



# IMAGES OF RESEARCH 2022

Celebratory Brochure

**Research** and  
**Knowledge Exchange**



# Images of Research

A research communication competition brought to you by the Research and Knowledge Exchange Directorate.

Researchers and postgraduate researchers were challenged to submit a photograph and accompanying abstract which communicates the significance and impact of their research to a non-specialist audience.

The finalists' entries were showcased both in an online gallery and a touring exhibition around campus for a month, culminating in a hybrid celebratory event. Three prizes worth £100 each were available to the winning entries.

A panel of experts, including Professor Richard Greene, Pro-Vice-Chancellor for Research and Knowledge Exchange, selected the Judges' Choice awards. Helen Barrett's entry, 'Invisible', won the Judges' Choice Award in the Postgraduate Researcher category, while Dr Dom Willmott's entry, 'Trial by Misconception', won the Judges' Choice Award in the Researcher category. Dr Lynn Settrington's entry, 'Safety Net' won this year's People's Choice award.

Thank you to all those who visited the online gallery and exhibition and voted for their favourite image. In all, nearly 600 votes were cast. This celebratory brochure is a compilation of all the wonderful entries received this year. We hope that you enjoy learning about the research taking place at Manchester Met. If you have any questions relating to past or future competitions please contact the organisers at: [imagesofresearch@mmu.ac.uk](mailto:imagesofresearch@mmu.ac.uk).



**“Images of Research is an important part of our annual calendar of research-focussed events, and one I enjoy immensely. It’s an interesting mix of photography competition and research symposium. Above all, it’s about the clear and effective communication of research ideas to a diverse and non-specialist audience.”**

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**Professor Richard Greene**

Pro-Vice-Chancellor for Research and Knowledge Exchange

# Judges' Choice Award Winner

(Postgraduate Researcher category)



## Helen Barrett

Postgraduate Researcher  
Faculty of Health and Education

### Invisible

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This image depicts a refugee camp in Rwanda where my PhD data was collected. The camp is high on a hill, often hidden in the mist. On some days you may not even notice it is there as it can barely be seen.

Like the camp in the picture, communication impairments (CIs) are also 'invisible' and can be difficult to identify. Refugees with CIs in Rwanda are often misunderstood and stigmatised within their communities. In a context where specialist communication support, such as speech and language therapy,

is limited, humanitarian service providers are unable to meet communication support needs, resulting in disabling exclusion.

My research has shown that 'invisibility' impacts upon the ability of refugee children with CIs to realise their right to an appropriate education, as well as to accessing other essential services such as health and protection. We may not see them, but they are there...hidden from view.



# Judges' Choice Award Winner

(Researcher category)



**Dr Dom Willmott**

Researcher  
Faculty of Health and Education

## **Trial by misconception\***

Sexual violence is on the rise throughout the UK. Statistics show that women are particularly at risk and those most often victimised. Yet, whilst sexual violence continues to rise, rates of prosecution are decreasing. Even when cases do make it to trial, based on strong evidence against those accused, jurors frequently return not guilty verdicts. Police and victims' groups have long speculated that misconceptions and attitudes towards rape may be biasing jurors, but the law prevents real jurors from disclosing how

they reached their decisions. To overcome this, I carried out a series of realistic mock-trials with more than 400 members of the public acting as jurors. Pre-trial questionnaires displayed strong evidence of a link between juror misconceptions about rape and not guilty verdict decisions, helping courts to understand why many rape victims never receive the justice they deserve at trial and the importance of introducing education for future juries.



\*Trigger warning

# People's Choice Award Winner



## Dr Lynn Settrington

Researcher  
Faculty of Arts and Humanities

### Safety Net

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Dr Lynn Settrington is known for her innovative stitched-based work with hard-to-reach groups and Safety Net is her latest Arts Council initiative exploring mental health in the workplace. Builders are ubiquitous in Manchester and Salford with construction sites on pretty much every street, but do we ever stop to think about the workers and what lies beneath their tough façade? Construction has the highest suicide rate of any profession in the UK, a fact supported by ONS figures showing that rates amongst construction

workers are more than three times higher the national average. The banners reading 'There is no Health without Mental Health' on Chapel Street were installed by Eccles-based Tunny Scaffolding Ltd and the Oldham Road installation was arranged by Manchester-based Northhold Group. A short film offers a lasting legacy of the transitory installations and is a collaboration with Manchester Met graduate and film maker, Mary Stark.



# Shortlisted Entries

## Dr Gina Cavan

Researcher  
Faculty of Science and Engineering

### **My back yard is important to the city's climate resilience**

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Green spaces help us to cope with climate risks including urban heating, air pollution and flooding by cooling the air, improving air quality and absorbing water.

While our gardens or back yards may appear insignificant, collectively they make up one fifth of Manchester.

Using novel methods combining citizen science and aerial imagery, we found that an average Manchester garden has only 50% green space (demonstrated by the Lego garden), and our models indicate that garden greening could mitigate against rising temperatures and flood risk.

In our call to action, residents made over 700 greening pledges and project partners are leading several initiatives to enhance take up. Natural England are supporting roll-out to other cities and through a NERC-funded project with RHS Bridgewater Garden and LEGOLAND Discovery Centre Manchester, we are developing a Lego-based gardens workshop exploring climate resilience for schools and the University (within RISE and Carbon Literacy training).



## Dr Rob Drummond

Researcher  
Faculty of Arts and Humanities

### Inside the Accent Van

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The way we speak is inextricably linked to who we are. Our voices can provide glimpses into the lives we have lived, and can help create our identities in the here and now. By exploring the diversity of voices across the ten boroughs of Greater Manchester and listening to people's reflections on what their accents mean to them, we are able to better understand the relationship between region and voice. The Accent Van offers a quiet

place for people to share their pride, their prejudices and their aspirations by reflecting on how they and the people around them speak. As part of the wider Manchester Voices project, it helps us admire and untangle the rich tapestry of accents, dialects and identities that make up Greater Manchester. Manchester Voices is run by Dr Rob Drummond, Dr Holly Dann, and a small group of student Research Assistants and interns.



