

Bristol Neuroscience Newsletter

2023: Issue 3



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Separation of sensory and cognitive networks

An international team of researchers, studying macaque brains, have mapped out neurotransmitter receptors, revealing a potential role in distinguishing internal thoughts and emotions from those generated by external influences.

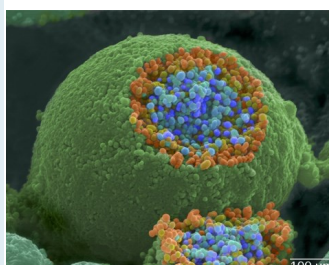
The comprehensive dataset has been made publicly available, serving as a bridge linking different scales of neuroscience: from the microscopic to the whole brain.

Imagine the brain as a city. In recent years, brain research has been focused on been studying its roads, but in this research, we've made the most detailed map yet of the traffic lights - the neurotransmitter receptors - that control in-



formation flow.

We've discovered patterns in how these 'traffic lights' are arranged that help us understand their function in perception, memory, and emotion. It's like finding the key to a city's traffic flow, and it opens up exciting possibilities for understanding how the normal brain works. Potentially in the future, other researchers may use these



maps to target particular brain networks and functions with new medicines.

Our study aimed to create the most detailed map yet of these 'traffic lights'.

Dr [Sean Froudish-Walsh](#)
(School of Computer Science)

By understanding the receptor organisation across the brain, it is hoped new studies can better link brain activity, behaviour, and the action of drugs. Moreover, because receptors are the targets of medicines, the research could, in the future, guide the development of new treatments targeting specific brain functions.

Froudish-Walsh S et al. (2023). [Gradients of neurotransmitter receptor expression in the macaque cortex.](#) *Nature Neuroscience.*

EVENTS

Using Mendelian Randomization to investigate possible causal effects of maternal environmental exposures during pregnancy on offspring short and long-term outcomes

11 September 2023, 12.00 - 13.00, Dr Gunn-Helen Moen (IMB, University of Queensland), OS6 Oakfield House and online

Agency and Food Scarcity in Mealtimes in Disadvantaged ECE

13 September 2023, 12.00 - 14.00, Emma Cooke and Bonnie Searle (early childhood researchers, University of Queensland), School for Policy Studies Common Room, 8 Priory Road

The family dynamics of gambling harms

14 September 2023, 11.00 - 12.00, online

Talking about homes: what we can learn from homelessness and poverty research

19 September 2023, 12.00 - 13.00, online

The Turing Lectures: What is generative AI? How AI broke the internet (part 1)

22 September 2023, 19.00 - 20.30, Professor Mirella Lapata (Professor in the School of Informatics, University of Edinburgh), The Royal Institution of Great Britain, 21 Albemarle Street, London W1S 4BS and online

33rd annual Cambridge Neuroscience Seminar, CNS2023: Interdisciplinary insights on the future of dementia research

26 September 2023, 8.30 - 19.30, Robinson College, Grange Road, Cambridge CB3 9AN

Equality, Diversity and Inclusion in Science and Health (EDIS) Symposium

26 September 2023, 10.00 - 17.00, The Francis Crick Institute, 1 Midland Road, London, NW1 1AT and online

Laboratory Consumables and Services Fair

26 September 2023, 12.00 - 19.00, Science Creates - Old Market, Midland Road, Bristol BS2 0NS

Dendritic spines as learning hubs

28 September 2023, 14.00 - 15.00, online

eSleep Europe Virtual Congress

4 - 6 October 2023, Keynotes: Amita Sehgal (USA), Chiara Baglioni (Germany), Gert-Jan Lammers (The Netherlands), online

2nd Annual Summit on Neuroscience and Neurological Disorders

5 - 7 October 2023, Vienna, Austria

Bristol Hub for Gambling Harms: First International Interdisciplinary Colloquium: Building capacity in gambling harms research

12 October 2023, 9.30 - 17.00, MShed Bristol and online

NEWS

Pandemic: One in ten NHS workers had suicidal thoughts

Concerns were raised about the risk of suicide among healthcare workers during the pandemic after a number of high-profile cases were reported in the media. Researchers from the University of Bristol, King's College London and UCL (University College London), sought to investigate the prevalence and incidence of suicidal thoughts and behaviour among NHS healthcare workers in England and their relationship with occupational risk factors.

