UNIVERSITY OF BIRMINGHAM | UNIVERSITY GRADUATE SCHOOL

IMAGES OF RESEARCH

2021-2022

Can you tell the story of your research in a single image?

The University Graduate School (UGS) presents this challenge to University of Birmingham postgraduates every year, and the images you see here represent the exciting research projects our postgraduates are working on as part of their postgraduate Taught courses, Masters by research, and PhD degrees.

Help us decide if they have captured your imagination or made you think a little differently about research by voting for your favourite entry! **Use the QR Codes placed around the exhibit to cast your vote.**

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College of Arts and Law

Recipe for a Translation

Emma Becciu (MA Translation Studies)

Often seen as a word-for-word transfer from language A to language B, translation is actually a complex process that combines theoretical and practical research. Literary translation aims to preserve the peculiarities of foreign texts for target readers, almost as if taking them on a virtual journey to the land of the author.

My research focuses on translating humour and maintaining gender neutrality in children's literature. As part of my theoretical research, I investigated the strategies used in gendered languages like Italian to reproduce the gender neutrality of English. The field research took me to Bridlington, where the book takes place, and to comedy shows where the author performed.

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College of Arts and Law

Woodcut Woman

Ellie Sutton (PhD History)

Comprised of a poem, woodcut image(s), and a tune for the text to be sung to, broadside ballads were popular across the social and geographical breadth of seventeenth-century England. My research considers representations of women and gender in these ballads, and what they can tell us more broadly about gender relations in early modern England. The hand-embroidered woman in my picture replicates a woodcut image commonly used to illustrate such ballads, and the objects surrounding her symbolise many of the ways she might be portrayed; from a loving spouse or confident market-trader, to a jealous 'scold' or even husband-murderer.

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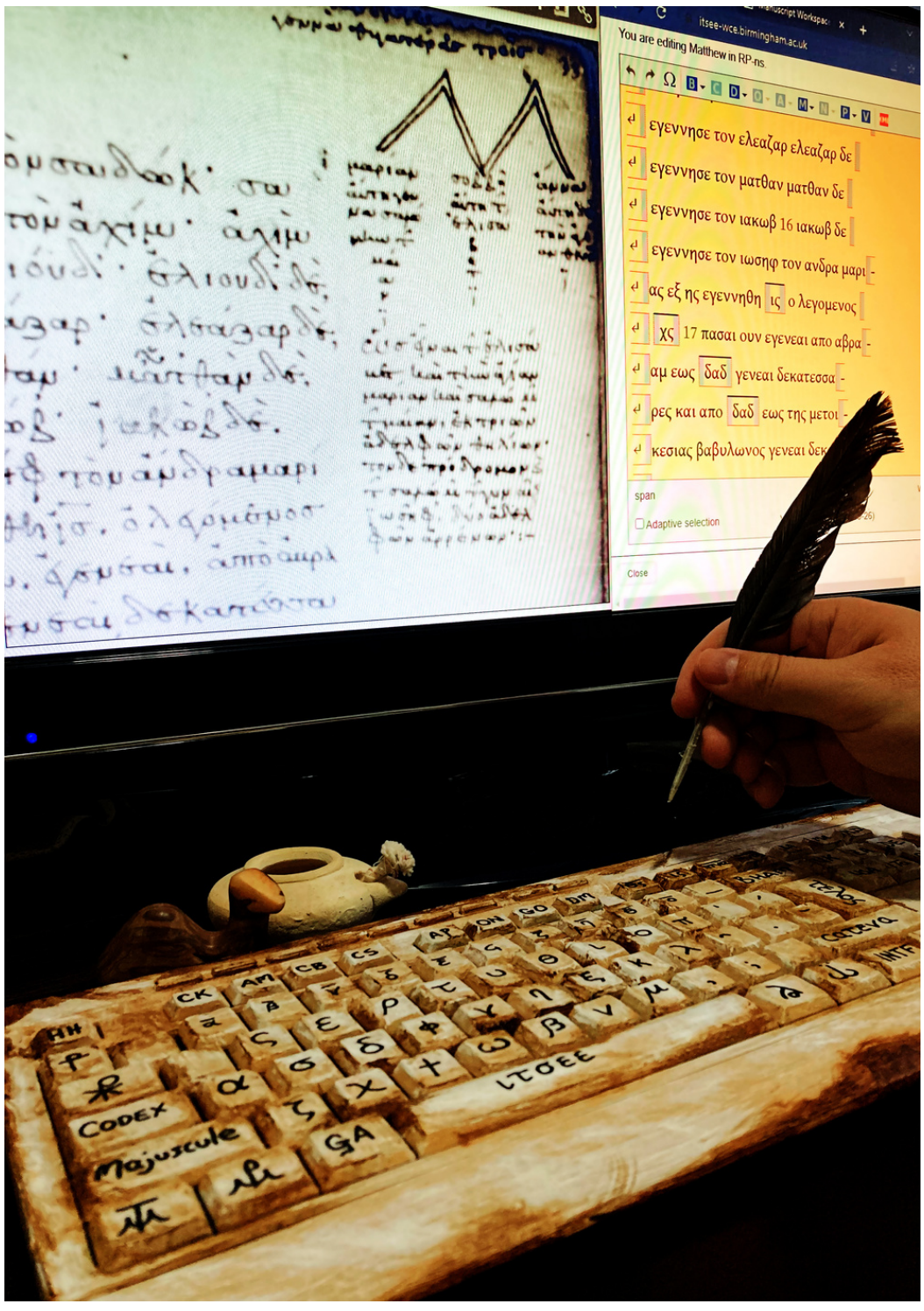
College of Arts and Law

Written Type

Gabriel Oberholzer (MRes Theology and Religion)



This picture represents the marriage of an old handwritten manuscript with our modern world's digital technology. Ancient witnesses of the New Testament can be read, researched and preserved by employing the best that our information age has to offer. My research is intent on transcribing this manuscript with a special interest in its marginal commentary and notes. Exploring its unique contributions will deepen our understanding and appreciation of such manuscripts not just in academic circles, but ultimately through translation lead to the reader's upliftment and spiritual edification. Without this marriage of Written-Type, these treasures will be lost.

