worldwide annually, but the relationship between coffee and cardiovascular disease risk is complicated. Coffee is rich in many different bioactive compounds some of which probably have beneficial and others detrimental impacts on health. The aim of this project is to try and understand the impact of coffee on cardiovascular disease risk. This project was granted access to a large database full of diet diaries

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and health measurements to be able to analyse and see if there are any credible links between consuming CGA and having reduced cardiovascular risk factors. Currently our data is giving inconclusive results, however, going forward we need to do further manipulations to the data before we can conclusively say there is no correlation between coffee consumption and a reduction in cardiovascular disease risk.

## HANNAH CHAUDHRY

### *Service Evaluation of NMP activity at Oxford Cancer and Haematology Centre*

**Supervised by:** Professor Nicola Stoner and Dr Nilesh Patel

**Research theme:** Agriculture, Food & Health

Because one in two people can be diagnosed with cancer, efficient medication prescribing is essential for both patients and the NHS. This research project gives an insight in non-medical prescribing in the Oxford Cancer and Haematology centre. Radiographers, nurses and pharmacists work in multidisciplinary clinics where they can prescribe chemotherapy and other supporting drugs for cancer patients.

The prescribing data from electronic patient records was manually extracted. The NMPs were also given a questionnaire on clinics and patient numbers for

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further information. Through analysing this data, it was evident that most treatments during these clinics were reviewed and continued while some drugs were changed or had dose reductions when toxicities were observed.

Through this project, I gained more confidence in doing independent research and adapted to analysing large data sets. This experience has also made me realise the importance of NMPs and has made me consider becoming a NMP and specialising in oncology pharmacy post-graduation.

## HARRISON A. M. G. POTTER

### *Mesolithic chipped stone artefacts from Rubha Port an t-Seilich*

**Supervised by:** Professor Steven Mithen

**Research theme:** Heritage & Creativity

One kilometre south of Port Askaig on the Isle of Islay, lays the site of Rubha Port an t-Seilich. Discovered by foraging pigs and a local gamekeeper, the following test pitting a year later (2010) and subsequent excavations revealed a remarkable history. The site is abundant with Scottish Narrow Blade Mesolithic technology from c.9000-7000 B.P. In addition, an even earlier presence is testified, pushing the sites occupation history back a further

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3000 years (earliest in the western Hebrides in situ). The exciting find of tanged point suggests a possible Ahrensburgian association. Our project was to catalogue and analyse a sample of the 2019 excavations chipped flint assemblage focused around a hearth. After four weeks of cataloguing exciting artefacts, immersed in the material made in the Mesolithic and earlier, a report of our conclusions was created.

## HOLLY HOLLOWAY

### *Specialist Teachers of Mathematics – A Primary Perspective from England*

**Supervised by:** Dr Nasreen Majid

**Research theme:** Prosperity & Resilience

Everyone has heard the phrase "I can't do maths" far too frequently, most likely having said it themselves. There are many ongoing initiatives to combat this attitude to mathematics and the specialist teachers within primary schools are the driving force.

This study investigated the need for mathematic specialists within primary schools. A survey investigated what their role consisted of, how they saw their role and professional identity, why they chose their position and their opinions regarding

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how mathematics is implemented. The results showed that teachers build their professional identity over a period time, with the role of a specialist being used as a steppingstone in career progression. It was clear that children were at the heart of all decisions with participants stressing that all students can achieve in mathematics. I can take away these findings and apply them to my future role as a teacher, taking forth the skills and knowledge I have gained.

## HOLLY HOLTOM

### *Exploring Clinical Perfectionism in Higher Education students*

**Supervised by:** Dr Allán Laville and Emma-Jayne Conway

**Research theme:** Agriculture, Food & Health

Perfectionism is a widely understood term in society, but at times it can be severe enough to cause detriment to an individual's daily life and mental health – this is called clinical perfectionism. Higher Education students are particularly vulnerable to this.

The present study explored clinical perfectionism in university students through a qualitative approach using semi-structured interviews. Participants were screened through completion of the Clinical Perfectionism Questionnaire and those with high scores were invited to interview. 8 interviews were

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conducted which aimed to assess participants' understanding of perfectionism, their lived experience, and prompted them to consider how they felt about their perfectionism.

A thematic analysis was conducted with the data, and revealed a number of themes, some of which were consistent across participants, some of which were more contradictory. The motivation to maintain perfectionistic tendencies is considered as well as potential treatment methods and avenues for further research.

## HOLLY KEITH

*The HAVEN study: An Investigation into natural blood clotting and blood vessel health in relation to cognitive function in later life.*

**Supervised by:** Professor Jon Gibbins

**Research theme:** Agriculture, Food & Health

What if we could live in a world without dementia? Through the HAVEN study we have investigated pathways that lead to Neuro-cognitive health and how intervention can prevent cognitive function decline. The HAVEN study aims to link HAemostatic function, VEssel health, and Neurocognitive health via a multi-disciplinary approach.

Dementia is considered a degenerative disease and affects over 55 million people worldwide, this type of disease typically has no cure so prevention is often the only disease management option.

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In this study we hope to uncover a pathway ideal as a therapeutic target. The study is ongoing and will hopefully provide key information in the understanding of dementia and how to manage it.

My placement consisted mainly of preparing plates for and conducting a platelet based aggregation assays with participant blood samples as well as 3D modelling brain vasculature. These roles helped me gain confidence, experience working in research labs and computer skills I would not have gained elsewhere.

## ILIA MICHAILIDOU

*Applying the Bell Foundation EAL Assessment Framework in practice: real world examples for teachers and parents.*

**Supervised by:** Dr Anna Tsakalaki

**Research theme:** Prosperity & Resilience

This project aims to understand the limitations of current literature on EAL students and the ways in which teachers can help them improve their English language proficiency skills. It is important to understand what teachers want from assessment tools to be able to help students. Analysis of survey responses allowed us to highlight key aspects of assessment tools identified by teachers which can be used to create an ideal assessment tool to cover all areas of concern. Research on EAL

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language models and assessment is important in creating a strong support system for students and educators alike.

Taking part in this project has helped me in completing literature review for other university work I have completed as well as my final year dissertation. This project has also made me realise my passion for research and data analysis and has opened new career paths for the future.

## JOANNA VAUGHAN

### *Architectural Imaginaries: Architectural design and science fiction*

**Supervised by:** Amy Butt

**Research theme:** Environment

This research project worked in collaboration with several academics and STORE Summer Schools to provide four publications targeted at pre-university level students where they could learn about and develop skills in relation to architecture and science fiction. The publications are free-for-use and have been designed for accessible access that will allow young people to get into the mindset of an architecture student or creative arts student.