A team analysed responses



from the [NHS CHECK](#) longitudinal online surveys completed by healthcare workers (clinical and non-clinical), students, and volunteers in 18 NHS Trusts across England during the

COVID-19 pandemic. Responses from 12,514 participants were completed at baseline, and 7,160 participants at 6 months follow up, between April 2020 and August 2021.

Results highlighted that exposure to events that went against moral values, a lack of confidence about raising safety

concerns, and these concerns being addressed, feeling unsupported by managers, and having to provide a reduced standard of care, significantly contributed to staff distress during the pandemic. At the second six-month time point, among clinicians, a lack of confidence about safety concerns being addressed, independently predicted suicidal thoughts.

Padmanathan P *et al.* (2023). [Suicidal thoughts and behaviour among healthcare workers in England during the COVID-19 pandemic: a longitudinal study](#). *PLOS ONE*.

Human factors affect bees' communication

Communication is a fundamental feature of animal societies and helps their members to solve the challenges they encounter, from exploiting food sources to fighting enemies or finding a new home. Eusocial bees inhabit a wide range of environments and they have evolved a multitude of communication signals that help them exploit resources in their environment efficiently. We highlight recent advances in our understanding of bee communication strategies and discuss how varia-

tion in social biology, such as colony size or nesting habits, and ecological conditions are important drivers of variation



in communication strategies. Anthropogenic factors, such as habitat conversion, climate change, or the use of agrochemicals, are changing the world bees inhabit, and it is becoming clear that this affects

communication both directly and indirectly, for example by affecting food source availability, social interactions among nestmates, and cognitive functions. Whether and how bees adapt their foraging and communication strategies to these changes represents a new frontier in bee behavioural and conservation research.

Alves DA *et al.* (2023). [Diverse communication strategies in bees as a window into adaptations to an unpredictable world](#). *PNAS*.

Image: Honeybee performing a waggle dance © Christophe Grueter

Keynsham's 'optical illusion' cycle path

Three university researchers have suggested why people keep tripping over an 'optical illusion' cycle lane near Bristol. Psychology experts from Bristol and Cardiff visited Keynsham after months of complaints about the new lane and markings.

Professors Nick Scott-Samuel, Ute Leonards (both University of Bristol) and Simon Rushton (Cardiff University) are interested in the human visual system, so took time out to head to the

High Street after reading about people who have injured themselves there.

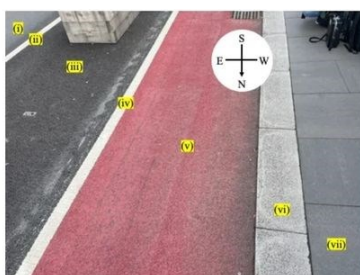


Figure 1 The cycle lane and adjacent pavement and road areas: (i) the road; (ii) a white painted line; (iii) buffer between road and cycle lane; (iv) a white painted line; (v) the cycle lane; (vi) the kerb; (vii) the pavement. (i) is lower than (ii); (ii) to (v) form one continuous flat surface, with (vi) and (vii) forming another, higher one. The critical boundaries are therefore between (i) and (ii), and (v) and (vi), where there are height differences. Despite these, the surface looks flat from (i) all the way to (vii). The compass is approximate.

Prof Scott-Samuels said their findings indicated that while the design of the cycle lane complies with current government guidance on cycle lane infrastructure, it does not take

into account how the visual system works to guide movement, using processes such as depth perception. Between the road, the cycle lane and the kerb, the surface may look flat, but there are height differences.

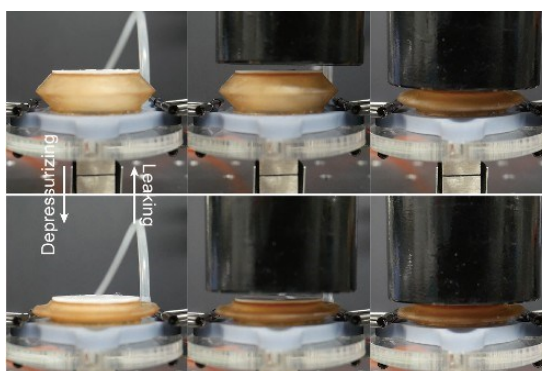
They also found that: “Two common cues used by the human visual system to segment surfaces are how dark or light they are, and their surface appearance - how rough or smooth”. It is these variations which can signal edges.