## Sheryl Lee

Postgraduate Researcher  
Faculty of Science and Engineering

### Demolition waste in a sustainable world

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Additive Manufacturing (AM) is the process of turning a digitised 3D model into a physical object by adding layer upon layer of material – an additive process. Traditionally cement objects are formed by casting, a process that requires a mould that takes time to produce and is costly for smaller jobs. AM gives the freedom to produce complex, customisable geometries in a fast and economical manner that is available locally, removing the need for transport and storage of large inventories.

Manchester Met is developing mortar for use in AM, or 3D printing, using locally-sourced demolition waste as a substitute for sand. Worldwide, we use 50 billion tonnes of sand every year; the energy required to extract it and the damage caused to the environment is substantial. Finding alternatives to this ever-increasing demand is vital to supporting the adoption of a circular economy and a sustainable future.





## Xaali O'Reilly Berkeley

Postgraduate Researcher  
Faculty of Science and Engineering

### The hidden cost of ecological research

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Biodiversity research is crucial to quantify the life on our planet. I am interested in the most diverse of ecosystems, tropical rainforests. My research consists in collecting plants called bromeliads, extracting and counting all the creepy crawlies dwelling between their leathery leaves, and sampling the bacterial communities of the plants. Specifically, I am investigating whether the genetics of the plant influences the diversity of the communities of organisms associated

with that plant. If more genetically-similar plants turn out to have more similar communities associated with them, it may have implications for how we do conservation. However, with this image I invite you to consider – what is the cost of biodiversity research? Can we justify removing plants and invertebrates from their environment in order to study them, in the name of conservation biology?



## Darryl Peers

Postgraduate Researcher  
Faculty of Arts and Humanities

### **Queer form: A creative-critical methodology for contemporary Scottish fiction**

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'Queer form' is a critical lens which challenges conventional literary criticism that depicts queer writers as a hyper-visible minority unduly concerned with sexuality or gender identity. Queer form broadens our understanding of what queer writing can achieve by orientating critical analysis towards the techniques queer writers deploy. I write a collection of short stories which develops queer form into a methodology for creative practice. My writing shares an objective with the queer theory I analyse in the accompanying critical thesis: to highlight

the ways that marginalisation manifests in the everyday lives of LGBTQ+ people. The stories build a portrait of a singular narrator's life in contemporary Scotland, elucidating the violence threatened throughout that social context.

In the image, rainbow paint has been hurled over the subject's body. This echoes the violence of a gaze which renders a queer person hyper-visible because they do not correspond with heteronormative expectations.



## Dr Krystal Wilkinson

Researcher  
Faculty of Business and Law

### Perinatal mental health and policing

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Perinatal mental illness refers to mental illness during pregnancy, and up to one-year post-birth. Conditions include anxiety, depression, and post-traumatic stress disorder. Prior to the pandemic, around 1 in 5 women experienced mental illness during the perinatal period, as did 1 in 10 men. This figure has increased significantly since 2020. Our research explores the intersection between perinatal mental illness and UK policing – a unique and challenging occupational context. We chose this image to capture the importance of

occupational support around perinatal mental health – for organisations, for working men and women, and also for their families/babies. The image was provided by our project partner Sgt Jennifer Sharpling, who set up the national Blue Minds working group on perinatal mental health, and works tirelessly to support fellow officers and campaign for organisational change. The research is in collaboration with Dr Sarah-Jane Lennie at The Open University and Greater Manchester Police.



## Hannah Williamson

Postgraduate Researcher  
Faculty of Arts and Humanities

### Storytime with Bertha Hindshaw

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This was taken in the art store at Manchester Art Gallery, where these objects from the Horsfall collection now reside. Thomas Horsfall (1841-1932) set up his museum in Ancoats in 1886 to teach working people about beauty. While the museum's early work is now well-known, its later life is my focus.

Bertha Hindshaw (1881-1955) curated the museum from 1912 to 1947, setting up an innovative children's theatre there in 1922. I think she is the woman telling the story

in the photograph. It is just labelled 'Ghost story'. I have surrounded it with old mounts from Horsfall collection watercolours, turned back-to-front, so that instead of a shiny gold frame, you can see how they are held together. My research looks at the Horsfall objects and Hindshaw to tell a new story: how his museum became her museum.



# Entries

## Dr Bela Arora

Researcher  
Faculty of Business and Law

### Connecting with the local environment and inspiring change

My work focuses extensively on sustainable development. In October 2021 students took part in an activity with the Canal and River Trust to deepen their understanding of sustainability and to give them an opportunity to create a positive environmental impact. The activity took place along the canal-side near the University and students engaged in wild flower planting, litter picking and the removal of evasive species. This approach has supported a transition from research-informed teaching to direct impact.

Through the activity, the students from the BA (Hons) International Business Management gained a deeper understanding of the importance of biodiversity to enrich our green and blue spaces. The activity brought to life the agenda, provided an opportunity to appreciate the importance of green and blue spaces in cities and enabled our students to make a direct and lasting impact on the local environment.



## Nathan Atherton

Postgraduate Researcher  
Faculty of Arts and Humanities

### Health and happiness in historic green spaces

Investigating three National Trust properties here in the North West, this research considers how the gardens and wider estates of Tudor and Stuart gentry were designed and used with wellbeing in mind.

Through different investigations, we see how these settings were beneficial: the dietary and financial benefits of growing fruits in orchards, as well as the mental reward of a successful harvest. The physical benefits found in gardening and walking through them. The quieter, contemplative moments,

of birdwatching, fishing, or relaxing in a shaded summer house. There was also an intrinsic spirituality to all this, given how deeply religious society was.

For contemporaries, humanity first began in a garden with Adam and Eve, and so to spend time there was to harken back to a simpler time. These varied responses to green settings lie at the heart of this project, many of which we still share, or are rediscovering today.



## Nobila Bano

Postgraduate Researcher  
Faculty of Arts and Humanities

### Wilderness, a space I can truly call 'home'

Natural environments feature in the tales of many global cultures. Exploration into some of the cultural, social, and symbolic goodness that nature can offer, could enable deeper insight into this uncharted world. Particularly amongst migrant-background groups, who have been long excluded from broader environmental policies.