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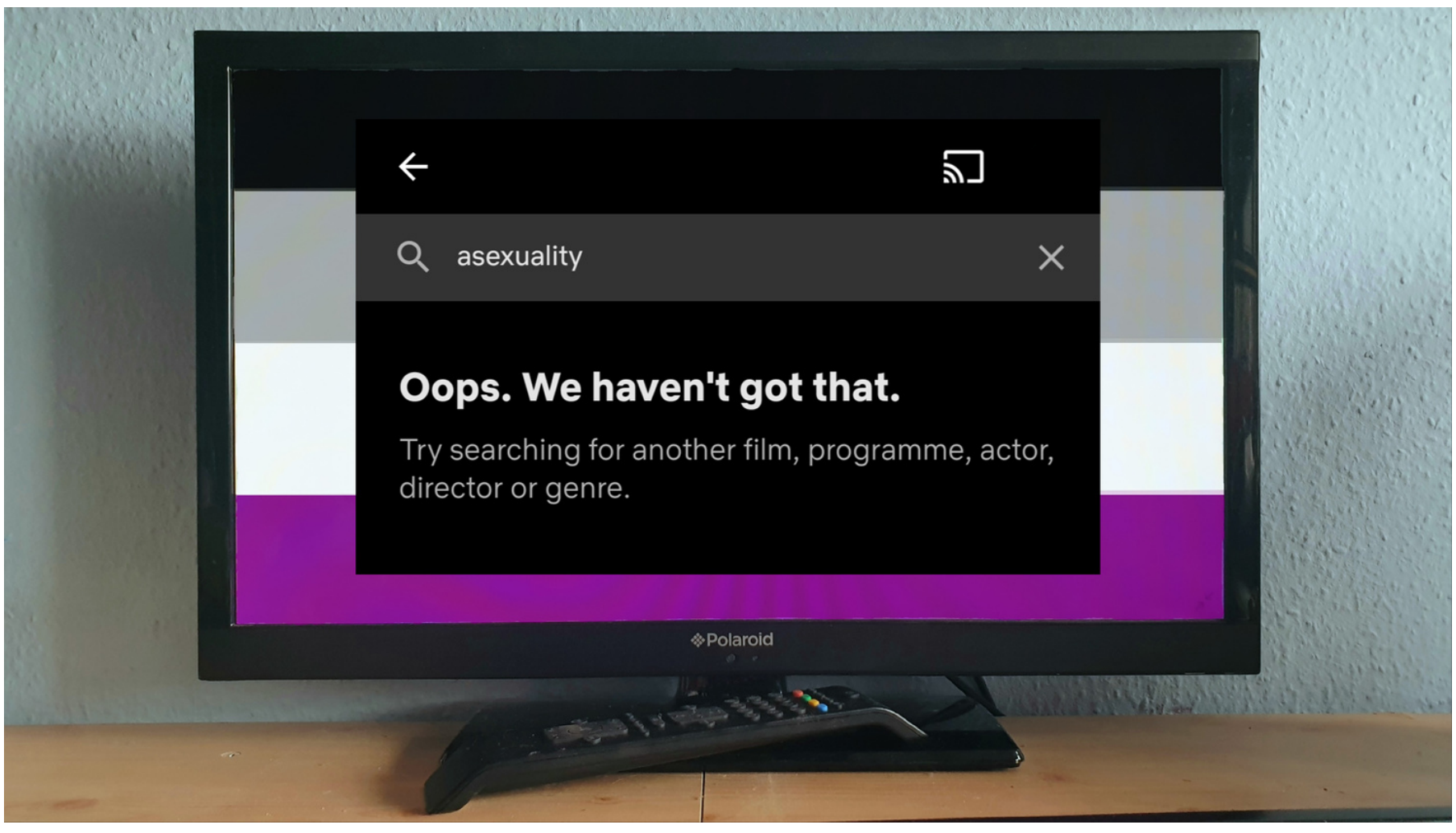
College of Arts and Law

Searching for Asexuality in British Television

Rebecca Humphreys-Lamford (MRes Modern Languages)



My image reflects the struggle that asexuals, including myself, face finding representations of asexuality on British television. Asexuals - people who experience little-to-no sexual attraction - are estimated to make up 1% of the British population (>700,000 people), but asexuality remains almost invisible in society. Representations on TV do exist, but some have been lost over time, and those which remain often misrepresent asexuality, viewing it with disbelief or as a medical problem to be fixed. My research, therefore, aims to retrace this history of asexuality on British television and explore what these representations mean for understandings of asexuality in British society in the past, present, and future.

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College of Arts and Law

Ecological Auditory Theatre

Sara Caneva (PhD Musical Composition)

This picture is a collage. Screenshots of waveforms and spatial audio panning, obtained from audio editing software, overlap a photo I took in Normandie during a field recording session. The dandelion in the field resembles a spherical loudspeaker. All-around at the periphery of the image, a black contour represents the darkness. My research investigates links between visual cues and listening through newly composed theatrical performance and sound installations in unusual lighting conditions, including full darkness. Vision removal enhances listening awareness, and affects perceptive behaviours, subverting the audience's expectations about sound and reality.