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My main roles in the creation of these publications included creating the graphic scheme, compiling, and researching, editing, and inserting the text and graphic information. The publications blur the lines between physical and digital learning by including QR codes that create a new level of depth to the publications and allow the reader to develop their critical analysis and independent learning skills.

## JOSHUA DEAKINS

### *The root of the problem – Does restoring broadleaf forests impact the symbiotic fungi?*

**Supervised by:** Caitlin Lewis and Professor Martin Lukac

**Research theme:** Environment

Following WW1, native broadleaf forests were replaced with non-native coniferous forests for timber production, resulting in groundwater pollution. Now, there is growing interest in restoring broadleaf forests. Different tree species have different symbiotic relationships with mycorrhizal fungi, which absorb nitrogen from the soil. Therefore, restoring broadleaf forests may change the mycorrhizal associations, changing the amount of nitrogen absorbed compared to the amount leached, and changing the amount of groundwater

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pollution. The aim of our research was to investigate mycelial hyphae length under stands composed of different tree species and different ages. We found that hyphae length increases as the age of the stand increases. Therefore, younger stands of broadleaf trees may be less capable of absorbing nitrogen and less able to decrease groundwater pollution. This is important to consider, particularly in the context of tree planting targets. This was a fantastic opportunity to make a real contribution to science.

## JUDE REEVES

### *Sugar Mills and Enslaved Women in the Caribbean*

**Supervised by:** Professor Emily West and Liz Bartram

**Research theme:** Heritage & Creativity

This UROP involved exploring how sugar milling during the era of slavery contributed to the development of new global markets in the eighteenth-nineteenth centuries. I researched the role played by enslaved people, especially women, in sugar milling and how this changed over time. I researched technological changes in sugar milling, and I also considered the legacies of the subsequent

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decline in sugar milling on Caribbean islands in relation to the rise of tourism on the islands. The UROP consisted of three main areas of research, milling innovation, enslaved women and the legacies of the islands, culminating in a digital exhibition hosted on the Mills Archive website. It Gave me a lot of opportunities to develop research skills and to work on goals for my future.

## KATHERINE BIRCH

### *Developing an Audio-Visual Emotion Database: Pilot study*

**Supervised by:** Dr Jia Hoong Ong

**Research theme:** Agriculture, Food & Health

The Reading Everyday Emotion Database (REED) is a new open-source emotion database which can be used for emotion science research. It contains audio-visual video clips of 22 actors expressing a variety of sentences in 13 different emotions, recorded online using their own recording devices. A common issue in emotion research is that stimuli in the lab are unrealistic; therefore, REED provides more natural stimuli to researchers. One way it can be used is for research into emotion recognition

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difficulties. As such, this project tests the useability of REED by investigating the difficulties in emotion recognition difficulties by autistic individuals (or individuals with high levels of autistic traits) is due to autism or alexithymia, a condition involving difficulty identifying and describing emotions that is commonly observed with autism. This is an under-researched area and is just one of the ways that REED can be used by researchers.

## KATIE BRIDGER

### *Mesolithic chipped stone artefacts from Rubha Port an t-Seilich: Is there evidence of earlier settlement on Islay?*

**Supervised by:** Professor Steven Mithen and Dr Inger Berg-Hansen

**Research theme:** Heritage & Creativity

This project involved the identification and cataloguing of 7000 flint artefacts excavated at the Mesolithic site of Rubha Port an t-Seilich, in the Scottish Hebrides, and the production of a professional lithics report analysing the assemblage. Previous excavations of the site revealed a plethora of Mesolithic artefacts, but also evidence of an even earlier technology – an arrowhead known as a 'tanged point', which is typical of a certain group of hunter-gatherers known as the Ahrensburg group.

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This is significant as it suggested that people had been settling in Scotland way earlier than previously thought, in the Late Glacial period. One of the project aims was thus to identify more late glacial lithic technology, known as 'concept 1', to support this theory. As you can see in my conclusions, we identified many artefacts from the 2019 excavations which could be described as 'concept 1', having major implications for the early settlement of Scotland.

## KATY SILLS

### *How can assessments be improved to support EAL students as holistic learners?*

**Supervised by:** Dr Anna Tsakalaki

**Research theme:** Prosperity & Resilience

For our project we aimed to find out what teachers want from English language assessments of EAL students. This is important as at present there is no nationally standard assessment method for EAL students, meaning that data collected, the support they receive and the opportunities they are given varies. We identified a gap in the research reflecting teachers' opinion on assessment of EAL students. Our findings show that the effect of not having a standard assessment set leads to inconsistency

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and gaps in the knowledge about the progress of students. The experience of this varies from school to school. This is vital information to ensure that EAL students are getting equal opportunities in education and are not being marginalised. From this future assessments to be used with EAL students should have criteria that clearly indicate the support that child should receive in the everyday classroom and who is responsible.

## KIERA STEVENS

### *The mechanism of auditory and visual integration underlying natural social-emotion information processing*

**Supervised by:** Dr Chen Zhao, Dr Anthony Haffey and Dr Fang Liu

**Research theme:** Agriculture, Food & Health

The purpose of this project was to explore emotional processing, using an online emotion recognition paradigm using webcams to allow eye-tracking data to be recorded. We set out to investigate the extent that vocal emotion contributes to the overall processing of audio-visual (bimodal) emotions.

Typically, autistic individuals present a deficit in understanding emotions, but often excel with musical ability and recognition. It was therefore important to consider the possible mediation of musical ability, between autistic traits and emotion

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recognition. We were also investigating whether musical training would aid emotion recognition.

Our results from 5 neurotypical participants displayed a ceiling effect, removing the opportunity to draw any conclusions about musical training or autistic traits, or any interaction conclusions. Despite this, our pilot provides reason to continue research into the interaction between musical ability, autistic trait prevalence, and emotion recognition within a wider population, including those with clinical diagnoses of Autism.

## KIERAN PALMER

### *Civic Societies and the Planning Process: Exploring the role of local civic societies in the English planning system*

**Supervised by:** Dr Christopher Maidment and Professor Angelique Chettiparamb

**Research theme:** Prosperity & Resilience

Civic societies are community groups that get involved with planning decision-making in their local area, often with a focus on preserving the historic environment of towns and cities across our country. Since the planning reforms of the Coalition Government ten years ago affecting the role of civic societies, little research has been completed on civic societies, establishing the need for my project.