An extract from a [Bristol Live](#) article published 8 June 2023

Sponge makes robotic device a soft touch

An easy-to-make sponge-jamming device can help stiff robots handle delicate items carefully by mimicking the nuanced touch, or variable stiffness, of a human. Robots can skip, jump and do somersaults, but they're too rigid to hold an egg easily. Variable-stiffness devices are potential solutions for contact compliance on hard robots to reduce damage, or for improving the load capacity of soft robots. This study shows that variable stiffness can be achieved by a silicone sponge. In the

paper, the authors explain how they developed a soft device with variable stiffness, to be mounted on the end robotic arm for making the robot



-object contact safe. Silicone sponge is a cheap and easy-to-fabricate material. It is a porous elastomer just like the cleaning sponge used in every-

day tasks. By squeezing the sponge, the sponge stiffens which is why it can be transformed into a variable-stiffness device.

This device could be used in industrial robots in scenarios including gripping jellies, eggs and other fragile substances. It can also be used in service robots to make human-robot interaction safer.

“A Silicone-sponge-based Variable-stiffness Device” by Tianqi Yue at the [IEEE International Conference on Robotics and Automation \(ICRA\) 2023](#), held in London 29 May - 2 June 2023.

Capturing the audience response: A new Bristol cinema

One of the world's most innovative cinemas, capable of monitoring audience reactions like never before, is coming to Bristol.

Officially called an **Instrumented Auditorium**, this 36-person 150m² cinema has received a £400,000 funding grant from the **Wolfson Foundation** to equip it with state-of-the-art monitoring equipment to record data on audience members and how they react to the content they are watching and hearing.

It's due to open in May 2024 at the **MyWorld** creative hub at The Coal Shed on Avon

Street, St Phillips, as part of the University of Bristol's new Temple Quarter Enterprise Campus.



Thanks to this additional grant, the controlled environment will record audiences' biometric responses to what they're watching and hearing, including their heart-rate, eye movement and brain activity. Researchers will even be able to monitor the electrical prop-

erties of people's skin to gauge their subconscious emotional and sympathetic responses.

These new insights will underpin future commissioning, directorial and production approaches to new content creation using emerging creative technologies.

There is also enormous potential for future applications of this research, for example linking individual differences in response to mental health, including conditions such as anxiety and depression.

Image: A computer-generated image of the Instrumented Auditorium © AHMM Architects

Barton Hill open day

Researchers with the **Tobacco and Alcohol Research Group** (TARG) based in the School of Psychological Science, took part in an open day at the University of Bristol's micro-campus in Barton Hill, in the East of the city.

Senior Research Associate in Smoking Studies Dr **Jasmine Khouja**, Senior Research Associate Dr **Zoe Reed** and Senior Research Associate in Wearable Technology Application Development Chris Stone took part. The day was

very well attended by local residents and others who work with the community



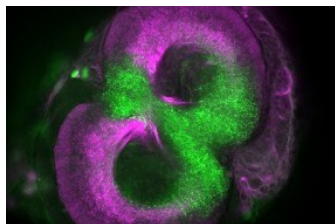
there. A sample of TARG's research was demonstrated to visitors, including emotion

recognition training, countering myths about vaping, and a smartwatch-based "just-in-time" smoking relapse intervention, prompting conversations around these issues and how they affect people's everyday lives.

Butterfly brains adapted to survive

Heliconius butterflies' brains grew as they adopted a novel foraging behaviour. A region of their brain, known as the mushroom body due to its shape, is two to four times larger than those of their close relatives.

The findings suggest that the structure and function of the nervous system are closely linked to an organism's ecological niche and behaviour. Dr [Stephen Montgomery](#) (School of Biological Scienc-



es) explained: "*Heliconius* are the only butterflies known to collect and digest pollen, which gives them an adult source of protein, when most

other butterflies exclusively obtain protein as caterpillars. This shift in diet allows *Heliconius*

to live much longer lives, but they seemingly only collect pollen from specific plant species that occur at low densities. Learning the location of these plants is therefore a critical behaviour for them, but

to do so they must presumably invest more in the neural structures and cells that support spatial memory."