The consideration for resilient treescapes/ natural environments amongst migrant-background communities has the potential to offer new ways of understanding into the connectedness of human culture. My intergenerational place-based research collaborates with migrant-background learners, via Hopwood Hall College and Treesresponsibility. The idea that planting trees and exploring nature in the 21st century, can give young people a 'voice' to share insight into their world, particularly through the lens of identity/belonging. As a practitioner working with migrant communities, there is a need for deeper appreciation into natural environment studies, with the potential to encourage new knowledge, thus making life more sustainable and life-enhancing for these somewhat 'forgotten' groups.



## Debora Belami

Postgraduate Researcher  
Faculty of Science and Engineering

### Is hydrogen the future?

The UK is committing to 100% net-zero carbon emissions by 2050. One of the main ways we are aiming to achieve this is by replacing fossil fuels, with green hydrogen that is generated without any emissions along the production route. Currently, hydrogen is produced from fossil fuels, which naturally generates harmful side products like carbon dioxide.

My picture depicts the view of an electrochemical device that produces hydrogen from water. When powered by renewable electricity such as from solar or wind, this process known as water electrolysis generates emission free green hydrogen. However, the cost needs to be reduced to make green hydrogen from electrolysis affordable and scalable.

My PhD focuses on preparing and testing low-cost and robust materials that will lower the cost of green hydrogen by reducing materials and manufacturing cost. Such technologies will mitigate carbon emissions in cities all over the UK and the world.



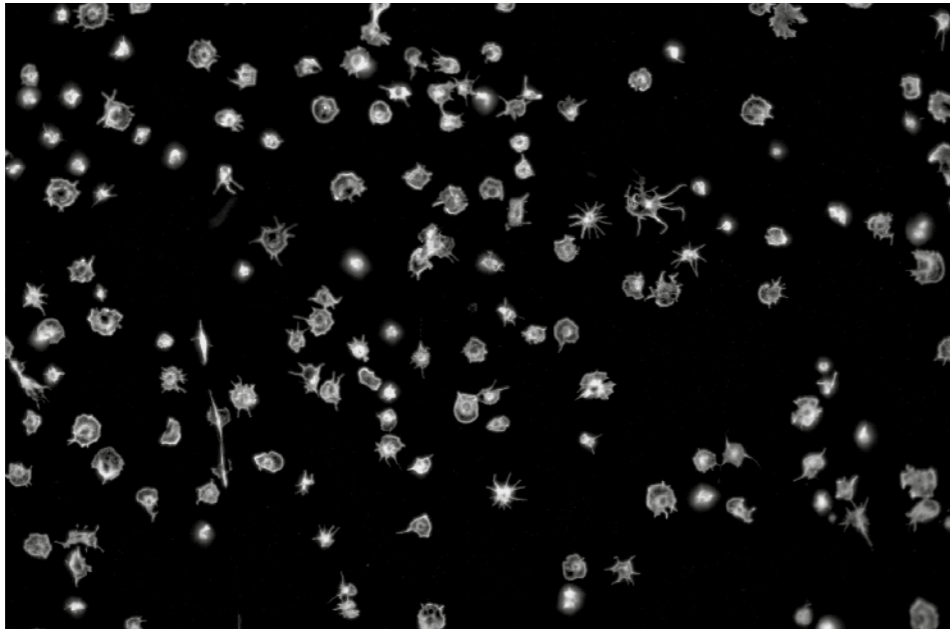
## Maria Blanco

Postgraduate Researcher  
Faculty of Science and Engineering

### The cosmos in our veins

Platelets are small cells that circulate through the bloodstream. Although they play a key role in wound healing, these cells adhere to the wall of diseased vessels and form a blood clot that could cut off blood supply to the brain, causing a stroke. In the UK, there is an average of 1 stroke every 5 seconds, leading to 34,000 deaths every year and being the first cause of severe disability in this country. Therefore, the development of novel

antiplatelet therapies for preventing and treating stroke is crucial. At the Thrombosis Group, we are able to mimic platelet adherence to the proteins of the blood vessels in vitro and visualise the cells using confocal microscopy, as shown in the image. This technique allows us to identify how different drugs affect platelet morphology and adherence, revealing some potential new therapies for stroke.



## Kevin Boardman

Postgraduate Researcher  
Faculty of Arts and Humanities

### Whiteboard door

I am interested in the early stages of creativity. In particular, how the whiteboard plays an important role during this process. As an artist I am reclaiming and repurposing

the whiteboard in an expanded enquiry to discover creative insights. Here I have painted a door using whiteboard paint to begin this investigation.



## Dr Michael Bull

Researcher  
Faculty of Business and Law

### Ours: Moral ownership in football

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English football's ecosystem is in crisis, with scrutiny on the relationship between owners and fans. Owning an English professional football club is for extremely wealthy global investors. There is a separation in the alignment of purpose; a 'club' is reimagined as a 'business'. As seen from slogans of disenchantment on terraces across the country "Football without fans is nothing". Whilst there are calls for supporters to become shareholders, an undeveloped concept in the literature suggests supporters are 'moral owners' of their clubs – ownership is

therefore socially constructed and accordingly contested. My research seeks to understand the relationship between organisational ownership and governance structures in relation to moral ownership.

This image represents two boys (my children) engrossed in the game, where passion is espoused from the terraces – this is not the Premier League. This is Banbury United, a club owned by its supporters in the seventh tier of English football.



## Clare Calveley

Researcher  
Faculty of Arts and Humanities

### TRANSvisualATION: Adjusting our attitude and communication around death

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My research practice graphically and virtually investigates space, place, and non-places in the context of health and wellbeing. This has evolved from my MA research of the coffin, space, people and the relationship between them.

The research has required an adaptation to my practice direction, away from being very much subjectively driven by my own experiences, to looking at its application for others in a design context. The focus remains on grief,

the topics of health (end of life care, health of grieving survivors, managing unhealthy grief/recovery), wellbeing (dealing with loss as an individual through design/creativity), and social change (adjusting attitudes to death and communicating bereavement, challenging the norms of the funeral industry). I use my ability to curate and present information impactfully and professionally on various platforms alongside exploring sustainable interactive viewing through digital software such as Swatcheditor.