My project has found that often a poor relationship exists between civic societies and their Local Planning Authorities, suggesting that civic societies'

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influence is limited in determining the outcome of planning decisions. However, despite this many civic societies remain active and engaged across the country with many passionate and dedicated volunteers promoting the importance of conserving our heritage.

Personally, I have gained independent research and time-management skills; as well as a better understanding of the planning system important for my career aim of working in planning and development.

## LARA SALCAN

### *Can 3D Models transport us to the past? 3D digital visualisation in education*

**Supervised by:** Professor Amy Smith and Professor Matthew Nicholls

**Research theme:** Heritage & Creativity

The goal of this research project was to investigate how the virtual models of Ancient Rome in a MOOC (Massive Online Open Course) course on the platform FutureLearn helped teach people the history of Ancient Rome. The research was to find the ways in which people engaged with the material, through analysing their comments.

Another key part of my project was to write accessibility texts for people with visual impairments. I also did further research on

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academic websites and learned more from others' works on 3D visual heritage projects and compiled these into documents to be presented to and shared with academics I was working with.

Taking on this research project was fascinating as it opened up a new field to me and allowed me to further take on research on a subject I otherwise would not have had a chance to explore in detail, with such great academics.

## LAURIE NEASHAM

### *An investigation into Rotaxanes and Macrocycle formation*

**Supervised by:** Dr James A. Cooper

**Research theme:** Environment

Rotaxanes are chemically interlocked molecules that can undergo molecular motion and have been one of the key areas of research in chemistry, in recent years. Therefore, this research is developing all the time and there are lots of different aspects that have not been explored yet. My project set out to develop new methods to synthesise new rotaxanes that have not been made previously.

Some key results from my project were that the first steps in forming the macrocycle were successful.

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A macrocycle is a molecule that forms a ring and is a key part of a rotaxane.

Personally, I have gained lots of experience and confidence in laboratory work, which is useful as a chemist for my final year project and for a graduate job in chemistry. This is especially useful as we lost time doing practical work during COVID.

## LUZIE BLECHNER

### *A Room for the Night*

**Supervised by:** Henry Russell and Angelique Chettiparambil Rajan

**Research theme:** Prosperity & Resilience

Within this project, changes in the hospitality industry of Henley-on-Thames were considered. The research reaches back to the 1830s and has aimed to connect the occurring changes in the industry to events within Henley-on-Thames, for example, the regatta or the railway branch line. Events on a national scale like the war or recession were also considered. The primary data came from the scrutiny of Trade Directories, Census Reports

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and a District Valuation Record. This data was used to create an Excel list to compare it to the literature research conducted about the businesses. The work with hand-written documents has allowed me to build up my strength in reading them. I have enjoyed discovering Henley-on-Thames through its history, and I was stunned by the longevity of some of its businesses.

## LYNNETTE KIM GNÄGI

### *Effects of Social Anxiety and Interviewing Styles on Interrogative Suggestibility*

**Supervised by:** Dr Chung Kai Li

**Research theme:** Prosperity & Resilience

The current study that we worked on for UROP investigates the effects of interviewing style and social anxiety on interrogative suggestibility. Research investigating interrogative suggestibility has high applicability in the criminal justice system due to its implications on factors influencing conviction outcomes such as eyewitness testimony and false confessions. There are numerous factors that contribute to this concept and our study would like to investigate some of these factors in

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further detail in order to contribute to the current understanding of interrogative suggestibility as a whole. From this experience, I have learned a lot as it my first experience being involved in a 'complete' research project. One of the most insightful stages of this project was the designing stage. I learned a lot about the somewhat long process of creating, adjusting and improving on a research design in order to examine specific constructs.

## MADDIE ATKINSON

### *Urbanism, Space and Proxemics: Comparing ancient and modern contexts*

**Supervised by:** Dr John Hanson

**Research theme:** Prosperity & Resilience

We looked at the relationship between the sizes of cities and the types of structures that they had, depending on their size in the ancient world, because research has only been done into what the sizes were and not WHY, which will help us understand cities' development better. We then replicated this with medieval cities to see if there was a similar pattern.

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From this experience I developed my skills and knowledge in extracting data and analysing it, and also how much understanding of how societies develop over time, which is a big area of history that I am interested in. It has further increased my interest in this area of study, especially from a sociological perspective (which was the part I enjoyed most) and I hope to continue to research in this area.

## MARCIA WEBBERLEY

### *Examining the association between wild birds and woodland diseases*

**Supervised by:** Carys Cunningham Dr Glyn Barrett

**Research theme:** Environment

The UK has two native species of oak, both of which are important components of woodland ecosystems, providing food and shelter for more species than any other tree. However, oak trees are under threat from a recently discovered and rapidly spreading disease known as Acute Oak Decline, which can rapidly lead to the death of the tree and is having devastating impacts on ancient oak forests. Trees affected by Acute Oak Decline show necrotic

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tissue that leads to bleeds, preventing them from efficiently transporting water and nutrients to their branches and quickly killing large portions of canopy. A combination of bacteria is thought to cause Acute Oak Decline, and while these bacteria have been identified, their method of spread from one tree to another is still unknown. This project looked at woodland birds and whether they were the main carriers of these bacteria.

## MARCIE WEEKS

### *British Museum finds: cataloguing the multi-period site at Mucking, Essex*

**Supervised by:** Professor Duncan Garrow

**Research theme:** Heritage & Creativity

The project involved the recording of material from the complex, multi-phase archaeological site of Mucking, excavated in the 1960s-1980s. The material was deposited in the British Museum store, but was never completely recorded. The collection is extensive, consisting of over a million finds. This project aimed to undertake the process of recording the finds from Mucking into a comprehensive database in order to increase the research potential

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of the material, by making the collection accessible through detail records and a rationalised archive. I started the process of recording the small finds from Mucking into a carefully constructed database, and evaluated the condition of each find- providing recommendations for the objects future dependant on condition and research potential, ensuring that future researchers can gain the most from the collection in future projects.