Couto A *et al.* (2023). [Rapid expansion and visual specialisation of learning and memory centres in the brains of *Heliconius* butterflies](#). *Nature Communications*.

Image: Mushroom body calyx in Eueides isabella showing the segregation of areas that receive information about olfactory (green) and visual (magenta) stimuli. In Heliconius the expansion of the mushroom bodies is particularly linked to increases in visual areas. © Couto et al

Dogs provide critical support for homeless people

Homeless people and their dogs have a mutually beneficial relationship, with the dogs providing critical support for their owners' emotional and mental health while owners make every effort to protect the dog and meet their welfare needs.

The study highlighted the importance of making sure there are sufficient services available for homeless people with animals and that allowing dogs to remain with their owners could improve engagement with charity services. Researchers found dogs provided similar benefits as dogs owned in households, but additionally own-

ers believed dogs helped with their routine, assisted them through mental health issues and gave continuous emotional support. Owners noted difficulties accessing long- and short-



term accommodation, and services, such as shops, due to their dog, and generally only entrusted other individuals to look after their dog in urgent cases.

All the dogs received veterinary care as needed, were

treated against parasites, and fed adequately. The main concern expressed by owners was providing somewhere warm and large enough for their dog to sleep, but the team suggest access to a safe place to avoid frightening stimuli may also be important. During the interviews many owners used the dog to help facilitate a discussion about themselves, allowing them to open up about the difficulties of their past, and future.

Bailey C *et al.* (2023). ["A Part of Me." The value of dogs to homeless owners and the implications for dog welfare](#). *Zoophilologica*.

Image © Nick Fewings on Unsplash

Funding for 'Fastball' test to detect Alzheimer's earlier

A simple but revolutionary test to improve early detection for dementia and Alzheimer's disease could soon be helping patients and their families, thanks to a significant £1.5 million funding boost awarded to the Universities of Bath and Bristol.

Supported by the National Institute for Health and Care Research (NIHR)'s Invention for Innovation (i4i) funding, the project will see researchers Drs [George Stothart](#)

(Department of Psychology, Bath) and [Liz Coulthard](#) (Bristol Medical School) scale-up testing and development for their innovative 'Fastball EEG' dementia assessment at Southmead Hospital, Bristol.



a passive, completely non-invasive test which measures patients' brain waves whilst they watch a series of flashing images displayed on a screen.

Developed in-house by the researchers, the technology requires users to wear an electroencephalogram (EEG) headset, which is linked to a computer for analysis. Dementia is typically diagnosed too late, at a point at which the disease has damaged the brain beyond repair. This can be up to 20 years after dementia first started to develop. By testing more people earlier and more regularly, the team believes it could help lower the age of diagnosis by up to five years in the short-term. [Read more](#)

Good Grief Festival shortlisted for award

Good Grief Festival, founded by Dr [Lucy Selman](#), Associate Professor in Palliative and End of Life Care at the Centre for Academic Primary Care (CAPC) at the University of Bristol, was shortlisted for a Demystifying Death Award 2023. The Awards recognise pioneering work that shines a light on death, dying and bereavement.

The Awards are run by [Good Life, Good Death, Good Grief](#), a charity-led initiative working to make Scotland a place where people help

each other through the difficult times that can come with death, dying, loss and care.



The Awards Shortlist has been announced in the run-up to [Demystifying Death Week](#) (1-7 May).

[Good Grief Festival](#) – a virtual festival of love and loss – has reached over 26,000 people since its launch in 2020. Speakers and participants have come from all walks of life, including academia, journalism, medicine, sport, politics and the arts, united in sharing their knowledge and experiences of grief.

The Festival has its own YouTube channel, [The Grief Channel](#), which features over 120 talks from Good Grief festivals and events, with familiar faces like Julia Samuel, Ciriad Lloyd, David Kessler, Michael Rosen, Nikesh Shukla, Ruby Wax, Stuart Lawrence, Dr Kathryn Mannix, Dr Rachel Clarke, Amber Jeffrey and Professor Robert Neimeyer.