## Dr Simon Christie

Researcher  
Faculty of Science and Engineering

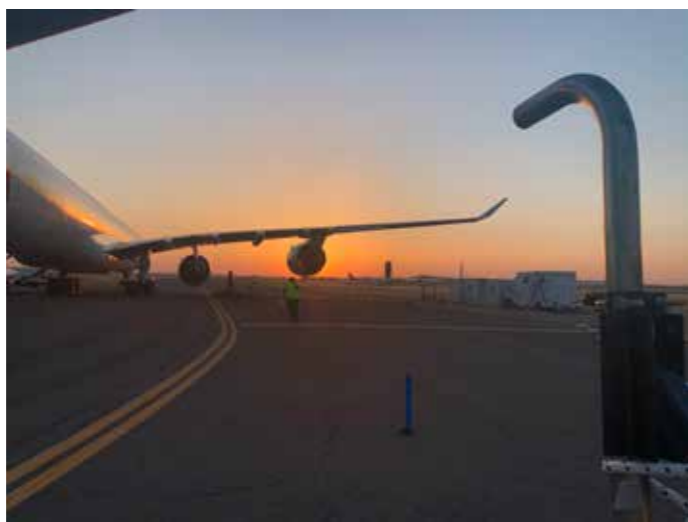
### The lifelong impact of air pollution: Airports

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Products of incomplete and non-ideal combustion from aircraft have adverse effects on the air quality in and around airports, contributing to public health concerns within neighbouring communities. The EU-funded AVIATOR project has adopted a multi-level measurement, modelling and assessment approach to develop an improved description and quantification of aircraft engine emissions, including their downstream evolution and impact on air quality under different climatic conditions. With temperatures approaching 40°C in the shade,

Ciudad Real International airport in central Spain provided the extreme meteorology for the hot-dry measurement campaign as well as the most perfect sunsets. Representative on-wing sampling of emissions from an Airbus A340 have supported the validation of new models and parameterisations for microphysical and chemical processes.

Working directly with the regulatory and standardisation communities, outcomes from the project will deliver tangible impacts and improved understanding of aircraft emissions.



## Kelly Curtis

Postgraduate Researcher  
Faculty of Health and Education

### How does exposure to death affect our beliefs?

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Everyone is going to die. With this amount of exposure to death and dying (ED&D), it raises the question of how this type of exposure affects individuals. While it is currently unclear how ED&D impacts formulating and upholding one's belief systems, exploring this area can provide a better understanding of the ways this exposure moulds someone's outlook on death and the afterlife.

Even though everyone experiences ED&D in their lifetimes, some, such as first responders, hospice workers, military, etc, have much higher exposure to ED&D. While there has been ample research surrounding those who are dying themselves and the bereaved, there is little exploration into how ED&D affects individuals who encounter high levels on the job. Understanding the impact those undergoing ED&D day in and day out can improve the mental healthcare provided to those individuals, an often overlooked factor amongst those professions.



## Sarah Day

Postgraduate Researcher  
Faculty of Arts and Humanities

### Opening up for conversation

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What do you think about when you think of ageing?

Frailty?

Loneliness?

Or, an active part of society?

We live in an ageing society. A society where older people face increased levels of inequality; where their thoughts are often the last to be taken into account, if they are taken into account at all.

Through engaging marginalised older people in conversation, storytelling, drawing and writing, the city has potential to be reframed as a site for collaboration. The aim of these conversations, activities and events is to enable the design of spaces for older people; creating spaces where they actively want to and are encouraged to, inhabit, volunteer, work, talk, and be a part of something.



## Amelia Drysdale

Postgraduate Researcher  
Faculty of Science and Engineering

### Removing the plaster – platelets and our blood

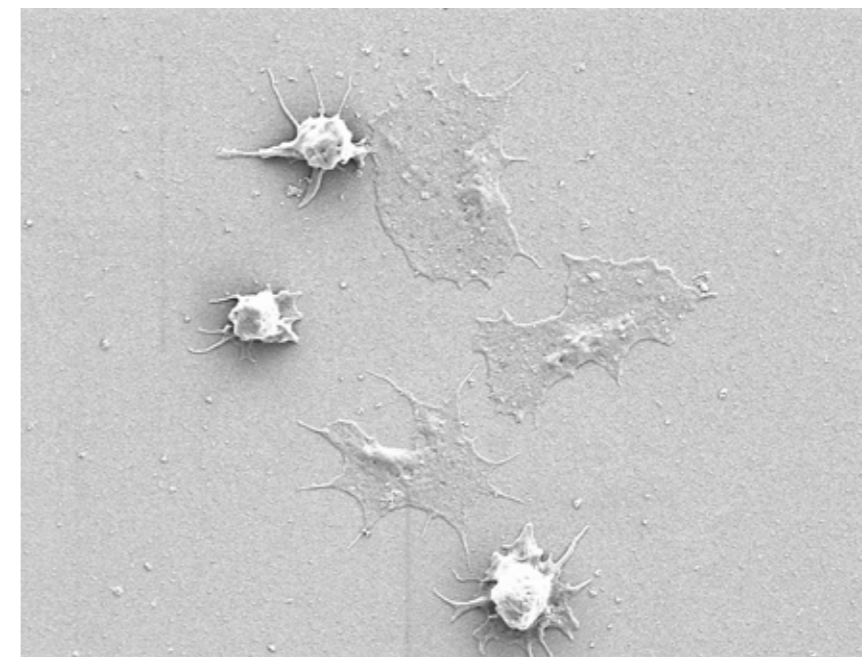
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Platelets are tiny fragments that circulate in our blood, helping to heal our wounds and keep us healthy.

Platelets are not only clotting champions, they are also diverse super spreaders, and can spread over three times their diameter – a bit like fried eggs! This spreading process informs us not only about how active our platelets are

(and how likely they are to form a clot) but also about some key differences we see in how our platelets respond to disease.

It is understanding these differences which will enable us to improve treatments and reduce the incidence of heart attacks and stroke.



## Onur Evren

Postgraduate Researcher  
Faculty of Science and Engineering

### Shall we play hide and seek?

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In the last century, many animal and plant species struggled to cope with the danger of extinction. Especially amphibians drastically declined recently. This creates the need to breed stocks of endangered species in the hope to rewilder them in the future.

Unfortunately, the biology of most amphibian species is not well understood. Particularly, many frogs that are highly colourful in nature remain rather dull in captivity. Colouration is a vital feature in conveying messages to

conspecifics as well as providing information about health.

In my research project I aim at optimising amphibian husbandry by identifying the effect of different diets on their colouration and growth. The photograph shows a Golden Mantella frog that can only be found in a small area in the forests of Madagascar today. Adding carotenoids to the food leads to more natural coloration, which might make it easier to rewilder these animals in the future.