## MARIA CHERA

### *Group work post Covid-19: home and international students' perceptions of working on group assignments in a blended learning environment*

**Supervised by:** Professor Sarah Brewer

**Research theme:** Heritage & Creativity

The research aims to improve students' experience of group work by gaining an understanding of international and home students' perceptions of multicultural and multilingual group work and the impact of Covid-19. Allowing the voices of students to be heard when making decisions that directly affect them is crucial, which is why eleven undergraduate students were interviewed to gain insight into their experiences and views. The findings suggest that both international and home

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students were aware of the role of language and culture in group work, with language forming a more prominent aspect of the discussions that emerged. With regards to the impact of Covid-19, students displayed mixed attitudes, reflecting on both positive and negative aspects of the experience of online group work. The take-away message is that students should continue to be consulted about their experiences, especially during times of rapid and drastic change.

## MATHURRA CHANDRABOSE

### *Vitamin D, Fat intake and Type 2 Diabetes: A Nutrigenetic Approach*

**Supervised by:** Dr Vimal Karani

**Research theme:** Agriculture, Food & Health

My project undertakes a nutrigenetic approach focussing on vitamin D deficiency which means analysing the impact of genetic variation in response to the intake of different nutrients on health outcomes in relation to Vitamin D, in the Brazilian population. This deficiency was associated with obesity and type 2 diabetes, which can arise from interactions between multiple genes and diet. Supporting research for a gene-diet interaction would mean that

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diet could be used as a method to overcome health complications in the Brazilian population. Through this project, I learnt how to conduct analysis on SPSS to investigate this interaction and association between gene and diet which I enjoyed conducting. It helped me improve my skills in the ability to use SPSS and provided me with the opportunity to learn about nutrigenetics which is a new field of research, widening my knowledge.

## MATTHEW RILEY-BRALEY

### *Studying the effect of leaf-level biochemistry and canopy-level structural traits on spectral reflectance canopy measurements*

**Supervised by:** Dr Christos Halios and Dr Stefan Smith

**Research theme:** Environment

The interplay between solar radiation and plant canopies is not fully understood. To understand this relationship, Transfer Radiative Plant Canopy models are used to study solar reflectance. One notable model is the PROSAIL model.

The aim of this project was to experiment with PROSAIL and examine the model's sensitivity to biochemical and structural canopy traits. This involved running and manipulating the model to understand the processes affecting canopy reflectance.

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As a psychology student, it was a great opportunity to research something outside of my department. This opportunity allowed me to learn a new and challenging topic. What was also beneficial was being able to learn MATLAB and see how other programming languages work. This project has motivated me to go into the field of data science and continue learning to code.

## MOON HOOI

### *Effects of Social Anxiety and Interviewing Styles on Suggestibility*

**Supervised by:** Dr Chung Kai Li

**Research theme:** Prosperity & Resilience

Suggestibility can be defined as the tendency of a person to respond in a particular way to suggestions. From psychological research, individual differences and interviewing styles (i.e., supportive and non-supportive) can affect one's statement and impact their suggestibility and recall accuracy during forensic interviewing. This research aims to investigate how social anxiety and interviewing styles play a role in influencing one's suggestibility. As a result of the Covid-19 pandemic, this project is conducted remotely via

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Microsoft Teams interview and is currently at the data collection stage. We hypothesized that higher anxiety levels will be associated with increased suggestibility; and non-supportive interviewer will increase the suggestibility of the interviewees, as compared to supportive interviewer. The best thing about this project was that I was being able to undergo interviewing training sessions. Besides hard skills, I also improved my soft skills from this UROP experience, such as communication skill, teamwork, and professionalism.

## OLIVIA BOOKER

### *Let coffee be thy medicine? The impact of coffee on cardiovascular risk factors: A systematic review*

**Supervised by:** Dr Charlotte Mills

**Research theme:** Agriculture, Food & Health

The evidence surrounding the impact of coffee on cardiovascular disease (CVD) risk factors provides much debate. CVDs are the leading cause of death globally and diet is one of the main modifiable risk factors. As coffee is a popular beverage in many cultures, it's important to understand how and which of its complex mix of bioactive compounds contribute to a cardio protective effect.

To determine the overall impact on CVD risk markers, a systematic review and meta-analysis

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was conducted on randomised control trials with coffee interventions and haemodynamic measures. Initial results (prior to statistical analysis) suggest that caffeine appears to cause an increase in blood pressure, whereas other components, such as chlorogenic acids, have the opposite effect.

The next stage will be to conduct a meta-analysis of the data and create a forest plot with sub analysis of the different components. I very much look forward to seeing the final results!

## OMKAR VIJAY ANAND

### *Upcycling Dried Distiller's Grains (DDG) for food applications*

**Supervised by:** Dr Paola Tosi

**Research theme:** Agriculture, Food & Health

Dried Distilled Grains (DDG) is a byproduct of the distillery and bioethanol industry which finds its way to cattle feed or to landfills. The surprising fact is that DDG is rich in protein and fibre, and the demand for these nutrients as a part of the human diet is now seeing an upward trend. So, the focus of this project was to Upcycle DDG for food applications.

The major drawback of using DDG in food was its pungent flavour and aroma. To encounter this, we

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subjected DDG to solid state fermentation with 3 distinct microbes and later tested their flavour change with the help of a sensory panel, which yielded favouring results. We also measured the nutrient change that took place during the fermentation process. With the help of these results, tomorrow DDG could be formulated into food products which we could consume daily.

## OSCAR MINTO

### *The UK as a global actor post-Brexit: legal and political limits on the royal prerogative to conduct trade deals under the UK constitution*

**Supervised by:** Dr Anne Thies and Dr Ana Cannilla

**Research theme:** Prosperity & Resilience

As a result of Brexit, the UK government has regained its competency to sign and ratify its own independent trade treaties. This project focuses on mapping some of the core legal and political restraints on this prerogative power. The nature and contents of trade treaties has changed a lot since the UK last found itself negotiating independently. Newer trade deals are much more likely to cover a broader array of social and economic areas. It is therefore incredibly important that we have a firm

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understanding of how well the government can be scrutinized or held legally accountable. Overall, this project concludes that although the government has made positive steps towards greater transparency on its trade deals, there is a real lack of legal restraints on its prerogative power here.

I have enjoyed this project and feel I have gained an appreciation for how organic research can be.

## POK LIM LAI

### *Ozone exposure and health impacts in the urban environment of Reading, UK*

**Supervised by:** Dr Hong Yang

**Research theme:** Environment

This project research is important because ozone (O<sub>3</sub>), a secondary air pollutant, continues at a rising levels whilst, in contrast, the other air pollutants show a declining rate during the implementation of lockdown worldwide which is a very concerning issue as ozone is known to bring detrimental impact to human health. Therefore, this study aims to raise public awareness that ozone pollution that's needed to be carefully considered and managed. The results from this study shows that Central

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Caversham is the most concerning site with ozone levels of 73.41 ug/m<sup>3</sup> and considering that Reading has only been given status as the largest town in England which highlights further that ozone not only rises in cities but in towns as well.