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College of Arts and Law

Painted But Never Painter

Sumaiyah Kholwadia (PhD in Law)

This image portrays a veiled Muslim woman sat on a bench. She is confined to the boundaries of the frame despite the openness of the natural background. She is looking at the viewer, having been captured in a mundane moment in public. Muslim women are oft the subjects of scholarship but represented through a one-dimensional lens which views them exclusively as victims of patriarchy. There is a disparity between these misconceptions and Muslim women's lived experiences. My research seeks to re-centre Muslim women's agency in discourses on dress. The space above her head is blank, representing the potential of her painting her own narrative and eventually breaking out of the frame.

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College of Social Sciences

'Justice on the grass': A Conversation with Children in Rwanda

Jeannette Mines-Rogers (PhD International Development)

What is justice? What are human rights and your rights as children? How do they apply in your everyday lives? These are questions I asked 13-18-year-old children to ponder on fieldwork in Rwanda. The photograph shows one focus group, set outside on the grounds of a village school in the Eastern Province. The set-up is reminiscent of a mechanism of justice unique to Rwanda: Gacaca ('justice on the grass'). Here, problems are discussed, dialogue established, and communities reconciled. My research looks at how - and why - the participation of children should be integral to such justice measures, using the views and opinions of children in Rwanda to inform a new framework.

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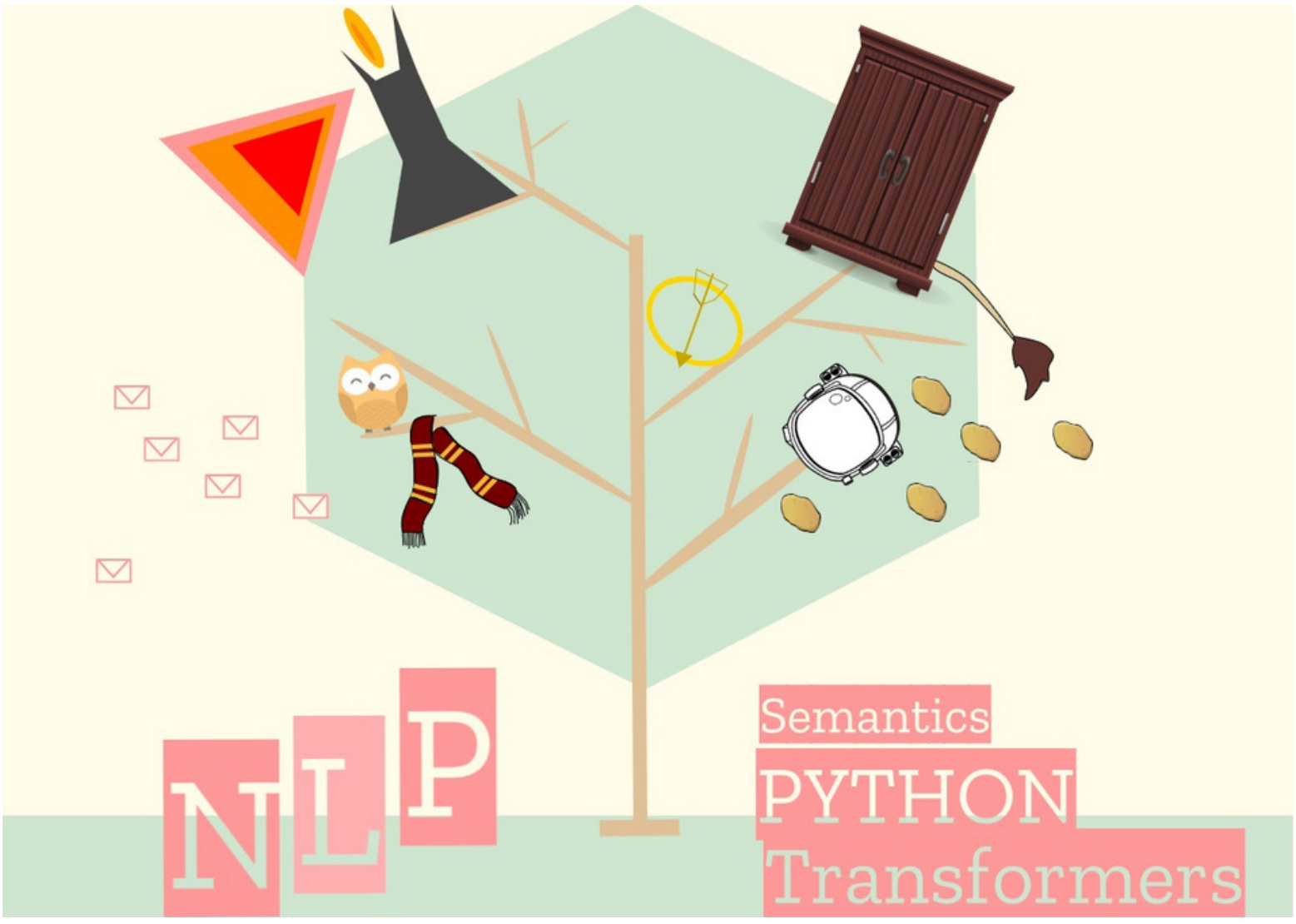
College of Engineering and Physical Sciences

"You should read the books!" But what if you can't?

Ethan Liu (MSc Interdisciplinary Data Science)



My MSc project consists of using algorithms and machine learning to 'translate' commercial books into an easier to read form of English, whilst keeping the authors expressions as close to their original intension as possible.