## Dr Russ Glennon

Researcher  
Faculty of Business and Law

### Loneliness of the long distance researcher

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The pandemic has made being a researcher in the social sciences, already a lonely position, into one of physical isolation. Here, my faithful academic support cat, Theo, sleeps peacefully in his bed on my desk at home whilst I plan my next piece of writing. Whilst the topic of my research focuses on public administration

and public service management, this image serves as a reminder that I am not alone at my desk. For me, research is inherently a co-produced process. My co-authors, colleagues and friends are participants in the intellectual sphere, and Theo supports me in the physical sphere.



## Olivia Greenhalgh

Postgraduate Researcher  
Faculty of Health and Education

### **In safe hands – Premier League goalkeeper applying evidence-based cryotherapy protocols**

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This PhD research degree has been carried out alongside a Knowledge Transfer Partnership with Manchester Metropolitan University, University of Central Lancashire and Swellaway Ltd, aiming to develop evidence-based protocols using a cooling, heating and compression device (ProMOTION EV1).

Cryotherapy and compression are advised within clinical guidelines. However, optimal protocols have not been defined and there is an apparent lack of standardisation amongst cryotherapy protocols used in clinical and sports settings. In elite sport, the consequence of sub-optimal clinical protocols

could negatively impact player availability and team performance, which may lead to a significant loss of time and money.

ProMOTION EV1 has the ability to control time, temperature and compression within safe parameters, which provides an opportunity to explore different protocol combinations. This could provide key information of the optimum recovery environment for different injuries. Premier League goalkeeper, Dan Bachmann, pictured applying evidence-based protocols on his recent medial collateral ligament injury.



## Dr Sarah Jones

Researcher  
Faculty of Science and Engineering

### **Chewin' the fat**

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An unhealthy diet and lack of exercise are the major modifiable risk factors responsible for cardiovascular disease. Using our giant blood vessel, giant red blood cells and fatty deposits we have been demonstrating to the public the impact of an unhealthy lifestyle on our blood vessels and how this leads to heart attacks and strokes. This was an outreach project supported by the Biochemical Society, which has enabled us to deliver interactive events at museums and schools,

educating over 800 children. The giant vessel demonstrates how fatty build-ups in arteries make it more difficult for blood to transport oxygen to the heart. Educating children at an early age about the cardiovascular system and the benefits of a healthy lifestyle is crucial in the fight against cardiovascular disease and represent an important way in which scientists can have a positive impact on the health of our local community.



## Lauren Kinch

Postgraduate Researcher  
Faculty of Science and Engineering

### The psychotherapeutics of imaginary companions

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With up to 65% of children engaging with an imaginary companion; whether that be an invisible friend or a personified object, it is important to highlight how many benefits they produce. We already know they support children's language development, theory of mind, social skills, empathy and confidence as well as helping children explore their personalities in a risk-free manner, but what else could they provide?

It is also important to recognise that 1 in 6 children will suffer with a mental health condition at some point in their childhood.

If we could utilise the natural phenomenon of imaginary companions and understand the possible psychotherapeutic benefits they provide, we could use them to aid in children's mental health and wellbeing as a low cost, global solution.



## Sarah Lister

Researcher  
Faculty of Health and Education

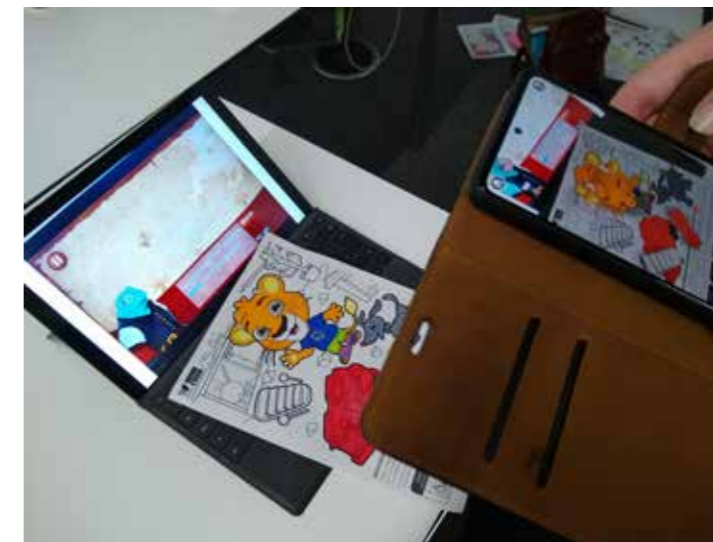
### Developing games-based digital resources for content and language integrated learning

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This five-country Erasmus+ funded project developed digital resources to support teachers and learners to bridge the gap in digital, numeracy and literacy skills among refugee students in secondary schools across Europe and beyond. The project involved collaborating with teachers to create various game-based learning resources underpinned by Content and Language Integrated Learning (CLIL).

The resources support and enhance the teaching and learning of fractions (mathematics) through a second language. Manchester Met staff working on the project include Su Corcoran and Fiona Haniak-Cockeram.

The image, taken during a project workshop, shows a member of the project team learning about existing digital resources used in early years lessons and the landing page for the Fractio Quest app.