This research project has widened my understanding on the contemporary air pollution issues and provided me with valuable experiences and transferrable skills in using QGIS, WHO AirQ+ and Microsoft Excel.

## PRAVEEGA SELVARAJAH

### *How do ethnic wage gaps evolve over people's career?*

**Supervised by:** Dr Simonetta Longhi

**Research theme:** Prosperity & Resilience

With ethnic and racial minorities being paid on average less than white men, evidence suggests wage gaps are smaller when first entering the labour market. Our project aims to look at whether the wage gap changes over an ethnic minority employees' career. We looked at how it evolves over people's career and to what extent they result from lack of career progression of minorities. We went into the project understanding that there is minimal evidence that looks at a longitudinal study

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of a person's wage difference over their career progression- an aim was to understand how little evidence there is and what specifically is needed in order to tackle the issue of a growing wage gap.

The project has allowed me to use literature review in order to analyse economic, psychological, sociological and scientific approaches taken to study wage gaps and how different perspectives still highlight similar key findings.

## RACHEL MORGAN

### *Individual differences in social interaction perception*

**Supervised by:** Mahsa Barzy and Dr Katie Gray

**Research theme:** Agriculture, Food & Health

This piece of research was to investigate whether the social relevance of an object impacts the speed and accuracy of detecting a change, since previous research has found we pay more attention to things that have higher social relevance. My study was titled 'Change detection in social and non-social aspects of images'. For this we found 100+ images of social scenes and edited them to remove either a person who was interacting, a person who was

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stood alone, or an object. The expected effect was that the higher social relevance, the quicker a change would be detected. We also had inverted versions of every image and expected that when images are rotated 180 degrees, the social changes wouldn't be detected as quickly since faces are not processed in the same way when inverted. No significant social effects were found however we did find an inversion effect.

## RHIAN WILLIS

### *Speech and Song Comprehension in Congenital Amusia*

**Supervised by:** Dr Ariadne Loutrari and Dr Fang Liu

**Research theme:** Agriculture, Food & Health

Congenital Amusia is seen in around 4% of the population, limiting their ability to recognise and reproduce pitch from birth. However, rarely is pitch in speech seen as a hindrance for individuals with this neurodevelopmental condition. The mechanisms through which this phenomenon of reduced ability to process music occurs is currently unknown. The present research and future analysis of the

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data collected within this project, aims to find the conditions under which individuals with and without amusia differ in their understanding of meaning according to pitch using the Montreal Battery of Evaluation of Amusia and a Speech Repetition Task. Through this data, we will be able to further develop an understanding of the mechanisms behind language and music processing

## ROBERT HOGGE

### *Infodemic: The dissemination of misinformation online*

**Supervised by:** Dr Mark Shanahan

**Research theme:** Prosperity & Resilience

The internet is a powerful tool to share information, and misinformation. During various lockdowns worldwide, people have felt the need to connect with others online, with some spreading misinformation ranging from factual errors to outright conspiracy theories. Yet accurate public health information has never been more pertinent towards saving unnecessary severe illnesses and deaths. Furthermore, misinformation is rife in America, leading to a disputed 2020 presidential election, culminating in the 2021 United States Capitol attack, led by extreme far-right groups.

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My research takes a unique methodological approach to discover that misinformation is more effectively spread when it is communicated through an angry tone, perpetuated by a public figure or attached to an articulate and persuasive article, image or video.

This project has helped me improve my problem solving skills, and helped me realise how much I enjoy research, to the extent that I am considering it as a career.

## ROBERTO HAMAR

### *Maximising the environmental benefits of domestic gardens through optimal planting choices*

**Supervised by:** Dr Tijana Blanus, Dr Jake Bishop and Caitlin McLaughlin

**Research theme:** Agriculture, Food & Health

The research focused on some plant species' ability to provide ecosystem services. This is important as these characteristics could improve the environmental performance of domestic gardens and reduce risks posed by extreme weather and pollution in domestic urban spaces. Specifically, aimed to understand which plant species combination and layout helps the most in reducing rainwater run-off in domestic gardens.

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Results showed that the *Salvia officinalis*, and *Stachys byzantina* stripe layout was the most successful of all treatments tested as it retained the most water in its soil.

Further research is being carried out to investigate a range of other planting layouts (monocultures and 'checkered') and relate the volumes of runoff to measurements of canopy density and root biomass.

## RONALD W. ARNOLD

### *The Symbolic Language of Parliamentary Art and Architecture in the German Speaking Regions of Europe*

**Supervised by:** Dr Athena S. Leoussi

**Research theme:** Heritage & Creativity

This project was aimed to collate and derive the narratives provided by national and subregional parliaments within the German Speaking Regions of Europe: Germany, Austria, Switzerland, and Liechtenstein. As such, this plays into a large scheme of research that Dr Leoussi is currently undertaking to establish how nations within Europe define their political and democratic narrative, either along classical lines (with relation to that of Ancient Greece and Athens) or national/ethnic lines.

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Thus, the websites of the official legislatures were analysed in the original German and then the findings translated into English for reference. Following which analysis was carried out to establish the openness of the buildings in terms of visiting, their architectural style as well as the art contained within and outside the structures themselves.

## ROSIE MOORE

### *Repurposing an array of licensed drugs to attenuate myotoxic effects of snake venoms*

**Supervised by:** Professor Sakthivel Vaiyapuri

**Research theme:** Agriculture, Food & Health

Snake envenomation events cause upwards of 50,000 deaths per year in India alone, with many other fatalities happening around the world. Many bites will not kill victims but will leave them with serious long-term complications, one of the most common being muscle damage (known as myotoxicity).

This project studied 21 different snake venoms, 11 vipers and 10 elapids, to assess their metalloprotease activity, a family of enzymes with myotoxic effects. It was found that two vipers

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had a very high metalloprotease activity, and two elapids had an unexpectedly high metalloprotease activity. These four venoms were used to test 10 different FDA approved drugs (mainly used in cancer treatments), to assess whether they had metalloprotease inhibitory effects.

Of these drugs, three were found to have a very large inhibitory effect, and could be used in future, to treat snake bite victims, to try and treat and reverse muscle damage.