The motivation for this is to allow accessibility of high reading level commercial texts such as novels, to individuals with dyslexia, learning difficulties and non-fluent English speakers. Many passionate fans may have discovered amazing stories from movies, but however cannot experience the source material because of numerous barriers. My project hopes to 'lift' them closer to their favourite worlds.

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College of Engineering and Physical Sciences

Of Mice and Men

Abigail Wright (PhD Chemical Engineering)

Osteoarthritis is a painful, debilitating disease effecting joints. Treatment is elusive, despite research efforts. Modelling this disease in the lab is paramount to understanding the ways in which we can tackle it. Animals models fail to capture the workings of the human skeleton. We are not mice. How can we draw conclusions about human disease from animal models? The aim of my project is to grow a human joint in the lab to see its inner workings, helping us to diagnose and treat osteoarthritis.

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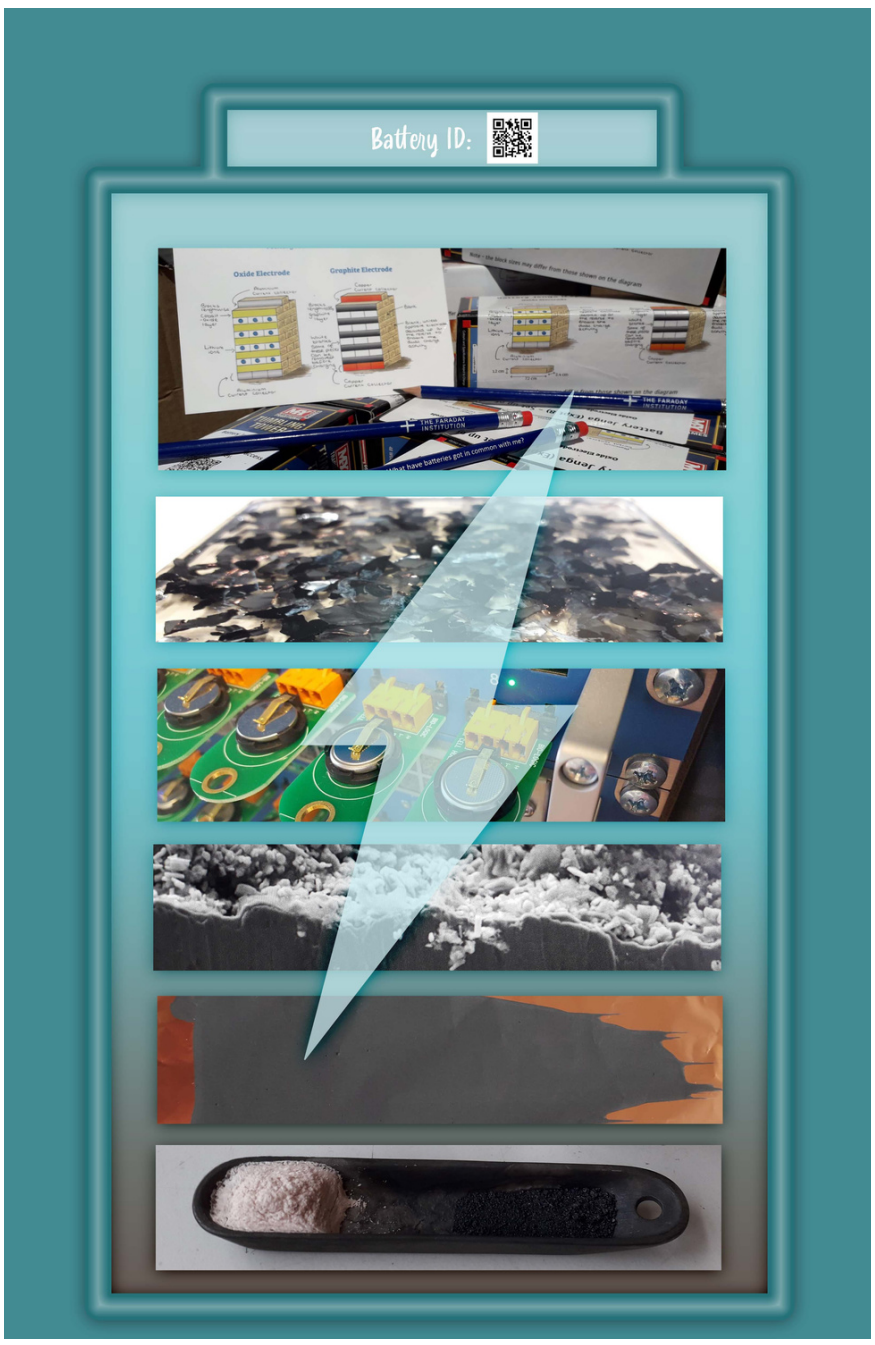
College of Engineering and Physical Sciences

Charging a Battery Thesis

Lizzie Driscoll (PhD Chemistry)



Li-ion batteries are everywhere - smart phones, laptops and electric vehicles, but have you ever wondered how they are made? And the research steps involved? This collage explores the full capacity of battery research: from the initial synthesis of new Li-ion battery materials, to manufacturing electrodes, with characterisation playing a fundamental role across all stages through imaging to electrochemical testing, before recycling these materials and starting the process all over again. The final image represents an equally important stage - outreach and battery education, nominally using a battery jenga set to explain the science behind this type of battery. My research has 'charged' all of these aspects.