THE GRIEF CHANNEL

The Festival now runs a rolling programme of mini-festivals on specific topics throughout the year.

Jean Golding seed corn fund award

Drs [Jasmina Stevanov](#) and [Laszlo Talas](#) were awarded [Jean Goulding Institute Seed Corn Funding](#) to apply novel machine learning methods to previously collected data. In 2019, Jasmina led a project, supported by the Bristol Vision Institute Platform Grant 'Vision for the Future', to [host an art exhibition](#) where participants were asked to wear mobile eye trackers while looking at paintings generated using deep neural networks. The method, called "style-transfer", allowed the crea-

tion of artificial "paintings" by mixing real-world photographs with artistic styles of painters, and thus mimicked the style of original artists



Painting and curating with Artificial Intelligence

while keeping the compositional and semantic content untouched (e.g. same scenes, objects and portraits painted by different artists). This ena-

bled reliable separation of individual preference for different contents and styles.

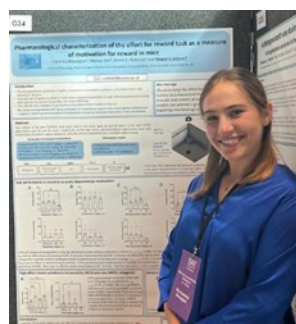
Now, the team will work on developing software that can recognise eye movement patterns associated with particular semantic contents and artistic styles, which will help to predict individual preference for art never seen before. This will be a stepping stone in developing a new tool for curators to tailor exhibitions to be more people-centred and user-driven.

BAP Summer Meeting 2023

Several members of Prof [Emma Robinson](#)'s Psychopharmacology research group in the School of Physiology, Pharmacology and Neuroscience presented at the British Association for Psychopharmacology (BAP) 2023 conference, held 23-26 July 2023 in Manchester

gan won one of two BAP non-clinical poster prizes.

Dr [Justyna Hinchcliffe](#) delivered a poster about the differential modulation of affective biases by psychedelics in a rodent affective bias test.

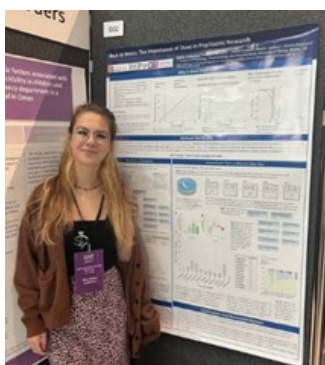


portance of dose in preclinical psychiatric research.

Post-doctoral symposium 3 on *The importance of dose in preclinical psychiatric research* took place on Monday, 24th July 2023 between 16:30-17:30, and

was chaired by Bristol PhD student [Dasha Anderson](#). Drs Megan Jackson and [Matthew Claydon](#) delivered presentations during the session, on *The importance of dose: An in vivo perspective* and *The importance of dose: An in vitro perspective* respectively.

Dr [Megan Jackson](#) presented a poster about the validation of a novel effort-based foraging task as a measure of motivation stat in mice; Me-



Cate Marangoni (pictured right) presented a poster on the pharmacological characterisation of the effort for reward task as a measure of motivational behaviour in mice.

[Dasha Anderson](#) (pictured left) delivered a poster on the im-

Public health gaps in the 'levelling up' agenda

The UK government's levelling up agenda is set to fail in its mission to address inequalities unless it tackles the root causes of poor health, according to a new study.

The research, led by the Universities of Bristol and Bath, presents policy recommendations to tackle the root causes of poor health which hold the key to overcome inequalities.

The study used data from interviews with 132 key government and industry professionals to assess if the 12 'missions' published in the



[Levelling Up White Paper](#) will achieve better quality of urban living to improve public health.

The study is part of [TRUUD](#), a transdisciplinary research project led by the University of Bristol, which aims to reduce non-communicable disease (such as cancers, diabetes, obesity, mental ill-health and respiratory illness) and health inequalities linked to the quality of urban planning and development.

Using seven principles that could underpin a successful 'levelling up' strategy for healthy urban developments,

researchers recommend how the Government might address the wider determinants of health in the implementation of its ambitions.