## RUTH BILHAM

### *Investigating factors affecting undergraduate degree choices in economics*

**Supervised by:** Dr Fangya Xu and Dr Sarah Jewell

**Research theme:** Prosperity & Resilience

The aim of this project was to investigate the influences and motivations behind individuals decisions when choosing their degree, mostly focusing on the underrepresentation of females in economics. I am currently studying Business Economics and as a female feel very underrepresented in a lot of seminars and lectures as they are very much male orientated. In doing this project I wanted to gain an understanding into specifically why females chose not to take

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economics. We found that a main concern was the level of maths, which made me realise the stigma behind economics being heavily maths orientated, which in a lot of modules is not the case. I have learnt from this that the theory side of economics needs to be talked about and promoted more, especially focusing on encouraging females to choose economics as a degree, as the degree itself is an extremely diverse and well-regarded qualification to have.

## SABRINA AKTER

### *Decision making capacity in Aphasia, and Speech and Language Therapists experience*

**Supervised by:** Dr Arpita Bose

**Research theme:** Agriculture, Food & Health

During my summer internship with UROP, I have worked alongside my supervisor on a qualitative research study- studying decision-making capacity in aphasia and speech and language therapist experiences. My role involved producing online surveys, reviewing transcripts produced from interview recordings, analysing qualitative data (using NVIVO to code interview transcripts), carrying out independent literature review, reviewing primary data as well as completing

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other computer-based tasks. The yet to be completed study aims to find new inventory niches in capacity assessments; in an attempt to make decision making and capacity assessments more efficient and reliable. Thus far the study has identified that SLTs require more formal training, universal materials and increased awareness surrounding the skills and abilities that an SLT obtains- as they are overlooked during capacity assessments despite their communicational expertise.

## SAMMY ROSE

### *Understanding the outcome of the National Student Survey*

**Supervised by:** Professor James Reade

**Research theme:** Prosperity & Resilience

The study was about trying to understand the outcome of the national students survey. The satisfaction rating of the university has fallen quite significantly over the past year. Whilst we can say that Covid-19 caused this, we wanted to find out what students disliked. We also used this project to try and understand pre-covid-19 what the university could do to improve satisfaction ratings.

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Through this study we were able to find out a few things that the university as a whole not just the economics department could do to improve. This included getting lectures to listen more to students as well as changing the feedback system. I have also had the opportunity to learn what an academic report looks like and how to produce one.

## SARAH OURAD

### *Citizen research: Evaluating the impact of drug shortages*

**Supervised by:** Dr Nilesh Patel and

Professor Parastou Donyai

**Research theme:** Agriculture, Food & Health

Drug shortages are a widespread, global issue, posing a serious threat to healthcare systems and patient care. A 2018 EAHP survey on drug shortages involving 1,666 participants revealed that 36% of hospital pharmacists reported experiencing a shortage of medicines every day and a further 39% every week. It was also reported that one in five pharmacists suggested that they are not able to manage the shortages all or most of the time,

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thus disrupting patient care. This Research is important as various factors in the UK such as Brexit alongside the covid 19 pandemics have exacerbated the drug shortage crisis in the UK. It is therefore imperative to research how patients are affected by the shortages because of the changing situation in the UK. Understanding how patients are impacted identifies the scope of the problem, so the situation can be managed more effectively.

## SEAN HOLDEN

### *The effect of diet on parents' mental health during the postnatal period*

**Supervised by:** Dr Katie Barfoot

**Research theme:** Agriculture, Food & Health

Postnatal depression (PND) is a type of depression which occurs in 1/10 parents within 6 months after the birth of their baby. PND symptoms include persistent sadness or low mood, tiredness, difficulty bonding with your baby, and problems concentrating and making decisions. Treatments for PND include psychological therapy, antidepressants, or self-help resources. However, these have varying success rates. Hence, research into preventative measures may be a key solution for mothers at risk of PND. This research continues to be explored to allow for cost effective preventions/treatments with minimal downsides.

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One measure being explored, is regular dietary flavonoid consumption. Flavonoids are naturally occurring compounds found in foods such as berries, citrus fruits, leafy green vegetables, tea, dark chocolate, and red wine. Evidence suggests high flavonoid consumption can improve health/cognitive outcomes. The current study aims to address whether these positive outcomes are consistent in the postnatal period for maternal mental health.

## SEBASTIAN LOCK

### *Metaethical Nihilism and the Emotions*

**Supervised by:** Dr Luke Elson

**Research theme:** Heritage & Creativity

In this project my task was to investigate links between metaethical nihilism and the emotions. This was, clearly, a very open-ended area of research, and eventually this took me to the theory of Sentimental Realism given by Christine Tappolet. This is a view that combines representational neo-sentimentalism (that is, that something has a particular evaluative property if it is correct to feel the corresponding emotion towards it) with

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a realism about evaluative properties (i.e., such properties are objective, non-relational and mind-independent). Of particular interest was Tappolet's response to queerness objections, which I took to be flawed, and so my research then took me to considering how to save the representational neo-sentimentalist side of Tappolet's view by substituting realism about evaluative properties with a constructivist approach.

## SOPHIE SUTHERLAND

### *Acceptability of a new music-based early intervention for autism*

**Supervised by:** Dr Tom Loucas

**Research theme:** Agriculture, Food & Health

This qualitative piece of work, investigated the parental experience of a new music-based intervention, designed to facilitate language learning in children with autism. Participants were interviewed following an 18-weeks of the Music-Assisted Programme (MAP) intervention. These were semi structure interviews, conducted over Microsoft Teams, and then transcribed and analysed using thematic analysis. The emphasis of these interviews was to investigate the acceptability of this intervention, and what changes need to

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be made before conducting a full randomised controlled trial investigating its efficacy.

Studies like this contribute to the growing pool of evidence in the field of speech and language therapy. The need for evidence-based interventions is paramount, so that clinicians are providing children and their families with the best support possible. This project was an invaluable experience for me, as I have learned how qualitative research is carried out and feel I can better interpret the evidence base in future.

## SORREL KNOTT

### *The impact of A-Level (or equivalent) grades on student attainment in higher education*

**Supervised by:** Dr Vivien Burrows

**Research theme:** Prosperity & Resilience

A more diverse student population has led to differences in academic characteristics, including prior attainment and subject choice. Assessing the extent to which A-Level grades influence degree attainment could be key in maximizing the proportion of students graduating with higher degree classifications, as universities can provide more support to students with lower entry grades to prepare them for the jump between A-Level and degree.