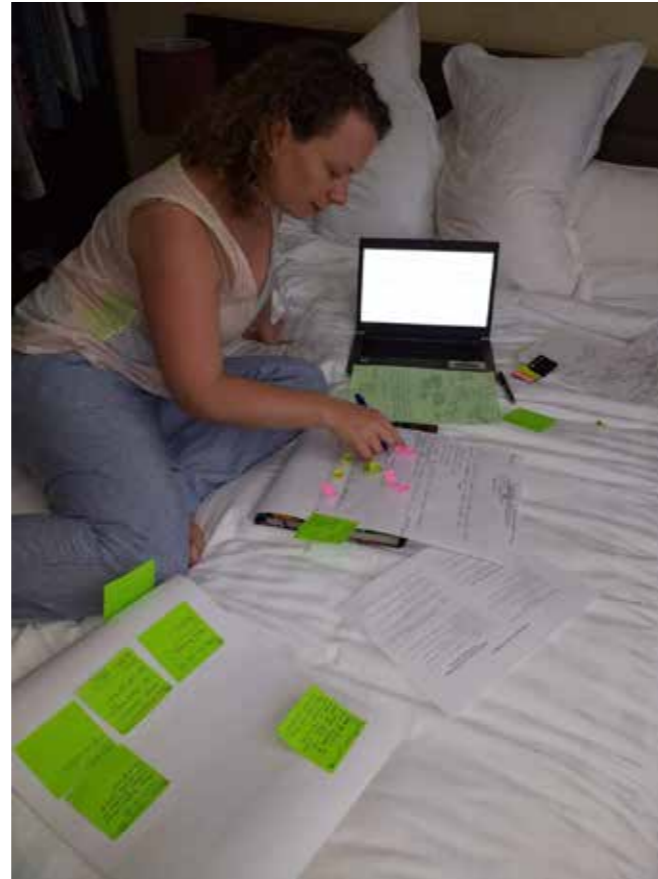


## Professor Julie Marshall

Researcher  
Faculty of Health and Education

### Research 'in the field'

When Helen Barrett (Manchester Met Doctoral student and also co-researcher), pictured here, and I, have worked together in Rwanda, our research takes place in refugee camps, cafes, offices, outside and in cars. Data analysis often happens in the wee small hours and with much paper and post-it notes spread all over my hotel room. Our unique research is related to sexual and gender-based violence amongst refugees who experience communication disabilities, and due to the community's vulnerability, we rarely have conventional 'research photos'. This photo sums up how we spend many hours of our time!



## Dr Karl McLaughlin

Researcher  
Faculty of Arts and Humanities

### Languages lecturer adds 30 years to life of female author

A Spanish city has been forced to rectify seriously incorrect information on its most famous literary daughter thanks to painstaking archival research. Languages lecturer Karl McLaughlin has spent years investigating the life of 17th-century author Catalina Clara Ramírez de Guzmán (1618-1684), whose verses went undiscovered in manuscripts in Madrid for several centuries. Information he discovered in archives – including rental contracts from the 1660s signed by Ramírez de Guzman and, crucially, a letter written from Guatemala by her brother in early 1685 expressing his deep sadness at her passing – enabled him to identify with greater accuracy the likely date of her death and extend by 30 years the figure (1654) on the official plaque that accompanied her statue for decades. He was invited to present his findings to the Mayor of Llerena (Extremadura) and the city has since installed a replacement plaque with the correct date of her death.



## Dr Magdalena Mikulak

Researcher  
Faculty of Health and Education

### Close-knit ties on the margins: Older people with learning disabilities

This image was taken during ethnographic fieldwork for the 'Growing Older Planning Ahead' study, which explores how people with learning disabilities and family carers can be better supported in later life. I took this photo at a social lounge in a day services centre for people with learning disabilities.

The lounge is open to all, but it tends to be visited by the same people, who come there to chat, socialise, have a meal, and/or take part in different activities. Some, like the person in the picture, a participant in the study, come in five times a week. They know everyone and everyone knows them.



## Dr Alyx Milne

Researcher  
Faculty of Science and Engineering

### California sea lion use active touch sensing during a dynamic-sensorimotor task

Human fingertips are an active touch system as they make purposeful, task-specific movements. The primary tactile sensor in most mammals are whiskers. While studies have referred to whiskers as an active sense, no one has ever identified task-specific whisker movements in any animal, determined by making different whisker movements during different tasks. Until now! Using pinnipeds, which have the most prominent and sensitive whiskers of any mammal, I discovered that California sea lions apply different whisker movement strategies depending on the task in hand or should I say whisker. While blindfolded sea lions used their whiskers to feel around shape edges to judge size, to determine textures they stroked their whiskers, centrally, over the surface of objects, and when vision was enabled, to judge brightness there was no whiskers movement at all. I discovered pinniped whiskers are an active sensing system, providing first-hand evidence of active whisker-sensing in any animal.



## Dr Gayatri Nambiar-Greenwood

Researcher  
Faculty of Health and Education

### Research across the waves

We are a multidisciplinary team of seven, from three universities working on a national study on COVID-19 and its impact on Domestic Violence. We have been learning from survivors of domestic violence and interviewing statutory staff (health, social

work, police) and NGOs who support those affected, on the challenges of lockdown on domestic violence since October 2020.

We have met weekly online throughout, going from planning, to running, analysing and now disseminating our rich data.



## Dr Erinma Ochu

Researcher  
Faculty of Arts and Humanities

### Decolonising cocoa supply chains by adding value at source of origin

Have you ever thought about where your chocolate comes from? Not many people do, but it comes from the wonderful cacao tree. However, the supply chain is exploitative with smallholder farmers only accessing sometimes as low as 2% of the money made from the whole supply chain.

Our research is exploring attempts to decolonise and add value to the cocoa supply chain in Tanzania, supporting the livelihood and wellbeing of small holder farmers, their families and their communities.

The researchers, Naomi Mwasambili and Erinma Ochu are submitting this entry linked to the #OpenLight Platform, which is funded by Wellcome and NERC, to recognise and foster research innovation, capability and knowledge exchange with communities most affected by the climate crisis.





## Dr Michael Pinchbeck

Researcher  
Faculty of Arts and Humanities

### Sit with us for a moment and remember

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Drawing on images from the archives, 'Sit with us for a moment and remember' is a 45-minute immersive sound experience that involves audio walks around a lake and tracks to be experienced on four benches installed with plaques – Spring, Summer, Autumn, Winter.

Each bench track explores the different seasons and how the landscape changes over time. Drawing attention to different views across the lake and the way benches are often

associated with acts of remembering, the piece invites you to encounter the history of the lake, to inhabit the past, to reflect on the present and to look forward to the future.

Part of Michael Pinchbeck's ongoing research into one-to-one and immersive performance during the pandemic. Commissioned by Lakeside Arts, Nottingham in 2021. More information here: [lakesidearts.org.uk/visit-us/explore-the-campus-highfields-park/Sit-With-Us-For-a-Moment-and-Remember.html](https://lakesidearts.org.uk/visit-us/explore-the-campus-highfields-park/Sit-With-Us-For-a-Moment-and-Remember.html)



## Dr Harriet Rowley

Researcher  
Faculty of Health and Education

### Unfurling: the impact of socially engaged research to amplify the voices of marginalised communities

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My research is concerned with the role of education in supporting young people to participate in culture, society and democratic life. I have particular expertise in co-production and socially engaged research, working to amplify the voices of marginalised communities to bring about change.