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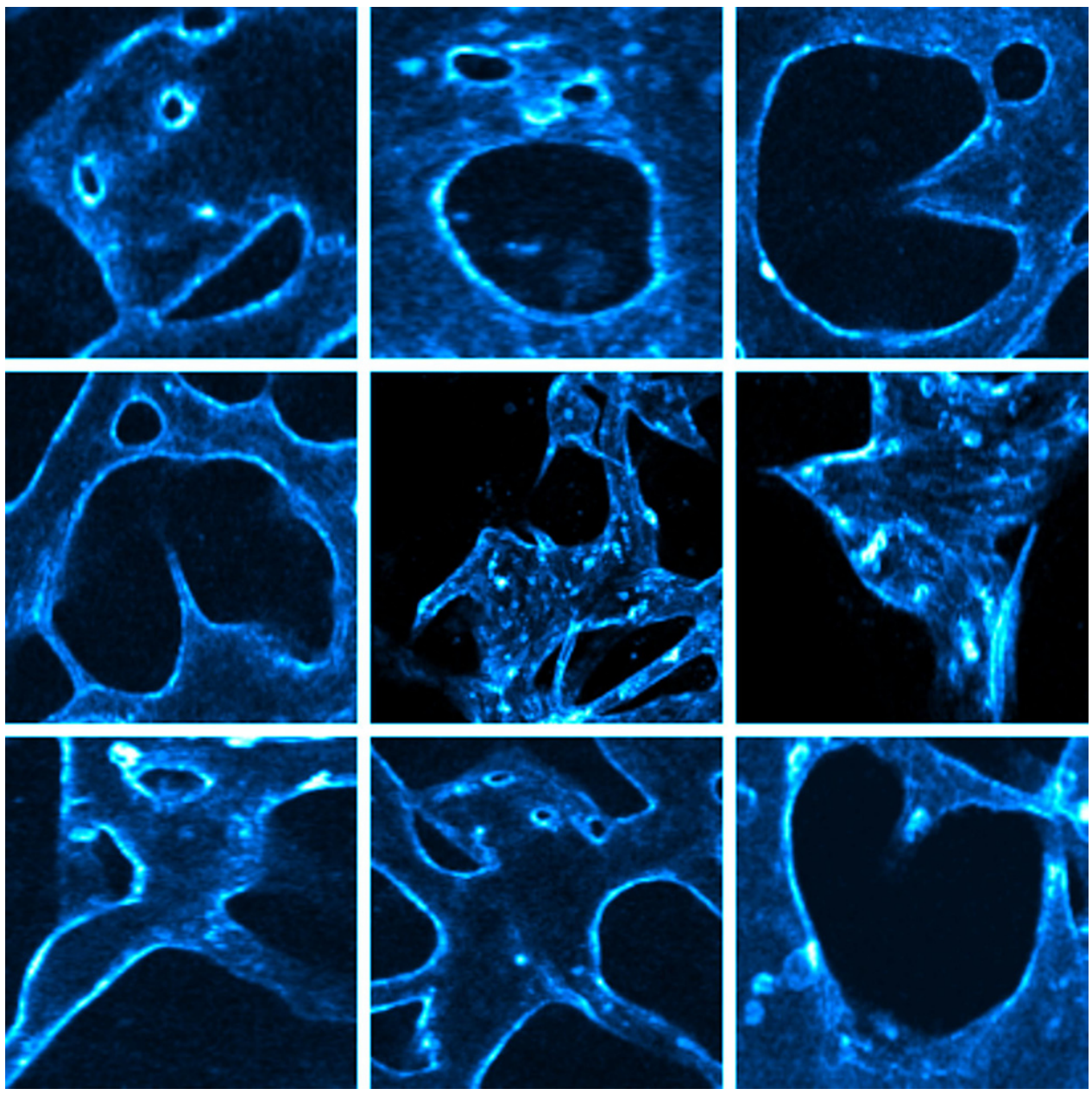
College of Engineering and Physical Sciences

Human vs Machine: Finding Art in the Arteries

Sebastian Gilbert (PhD Mathematics)



Humans are very good at spotting shapes and patterns. Computers and their algorithms are quickly learning how to do this too. Sometimes these patterns can range from the sophisticated to the comical. Here endothelial cells (the main cells which form blood vessels) have been genetically engineered to give off a fluorescence so we can distinguish them under a microscope. My research looks to automatically categorise the patterns blood vessels make, using machine learning and a branch of mathematics called topology, to identify their diseased state. Whilst staring at the images it is easy to see more than just the connections these blood vessels make. What shapes can you see?