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Overall, there is a positive relationship between A-Level (or equivalent) grades and student attainment in economics degrees at the University of Reading. There is a stronger positive relationship between A-Level (or equivalent) grades and student attainment on BA Economics programmes than for students on BSc Economics programmes.

As a result of my UROP experience, I am applying what I have learnt within my current postgraduate degree and I am looking forward to pursuing research as a career.

## TAMARA VUJIC

### *Optimisation of the ICAP; a microfluidic, smartphone-based, point-of-care test of platelet function*

**Supervised by:** Dr Chris Jones and Daniel Hodge

**Research theme:** Agriculture, Food & Health

The ICAP is a smart phone – based point of care test (POCT) which uses microfluidic technologies and capillary action. The microcapillary film (MCF) was coated with Poly Viny alcohol to create a hydrophilic surface which allowed for blood to rise via surface tension, followed by loading with Thrombin to detect possible platelet defects. In this project three usage parameters were examined and optimized to create an appropriate method, one which would allow for reproducible results with the

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least variability. We determined that 200µl of blood should be used for MCF dipping, that the ICAP strips should be used on blood 30 minutes after blood draw and that the MCF should be dipped at a depth between 8mm-10mm. The development of this POCT would provide less developed countries that are without the necessary equipment needed for conventional haemostatic function tests, with an affordable but reliable alternative.

## TATIANE CHANETSA

### *The impact of blended learning on MPharm students*

**Supervised by:** Rav Savania, Dan Grant and Amelia Hollywood

**Research theme:** Environment

The aim of this project was to build on and respond to the previous research that was collected, to assess the impact of blended learning on University of Reading pharmacy students. This prior work provided the project with qualitative data consisting of the student's response to the change in teaching format they had faced due to the COVID-19 pandemic, and the effects of this on their academic experience. A student-centred resource was ultimately developed following the assessment of

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this feedback in response to a highlighted area, they identified as requiring further support, to improve their university experience in blended learning. This was achieved using existing relevant primary literature and student advice, to curate a supportive student-centred intervention, using a psychology behavioural change model. Post-intervention will provide opportunity for further assessment/ research into the student behaviours and the impacts of this on academic experience.

## TEMILOLUWA ODUGBESAN

### *Tracing the Nigeria-Biafra Civil War in the archives of Heinemann's African Writers' Series*

**Supervised by:** Dr Sue Walsh

**Research theme:** Heritage & Creativity

The purpose of my UROP internship was to trace references to the Biafran Civil War in the African Writers Series archives. This Series of books by African writers published by Heinemann Educational Books between 1962 to 1994 was very significant for the development of postcolonial literature. Many of these books have been taught in African, British, and American schools as part of the curriculum.

This research is both important and attractive to me because it provided me with the opportunity to

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enhance my learning with academics and access a multitude of Nigerian texts from my heritage.

Key findings: The Nigeria-Biafra war had a significant impact on both the publishers and the writers; challenges with communication led to delays in production and loss of revenue. Tensions between different ethnic groups was also apparent in the archives as one publication was scrapped altogether because of them.

## THOMAS BREITBURD

### *What extra information can we gain about ice particles in clouds by using radar measurements at multiple frequencies?*

**Supervised by:** Dr Karina McCusker

**Research theme:** Environment

In this project, we explore the effect of cloud ice particle properties on triple frequency radar simulations. To do this, we use data obtained during the PICASSO campaign, which combined radar measurements and in-situ aircraft measurements.

Using in-situ measured PSDs together with the ARTS scattering database that provides scattering data for a series of different ice particle habits, we can compare modelled and measured radar quantities and verify any match with in-situ particle imagery. We find that particle shape has a large

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influence on simulations. However, we have not found a shape that simulates the most accurate measurements in all scenarios. This research is important in the context of precipitation. Indeed, a large portion of precipitation in middle to high latitudes falls as molten snow. And the shape and size of ice crystals have strong impacts on their fall speed, as well as when estimating the total Ice Water Content of a cloud, which is an important quantity for climate studies. This project enabled me to learn about weather and cloud radars first-hand.

## THOMAS GYLLENSHIP

### *The fatty acid profile of conventional and organic yoghurt*

**Supervised by:** Dr Sokratis Stergiadis

**Research theme:** Agriculture, Food & Health

The proportion of organic products purchased worldwide has doubled within the last decade. The organic market aims to minimise the impact of its farming practices on the environment, whilst some consumers choose to buy organic as they believe that organic products also have nutritional benefits.

The aim of this study was to compare organic yoghurt with its conventional equivalent over the course of a year, to assess the average fatty acid profile as well as the influence of seasonal variation.

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Despite finding no significant difference in the major fatty acid group (i.e. unsaturated fatty acids) content of both organic and conventionally-produced yoghurt, the analysis did show that organic yoghurt contains more omega-3 fatty acids, which support the functioning of the immune system and help to prevent heart disease. Further research is required to assess whether this difference in the omega-3 fatty acid profile significantly impacts consumer health outcomes.

## TOLULOPE ONIFADE

### *Service Evaluation of immunotherapy toxicity and resulting costs of treatment at Oxford Cancer and Haematology Centre*

**Supervised by:** Dr Nilesh Patel and Kristen Moorhouse

**Research theme:** Agriculture, Food & Health

The use of immunotherapy to treat cancer has led to higher life expectancy for cancer patients but not without associated toxicities. The project was aimed to gather and analyse data to assess the frequency of admission due to immune related adverse events so that healthcare professionals can predict when toxicities may occur and thus improve the quality of care of cancer patients. There was particular focus on cost of treatments and what adverse reactions occur so that conclusions could

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be made linking treatments or diagnosis to severity of toxicity. A data collection form was created but due to timescales limited data were collected. However, the project allowed me to learn how to do service evaluations and to become more adept at analysing and presenting data. I would have used descriptive analysis and used statistics to identify trends and predict outcomes. I wanted to challenge myself by taking part in a research project with other academic researchers and healthcare professionals.

## TORI PARR

### *Visualising research: Exploring creative ways to communicate research findings from a project that investigated the experiences of minority ethnic students at university*

**Supervised by:** Dr Billy Wong and Meggie Copsey-Blake  
**Research theme:** Prosperity & Resilience

For the UROP, I worked closely with Billy Wong and Meggie Copsey-Blake creating visual ways of communicating their research findings and to complement their study on ethnic minority students at university.