These include establishing a cross-government commitment for health, led by the Prime Minister's office, further local devolution of powers, simplified means of funding, and increased use of evidence from local communities and health sources for decision-making.

Ayres S *et al.* (2023). [What needs to happen to 'level up' public health?](#) *Contemporary Social Science*.

Approaches for people with experience of trauma

Designing services with people who have experienced trauma can help make them more welcoming, accessible and supportive for those who might otherwise struggle to access healthcare.

Researchers have illustrated how collaborative approaches to improving healthcare can be tailored to take account of people's experiences of trauma. This work builds on learning from [Bridging Gaps](#), a collaborative project between the National Institute for Health and Care Research (NIHR)

[Applied Research Collaboration](#) (ARC) West and the [Centre for Academic Primary Care](#) at the University of Bristol.

Bridging Gaps is a group of women who have experienced complex trauma, for example, experience of addiction, homelessness, mental health problems, sexual exploitation, domestic and sexual violence, and poverty. They are improving access to primary care using co-production and trauma-informed principles, working alongside GPs, researchers and staff from Bristol charity [One25](#).

Bridging Gaps' key learning points about co-production with people who have experienced trauma are:

- Not having to share personal experiences
- Making changes alongside research
- Collaboration is key
- Balancing safety and empowerment

McGeown H *et al.* (2023). [Trauma-informed co-production: Collaborating and combining expertise to improve access to primary care with women with complex needs.](#) *Health Expectations*.

Vision-based object recognition under distortions

MyWorld researchers in **Bristol Vision Institute** have been awarded £340,000 from the UK Defence and Security Accelerator programme to develop new methods for vision-based object recognition in the presence of atmospheric distortions.



Heat haze and atmospheric turbulence can significantly reduce the quality of visual imagery and degrade the effectiveness of conventional approaches to detection and classification which, in turn, makes scene interpretation and analysis extremely difficult. This is particularly im-

portant for natural history filmmaking as well as for security applications.

This new two-year project, led by Dr **Pui Anantrasirichi**

(School of Computer Science), Prof **David Bull** and Prof **Alin Achim** (both School of Electrical, Electronic and Mechanical Engineering), will address this challenge using modern data driven machine learning methods. It will develop real-time video restoration techniques that mitigate spatiotemporal distortions and thus improve visual interpretation of the scene by a human ob-

server. It will also assist decision making by implementing and evaluating real-time object recognition and tracking using the restored video.

MyWorld is a £30 million government funded engine of research, innovation and production that will catalyse growth in the West of England's vibrant creative technology industry. Through investment in new accessible research and production facilities across the region, advanced digital skills programmes, and an extensive programme of research and development, MyWorld will be able to uncover engineering challenges, driving forward the future of immersive media.

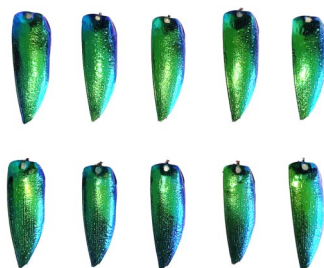
Gloss is less effective camouflage in beetles

When combined with iridescent colouration, a matte target surface appearance confers greater survival benefits in beetles than a glossy surface.

Findings suggest that iridescence provides camouflage independent of glossiness, which means that it is the colour of iridescent surfaces and its changeability, that is the most important aspect of iridescence in enabling camouflage.

Iridescence is a type of

structural colouration that produces bright, vibrant hues. These are often angle-



dependent, meaning the observed colour appears to change depending on the viewing angle.

Now the team plan to further explore why so many beetle

species are glossy, given it is detrimental to their survival when combined with iridescence.

They will also look at why black targets seem to survive well (second behind iridescence), the effects of background gloss and how lighting conditions affect how iridescence and gloss are perceived.

Thomas D *et al.* (2023). [Interactions between colour and gloss in iridescent camouflage](#). *Behavioural Ecology*.