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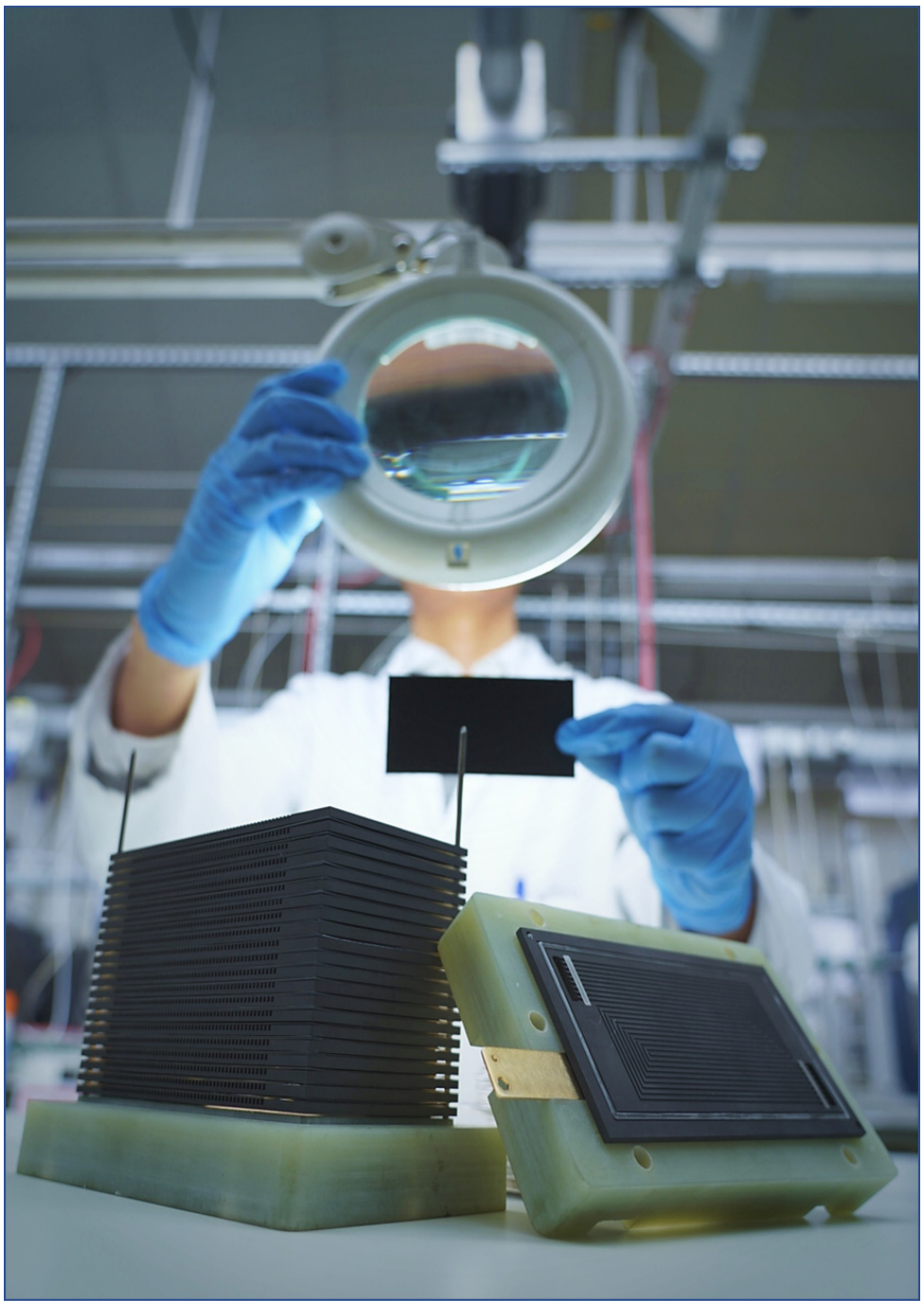
College of Engineering and Physical Sciences

Make It Happen

Yichang Yan (PhD Chemical Enginnering)



In 1969, the fuel cell technology took Apollo 11 to the moon. However, we do not see lots of fuel cell vehicles on the road until today. Cost, durability and performance are the three challenges that limit the commercialization of fuel cells. Usually, improving the other two results in the deterioration of the third. My research aims to make it happen by growing platinum nanowires catalyst directly on carbon paper at room temperature with as fewer steps as possible. The unique properties of platinum nanowires and the preparation process help to improve the activity of the catalyst and extend its lifetime while reducing the cost.

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College of Life and Envrionmental Sciences

Make Friendships Like This Protein so it Shines in Darkness

Rodhan Patke (MSc Molecular Bioptechnology)

Recombinant proteins are foreign proteins produced in a species different to its origin by recombinant DNA technology. They have a broad range of applications, right from brewing to therapeutic drug discovery. We aimed at determining the difference in protein expression between different vessel types. We devised an experimental plan to analyse the production of Green Fluorescent Protein (GFP) in Shake Flasks, Baffle Flasks, and a Lab Scale Fermenter. The experiment was divided in two weeks, with the first week involving optimisation of growth conditions. The optimised results were used to upscale the experiment in above mentioned three vessels. BL21 DE3 chemically competent Escherichia coli was used for expression of GFP.

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College of Life and Envrionmental Sciences

Skeletons in the Peaks

Amy Webster (PhD Biosciences)

Situated in the South Atlantic ocean is a volcanic island called Saint Helena. Across the high peaks, a cloud forest has formed and evolved over millions of years. Within it, insects, plants and trees not found anywhere else in the world, coexist in a thriving complex. However, an unknown disease causing agent has resulted in the death and deterioration of many of these endemic tree giants. One of the most startling being the black cabbage tree, where these skeletal remains are left scattered among the landscape. To uncover the cause of this dramatic dieback and begin an action plan of recuperation, a genomic exploration of the peaks microbiome is underway.

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College of Life and Envrionmental Sciences

Diverse Viewpoints in British Sign Language

Freya Watkins (PhD Psychology)

Noisy environments make it difficult to understand spoken language. For sign languages, which are perceived with the eyes, comprehension is harder when we can't see signs clearly. One way this happens is when a person signing is not facing us, e.g. in group discussions, or when watching dialogues side-on. My research addresses questions like: Are side views always harder? Would teaching signs from multiple viewpoints improve learning? Do cognitive skills like mental rotation help deal with this 'visual noise'? My collage shows stills of a BSL sign for PERSPECTIVE/VIEWPOINT from five different angles, like the videos used in my experiments.

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College of Life and Envrionmental Sciences

Juggling food: How We're Making Food Decisions Every Day

Madhronica Sardjoe (PhD Psychology)

Food is constantly on our mind. So how do we make decisions about what we eat? Do we go for a healthy salad, eat more proteins after hitting the gym, or treat ourselves to ice cream after a long workday? Our decisions might not be so conscious as we think. Our food intake is regulated by many unconscious drivers, like our energy homeostasis and metabolism. Cognitive functioning plays a role: your attention span, mental flexibility, ability to inhibit responses, stress, and sleep. My PhD investigates if we can improve cognitive functioning and metabolism with aerobic exercise, and how that affects food related decision making.