The image displays something I made during one such project juxtaposed against a quote from a participant. It captures the unfurling of emotions and educative process during a coproduced project where an interdisciplinary team of artists, researchers, therapists and women took a 'Leap of Faith'.

**“If we realise by ourselves  
how strong we are, then  
others will realise.”**

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**Leap of Faith participant**



## Dr Barbara Shepherd

Researcher  
Faculty of Arts and Humanities

### Follow on re-design of PPE for clinical use during the pandemic

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This image shows the next stage developments of our latest PPE garment design following on from last year's work on the re-design of a sustainable PPE plastic protective apron. This research aims to evaluate the perceived acceptability of a re-designed sustainable PPE theatre gown in an acute healthcare setting during the COVID-19 pandemic.

We now have an established regional team working on the further design and development of PPE. Re-design options and

prototypes are currently being explored with the next stages of research involving the base material selection, evaluation and perceived acceptability of the re-designed theatre gown in an NW-based hospital.

The pandemic has brought some positive outcomes for our industry sector. Being able "to make" has become a local/national priority and with the academic and technical services teams expertise that we have at MFI we are able to meet this challenge quickly and efficiently which is a national requirement.



## Serena Slack-Robins

Postgraduate Researcher  
Faculty of Arts and Humanities

### I have a voice

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'British Muslim Communities Engagement with Theatre'

The project will investigate the ways in which the British Muslim community has engaged with theatre, as artists, as audience members, and as a public. The research will begin from the post-second world war era, to modern-day. The project is in partnership with Khayaal Theatre Company, the UK's leading company working with the Muslim community.

The central questions of the research are to understand the value of British Muslim theatre-making to the British Muslim community and the value to the British Muslim community in having a voice in British Theatre.

Khayaal Theatre Company for over 23 years has created Muslim-inspired work for both Muslim and non-Muslim audiences in Britain. Although Khayaal is an industry leader in Muslim theatre-making, it faces two particular inter-cultural challenges: internally; engaging the different Muslim communities and specific groups within them, and externally; the British Theatre establishment and its funders.



## Katharina Steier

Postgraduate Researcher  
Faculty of Science and Engineering

### Advanced materials for high-temperature fuel cells (solid oxide fuel cells)

Solid oxide fuel cells (SOFCs) convert the chemical energy stored in fuels, such as hydrogen, directly into electrical power and thermal energy through electrochemical reactions. The efficiency and performance of SOFCs is inextricably linked to the material properties for their electrodes and electrolyte. By employing flexible and scalable production techniques, this project advances the state-of-the-art through the development of new materials for applications in SOFC systems.

The aim of this project is to develop novel materials for fuel cell electrocatalysts and electrolytes with enhanced properties. These novel materials can be produced by magnetron sputtering techniques, which will be used in new and innovative ways to develop electrocatalyst materials that approach current materials, such as platinum in performance, but exceed it in terms of efficiency and cost. As shown in the image, reactive co-sputtering of three different magnetrons is used to deposit electrocatalysts with additional dopants, to enhance fuel cell performance.



## Professor Lloyd Strickland

Researcher  
Faculty of Arts and Humanities

### The invention of binary arithmetic

Binary arithmetic, which employs just two digits—0 and 1—and serves as the representational basis for today's world of digital computing and communications, was invented by the polymath Gottfried Wilhelm Leibniz (1646-1716) in 1679. Yet more than 300 years later, remarkably little is known about how he invented it, the circumstances in which he did so, or the various ways in which he developed it. The principal aim of this project is to return to Leibniz's manuscripts on binary, housed in four different archives—Hannover, Göttingen, Gotha, and Paris—in order to make his most significant writings on it publicly available for the first time. The principal output will be a co-authored book—Leibniz on Binary: The Invention of Computer Arithmetic—published by MIT Press. My co-investigator on this project is Harry R. Lewis, who is Gordon McKay Professor of Computer Science at the University of Harvard.



## Marta Suarez

Researcher  
Faculty of Arts and Humanities

### Constructing nation through the immigrant other in film

My PhD thesis explores how contemporary Spanish film imagines Spain in relation to immigration and Europe. It argues that depictions of Spain are constructed with notions of Europeanness linked to ideas of modernity, knowledge, and freedom; while the African immigrant is often reduced to depictions of illiteracy, naivety, and suffering.

These portrayals are reductive and repetitive, negating representation of other realities and focusing instead on economic migration, often of single men. In contrast, Spain is constructed as a modern land of opportunity.

In depicting African countries as a homogeneous territory suffering from poverty and disease, these films perpetuate stereotypes. Although they are often lauded for inciting sympathy for the experiences of immigration, they become problematic for disseminating the same stereotypes that feed the racism they aim to fight.



## Chloe Turnbull

Postgraduate Researcher  
Faculty of Health and Education

### Exploring autonomy and agency in the early years classroom using notions of figured worlds

This thesis stems from a reconstructionist culture in early childhood education research that critically considers the possibilities and risks created by the increasing regulation and control on early years education practice. The study uses Moss' (2014) publication on Transformative Change and Real Utopias in Early Childhood Education to consider these constraints with relation to the children's autonomy and agency within their learning environment and the possibilities of implementing a 'planning-in-the-moment' (Ephgrave, 2018) approach. The research suggests the 'in-the-moment' approach provides children with a space for authoring the 'self' through mediation of artifacts within their learning environment. It recognises that there is a place for open-ended artifacts as they help provide a multitude of creative play worlds, allowing children to follow their own interests. However, the research also acknowledges the importance for practitioners to implement some subject-specific objects in order to scaffold and broaden children's knowledge and linguistic repertoire.



## Bethany Turner-Pemberton

Postgraduate Researcher  
Faculty of Arts and Humanities

### Redefining Mancunian textiles for a new era of museum visitors

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Employing a practice-based approach to research, this project aims to readdress the notion of a declining textile industry in the Manchester City Region and present Mancunian-led textiles to core audiences at Science and Industry Museum (SIM). In partnership with Science and Industry Museum, Manchester School of Art, Department of Materials and Special Collections, the aim of this research is to relocate textiles as a continuation of Manchester's successful textile past and recentre textiles within the local landscape.