Image © Dylan Thomas

Bristol Digital Futures Institute (BDFI) funding awards

The latest round of projects supported by the BDFI have been announced, and include:

Cognition - making mixed reality experiences accessible: How can we make virtual reality more accessible and inclusive for people with disabilities or impairments? Virtual Reality (VR) is a new technology with potential to be a transformative tool. The immersive industry has certain issues:

- VR is designed for people with standard sensory abilities, marginalising visually and kinetically impaired participants
- Often audiences are excluded from the experience design process, resulting in poor design and user experience (UX)
- VR manifests embodiment and immersion, but impedes participants' free hand and senses use to interact with the world, alienating them from their physical body

Cognition will address these issues, creating frameworks for inclusive and responsible Mixed Reality (MR) experience design, and provoking alternative digital futures to less equitable futures claimed by industry leaders.

Wearable robots for en-

hancing embodied communication (WREC): Could wearable robotic technology help enhance communication, especially for those with complex communication difficulties?

Non-verbal, or embodied forms of communication, such as gesture, posture, or body language allow people to form connections with each other. Clothing and other tools are commonly used to enhance our ability to communicate in this way. WREC could augment

the human body, allowing enhancement of embodied communication far beyond what is currently possible. This could help the >300k people with complex communication difficulties in the UK participate more fully in everyday life, make dance and performance accessible to a wider range of audiences, and ultimately provide us with new ways and methods of connecting with each other.

The team includes **Air Giants**, **Neon Dance** and speech and language therapists to address these questions.

Exploring digital futures through play: How can we harness the power of play to im-

agine futures in more inclusive, accessible and collaborative ways?

Digital technologies will profoundly impact many aspects of our future lives. These impacts will be experienced in diverse ways depending on our intersecting identities and how these identities impact our access, power, economic and political realities. Consequently, some communities and individuals will receive less than their fair share of the benefits of digital technologies and more than their fair share of the harms, with little leverage in the digital innovation ecosystem to make their voices heard.

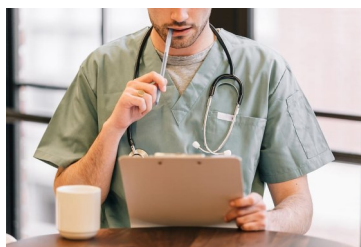
High quality socio-technical innovation requires methods that enable researchers and innovators to imagine futures in inclusive, accessible and collaborative ways, and crucially with the communities and publics who may be affected by them.

The team will bring together expertise in futures, play, ethical governance and public engagement to harness the power of play to enable us to connect, imagine and problem solve together, devising and piloting a suite of futures games for researchers, innovators, publics and ethics committees that are inclusive and accessible by design.



New Bristol Evidence Synthesis Group awarded £2.5m

The [Bristol Evidence Synthesis Group](#) is one of [nine new specialist research groups in the UK](#), set up to provide sound evidence to health and social care policy-makers. National Institute for Health and Care Research (NIHR) Evidence Synthesis Groups, part of [NIHR's Evidence Synthesis Programme](#), will investigate what evidence is available to answer important questions spanning healthcare, public health



and social care. Each group has been granted £2.5 million over five years. Together, the groups could work on up to 45 research projects per year. These groups will carry out projects requested by stakeholders such as NHS trusts, local authorities, patient communities and members of the public. Other projects will be identified through NIHR processes and working closely

with policymakers to make sure they address policy and practice needs. Research topics will be allocated without the need for a lengthy commissioning process.

Evidence synthesis is an approach that allows researchers to identify, appraise and analyse all the information on a particular research question. It is a powerful way of combining data across many different studies to find more definitive answers.

[Read the full University of Bristol news item](#)

Reducing effects of genetic risk of obesity

Research by University of Exeter, Exeter Clinical Research Facility, and University of Bristol found that those with higher genetic risk of obesity can reduce the effects that are transmitted via hunger and uncontrolled eating by up to half through dietary restraint.

Genes linked to obesity increase body mass index (BMI), with up to a quarter of this effect explained by increases in hunger and uncontrolled (including emotional) eating. There are over 900 genes that have so far been identified by researchers as being associated with BMI and several studies suggest these risk

genes influence feelings of hunger and loss of control towards food.

Researchers found that a higher genetic risk score was associated with a higher BMI, partly due to increased disin-



hibition and hunger. However, results also found that those who had high levels of dietary restraint reduced those effects by almost half for disinhibition and a third for hunger – suggesting that restraint may counteract

some of the effects of genetic risk.