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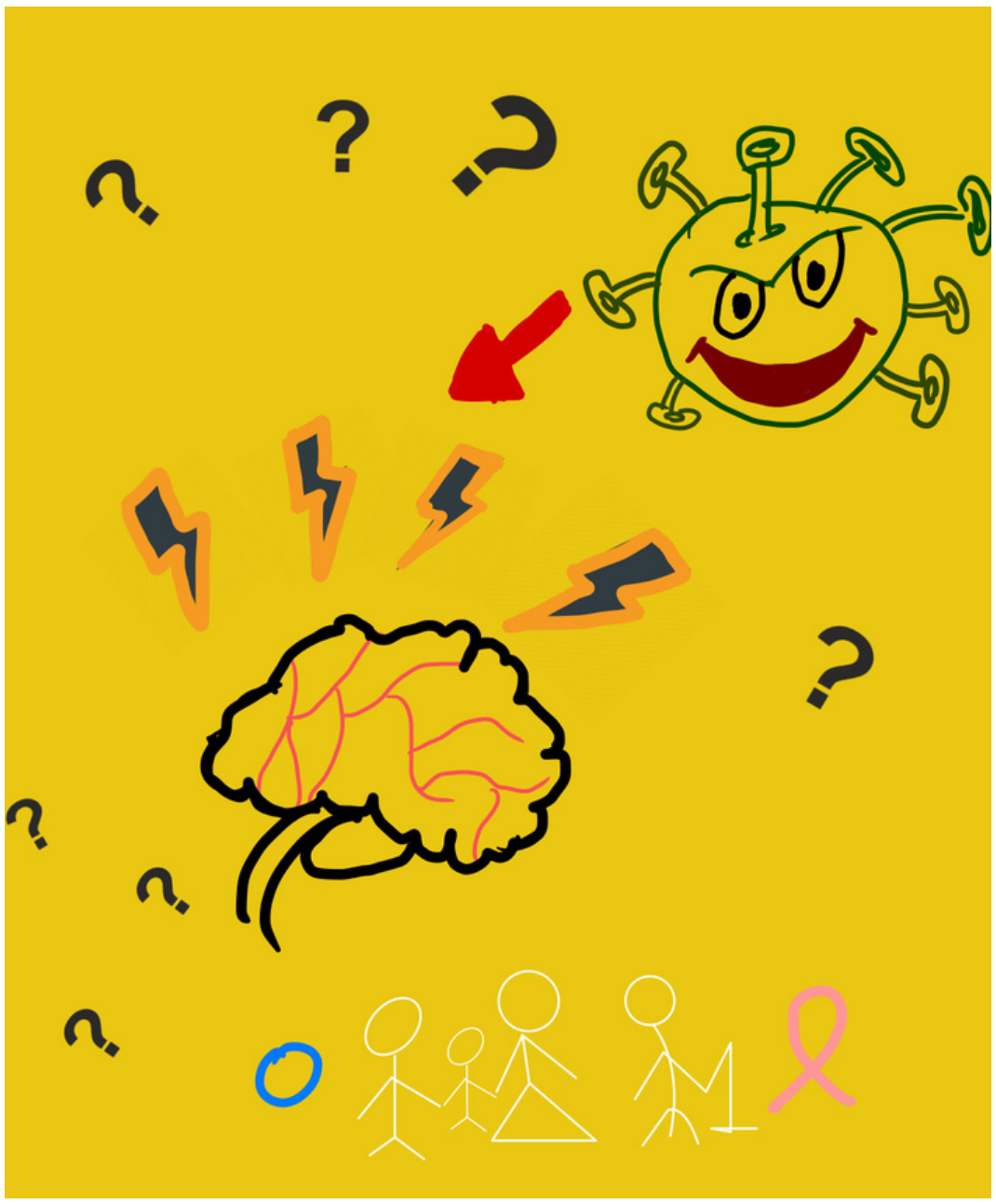
College of Medical and Dental Sciences

Risk Factors of Encephalopathy in Inpatients with COVID-19

Bhagyashree Mehrotra (MSc Clinical Neuropsychiatry)



Coronavirus disease 2019 (COVID-19) is a rapidly evolving and widespread global pandemic. It is observed that neurological manifestations are highly prevalent in patients suffering from COVID-19. Encephalopathy is a type of severe brain dysfunction and can present itself in various ways ranging from confusion to coma. In my study, I am exploring the risk factors that would make an inpatient more susceptible to developing COVID-encephalopathy. Some of the factors that I am going to explore are age, gender and other health co-morbidities such as diabetes and cancer.

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College of Medical and Dental Sciences

Global Collaborative Research in Surgery for COVID-19 Recovery

James Glasbey (PhD Cancer and Genomic Sciences)

To protect patients and hospitals during COVID-19, the NHS recommended against routine face-to-face review after surgery. However, returning to hospital after surgery has always been a challenge for many patients in lower-resource settings.

This photograph of a translator and I was taken in Veracruz, a bustling port city in Mexico. It captures a 72-year-old patient describing his journey to hospital from a rural community 100km away, requiring a 10km walk and three different buses, at his own expense. Our global research collaboration across seven low- and middle-income countries, has created a new, high-quality pathway for follow-up after surgery using telephone and video, in partnership with local patients and community members.