From the project I was able to expand on skill and knowledge in typesetting and infographic areas. The project also allowed me to explore illustration which

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I haven't explored much before. The supervisors were very open to different ideas which encouraged me to be creative and deliver a range of items with different designs. I had great fun working on my UROP and received lots of support and feedback to help me progress and improve my work further. The deliverables will also really help add some variety and content to my portfolio which is always appreciated.

## UYI ERHABOR

### *Identifying the Drivers of Domestic Energy Efficiency Retrofit Adoption in the UK*

**Supervised by:** Dr Eugene Mohareb and Dr Stefan Smith

**Research theme:** Environment

Household fossil energy demand is a notable barrier to significant reductions in Green House Gas (GHG) emissions. Centralised actions have not been found to be effective at addressing this issue and therefore researchers have suggested that household level actions such as improvements to the energy efficiency of houses (retrofitting) should be taken. Hence, the aim of this research is to identify the factors that encourage households to improve their energy efficiency.

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The main task that my supervisors and I focused on was data cleaning and analysis for energy efficiency data from local authorities in the UK and Canada. During the last week of my internship, I produced a report which included a summary of all the files I had used and produced. This internship strengthened my interest in data analysis and has encouraged me to research further into the number of careers related to this field of work.

## VASILIKI VIRVILI

### *Development of inhalable synergistic antibiotics for lung infections*

**Supervised by:** Dr Hisham Al-Obaidi

**Research theme:** Agriculture, Food & Health

This summer I had the opportunity to participate to a UROP project focussing on antibiotic development. The project focused on the antibiotic drug ciprofloxacin due to its broad-spectrum antibacterial activity and its promising efficacy against various, challenging lung conditions e.g., cystic fibrosis. The project's aims were to design a novel powder-based drug delivery system, which will deliver ciprofloxacin as co-amorphous that exhibits enhanced penetration and antibacterial properties, to design a formulation that is based on novel

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spray drying technology, which will facilitate the deposition and penetration deep inside the lungs and to evaluate this technology with other marketed formulations to establish efficacy. With many projects being online due to COVID-19, I had the amazing opportunity to participate in a lab-based project which allowed me to develop my practical and team-working skills. I believe that this project's findings will be a major contribution to drug delivery of antibiotics to the lungs.

## VENEZIA MAYA SUMON

### *Impact of contact hours on educational outcomes*

**Supervised by:** Dr Shixuan Wang

**Research theme:** Prosperity & Resilience

Learning how the impact of contact hours on educational outcomes seemed like an interesting and exciting project to partake in. It's important being a university student learning how mine and my peers' educational experiences can be influenced and ultimately enhanced.

From researching Universities in the U.K, we gathered relevant data regarding Economics courses, and ran a regression analysis comparing credits and contact hours per modules. This regression analysis also enabled us to investigate different factors too, for example how 'spend-per-student' ratio can impact student satisfaction levels.

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We were able to find various results, with the key findings being:

- Academic Support from Universities are highly influential in Students' satisfaction, with Value Added and Staff Feedback being mostly influential.
- For career aspirations, spend-per-student and the University entry tariff showed to be significant for student career prospects.
- Contact Hours were never shown to be significant towards educational outcomes

**VERITY IDEHEN***The HAVEN project***Supervised by:** Professor Jon Gibbins**Research theme:** Agriculture, Food & Health

The HAVEN project aims to explore a potential link between how our natural clotting response can affect blood vessel health in the body and brain, and how this could impact cognitive function in later life. Research has shown this is an area worth exploring as Suzuki et al., 2019, ultimately showed that cardiovascular health has links to impaired cognitive function by disproportionately affecting the anatomy of certain brain regions which could affect memory function. Additionally, platelet function

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and blood clotting factors have been closely linked with the presence of vascular dementia. Studies have found that individuals suffering from dementia seem to possess elevated levels of pro-clotting factors. Data collection is still ongoing and I am very excited to see the final conclusions. I have learnt so much on my UROP project and met so many amazing professionals that have such passion for their work and it is truly inspiring!

**VIKTOR IVAYLOV TSEKOV***Pseudospectra and their applications***Supervised by:** Dr Jani Virtanen and Dr Raffael Hagger**Research theme:** Environment

The project aims to use techniques for numerical analysis to study the pseudospectra of Toeplitz and related block matrices. Of particular interest is the structured pseudospectra which has a huge application in physics and modern computer science. We aim to inspect what happens to the pseudospectra of a matrix when it is perturbed by matrices of the same structure. We also aim to

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give evidence for some properties of block Toeplitz matrices such as the statement that the structured and unstructured pseudospectra of a matrix are the same. To achieve that I wrote software in MATLAB to numerically investigate the properties of block matrices. For now, it supports the Toeplitz and Hankel structures but for the future other structures can be added as well.

## WILLIAM FORSHAW

### *Multispectral Imaging of Potato Plant Canopies in Response to Drought Stress*

**Supervised by:** Dr Luke Bell and Dominic Hill

**Research theme:** Agriculture, Food & Health

This project focused on how plants grow differently when deprived of water at different stages of growth, data for this experiment was gathered primarily using the Phenospex PlantEye system. The hypothesis for this experiment is as follows; reduced water availability should result in decreased plant health leading to reduced measurable growth for the effected specimens compared to similar un-droughted specimens. The findings indicated that the growth rate of the specimens was largely

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unaffected by the droughting despite showing measurable differences in plant health although the experiment had many limitations.

The overall aim of this area of research is to see if food crops can be grown more water efficiently reducing the environmental impact of farming and helping societies adapt to climate change in areas that are already water stressed. I enjoyed undertaking the project and found had positively influenced my decision to pursue a PhD.

## YESAYAS TASLIM

### *Impact of Inorganic Nitrate on Cerebral Blood Flow and Cognition: A Systematic Review*

**Supervised by:** Dr Charlotte Mills and Dr Georgina Dodd

**Research theme:** Agriculture, Food & Health

My project involves doing a systematic literature review of randomised controlled trials, which in short, involves analysing published literatures screened through PRISMA diagram and synthesising collected data to answer the research question. The purpose of this research is to analyse whether inorganic nitrate derived from beetroot has a positive impact on cerebral blood flow and

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cognitive function, which if so, can be utilised to develop a better personalised nutrition for people who are at risk of cognitive diseases. I collected 5 studies, with 4 being fully retrievable to this date, and based on what I found, nitric oxide derived from beetroot tends to increase only certain aspects of brain activity and no significant difference is found on other brain activity.

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the Undergraduate Research Showcase 2021.  
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