Using under-researched objects from SIM's collections, this work will present new understanding and textile narratives for Mancunian audiences. Through archive research, case studies and curation, textiles will be researched in relation to science, industry and education, focusing on areas of contemporary innovation within these relationships. The research from this project may lead to new additions to SIM's collection, new visitor-centred displays and interventions around the museum, redefining what textiles means to Manchester today.



## Dr Amanda Unsworth

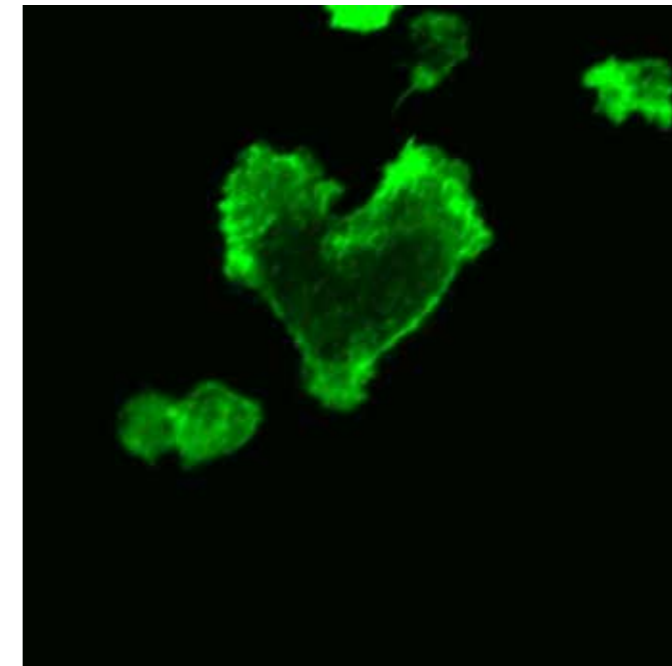
Researcher  
Faculty of Science and Engineering

### Getting to the heart of it

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Heart attacks occur when blood clots develop within our blood vessels and arteries, blocking blood flow to the heart. These blood clots are rich in cells called platelets. Platelets are the cells in our blood that usually function to stop us from bleeding. However, fatty plaques that build up in our blood vessels can rupture releasing their fatty contents which strongly

activates platelets causing large blood clots to form. Here we show a photograph, taken on a microscope of platelets, labelled with a green dye sticking to the contents of those fatty plaques and sticking to each other. In this image, several of them have stuck together to form a heart.



## Jane Wood

Postgraduate Researcher  
Faculty of Arts and Humanities

### I love it when a plan (doesn't) come together!

On the mission to find the answers to a research question, things don't always go to plan.

When working with living organisms (in this case *Komagataeibacter xylinus*), the researcher is in constant fear of the samples becoming contaminated or dying. *Komagataeibacter xylinus* takes at least one month to produce a film of bacterial cellulose for analysis and once extracted, the film must be washed, dried and treated carefully so critical data can be collected to inform its potential uses as a biodegradable technical textile. However, sometimes even the most carefully considered methods can result in catastrophic errors, such as an oven thermostat being set slightly too high. The samples were saved, the plates were not, but a valuable lesson about drying temperatures was learned!



## Fabio Zambolin

Postgraduate Researcher  
Faculty of Science and Engineering

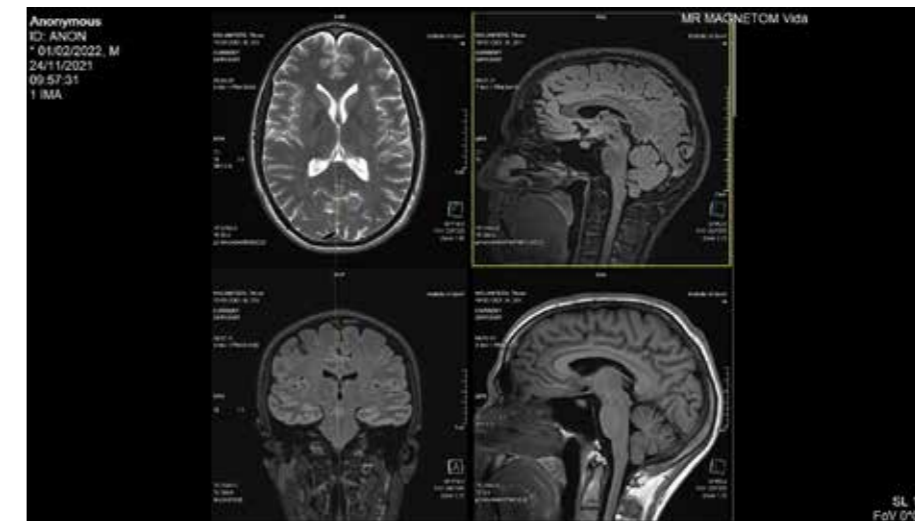
### Objective markers of perceived realities: chronic fatigue and pain

There are around 2 million people in the UK affected by chronic fatigue and pain syndromes, such as Fibromyalgia Syndrome. Their daily lives are disrupted by feelings of widespread muscle pain and generalised fatigue.

There are no clear diagnoses for these fatigue syndromes, so affected people are not taken as seriously as they might hope by healthcare providers. Anecdotally, they report being made to feel as though the symptoms are not real; they are perceived, or it's "all in their head".

However, there is some evidence to suggest that the part of the nervous system responsible for sending sensory signals from around the body up to the brain is hyper-sensitised in chronic fatigue syndromes.

My research is searching for objective evidence of hyper-sensitive nerve signal communications, considering the origin of the faulty nerve signalling and the brain's responses at rest and during movements.



# Acknowledgements

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Sam Gray	Callum Smyth
Professor Richard Greene	Professor Dale Townshend
Claire Harrison-Davis	Richard Walker
Dr Katy Jones	Dr Fiona Wilkinson

Thank you to all of this year's finalists and to all who entered this year's competition.

Images of Research  
[mmu.ac.uk/research/research-study/events/images](https://mmu.ac.uk/research/research-study/events/images)

Images of Research 2022 entries video  
[youtu.be/1D7-zipUdlQ](https://youtu.be/1D7-zipUdlQ)

For more information contact  
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