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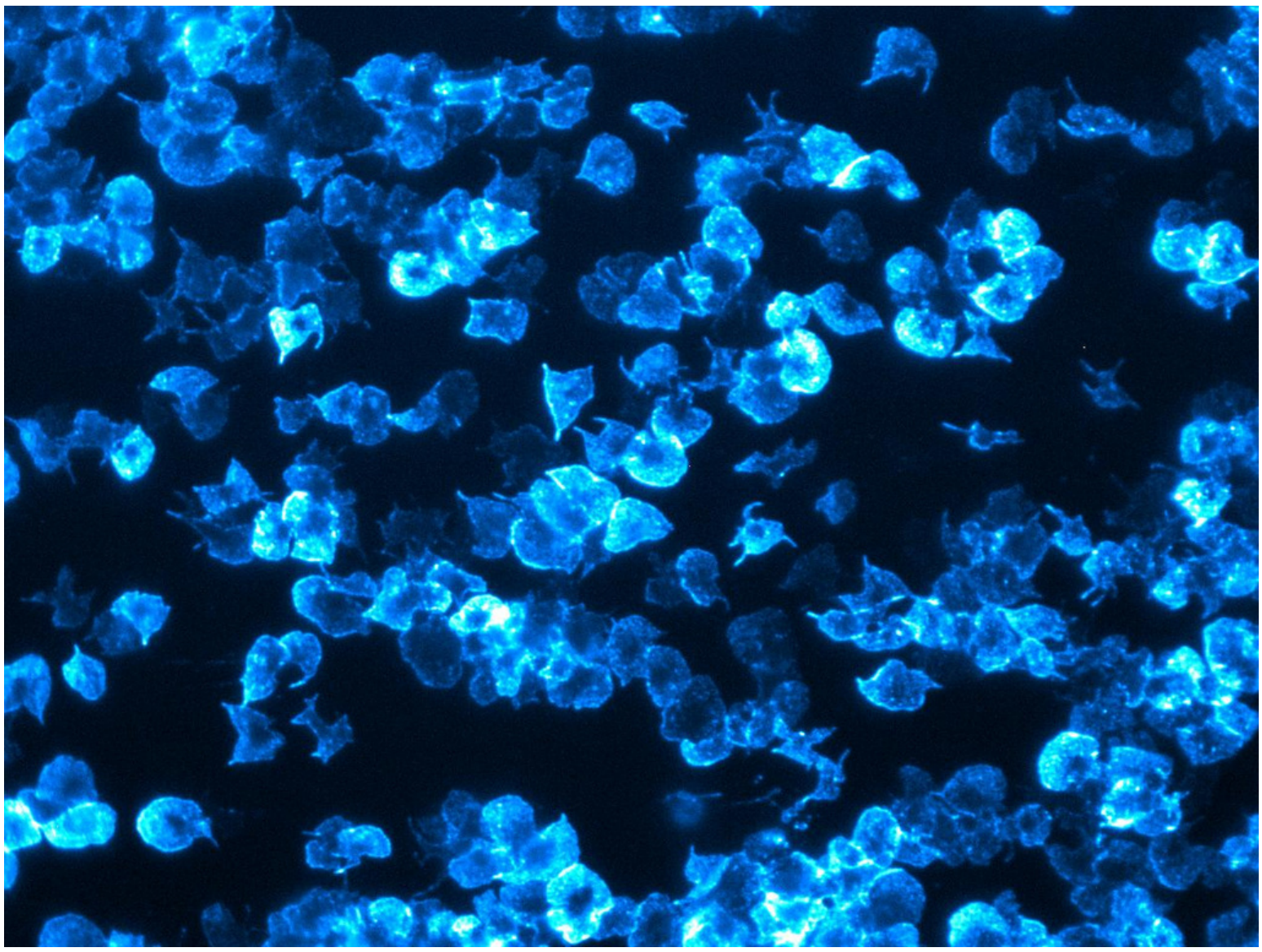
College of Medical and Dental Sciences

Investigating the Smallest Blood Cells

Natalie Jooss (PhD Cardiovascular Sciences)



In my PhD project I investigate the smallest blood cells in the human body, platelets. In a healthy human, platelets stop a person from bleeding when they are injured. Over the duration of our lives blood vessels change and can cause platelets to activate inappropriately, causing blood clots, heart attacks or strokes. This is often prevented by prescription of so called "blood thinners". However, these can cause bleeding side effects. With an artificial blood perfusion system, I am investigating new approaches to prevent unsolicited platelet activation. Using microscopy, I can visualize platelets and assess effects of drugs we added to the blood.

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College of Medical and Dental Sciences

The Rise of the Wise: Dr. Top Trumps

Sabena Jameel (PhD Applied Health Research)

This PhD research prizes wisdom over knowledge. Knowledge is king, especially in fields like Medicine.

Wisdom is elusive and enigmatic. Wisdom embraces cognition, character and reflection.

The enacted Phronesis (practical wisdom) in GP Study (EPGPS) is mixed methods research that empirically finds wise doctors and the take those wise doctors biographies using narrative interviews. The stories of those wise doctors help us understand what it means to be wise. They are the real superheros. This image is in the style of a comic/top trump card, to convey their superpower.

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College of Medical and Dental Sciences

Community Midwifery in a Pandemic

Sophie-Anna Dann (MRes Clinical Health Research)

The Covid-19 pandemic swept the world in 2020. Throughout, Midwives have continued to provide postnatal community care to women and babies. They have no guarantee the households they visit will wear facemasks, practice social distancing, obey lockdown, or even believe in Covid. Surveys by the Royal College of Midwives found that over half of midwives did not feel safe performing home visits and 7 in 10 midwives had experienced abuse from patients due to changes in maternity services. This photo shows my crammed car boot after a (now) typical day of community midwifery. My research will explore the lived reality for Community Midwives providing postnatal care in the Covid-19 pandemic.

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