There are different types of dietary restraint, including flexible strategies – such as being conscious about what you eat and deliberately taking small servings – to rigid strategies, like calorie counting. The study tested the influence of both types of restraint for the first time and found both could potentially improve BMI in people genetically at risk.

Begum S *et al.* (2023). [Mediation and moderation of genetic risk of obesity through eating behaviours in two UK cohorts](#). *International Journal of Epidemiology*.

Mindfulness intervention for women with PTSD

Researchers from University of Bristol, supported by the [NIHR Bristol Biomedical Research Centre](#), have demonstrated that it is possible to conduct a full-size randomised controlled trial of a trauma-specific mindfulness course for women with post-traumatic stress disorder (PTSD) and a history of domestic abuse (DA).

One in four women have experienced DA and they are at increased risk of developing PTSD and CPTSD. Researchers worked with a group of women who have experienced DA to adapt a

standard mindfulness course for depression to their needs. A literature review informed the development of a trauma-specific recruitment and follow-up protocol for a randomised controlled trial and further adaptations of the trauma-specific mindfulness course.

The team then tested the recruitment and follow-up procedures and refined the mindfulness course during a small pilot randomised controlled trial with 20 women with PTSD/CPTSD and a history of DA. An advisory group of women with experience of DA

worked alongside researchers to ensure that the mindfulness course and trial protocol were acceptable and safe for patients with PTSD/CPTSD and a history of DA. Working in this way meant that researchers were able to establish it would be possible to:

- Recruit and retain women with PTSD/CPTSD and a history of DA for a large-scale trial
- Deliver the trauma-specific mindfulness course during the trial
- Collect data from trial participants.

[Read the coMfort results newsletter](#)

Prestigious awards

Dr [Lizzy Winstone](#), Senior Research Associate in the University of Bristol [Centre for Academic Mental Health](#) (pictured), has been awarded a prestigious [Churchill Fellowship](#) to develop a project to help young people understand how social media algorithms work. Lizzy has been awarded nearly £6k for her project which will last six weeks. It will focus on developing policy recommendations for how social media algorithmic literacy can be embedded into the UK e-safety curriculum.



She will travel to Seattle in the US for two weeks; there she will meet content and safety leads at social media companies and academic experts in computer science communication and media literacy. [Read more](#) on the NIHR Biomedical Research Centre news pages.

Leading climate scientist [Dann Mitchell](#), Professor of Climate Science at the University's [Cabot Institute for the Environment](#), won an award in recognition of his pioneering work to advance understanding of global weather extremes and their impact on society. The [Adrian Gill Award](#)

[for Advances at the Interface of Atmospheric Science and Related Disciplines](#) from the Royal Meteorological Society is awarded annually to a member who has made a significant contribution and authored research in the Society's journals in fields interfacing between atmospheric science and related disciplines. Dann's latest research combines climate modelling and the projected effects on human health. This interdisciplinary focus between atmospheric and health sciences is especially important in light of the rapidly changing climate and its repercussions on global populations.

Echoes of the Port

In 2018, Dr [Amy King](#) (School of Humanities) conducted a series of oral history interviews with former dockers who worked on the Bristol City Docks. She used sections of these interviews, and clips from existing interviews archived at Bristol's M Shed, to create a soundscape for users to listen to as they walk along the harbourside from M Shed to Underfall Yard. Echoes of the Port is an experimental soundscape which aimed to bring to life the multilingual history of the Bristol city

docks. The soundscape follows J.C. Healey, a (real-life) trader and ship-spotter, as he goes



for one of his regular walks around the harbourside. Healey kept meticulous records of the ships in the city docks over

a period of more than thirty years, and the soundscape was inspired by his notebooks, which are kept in the Bristol Archives.

Once completed, the research team created a [video documenting the creative process](#) of this research project. The final result was the creation of [the sound walk 'Echoes of the Port'](#), a 10-minute audio performance that is free to access.

Echoes of the Port was funded by the [Brigstow Institute](#) at the University of Bristol.

Health Research Ambassador initiative wins HSR UK award

A pilot initiative aiming to build shared, sustainable relationships between researchers and communities in Bristol, North Somerset and South Gloucestershire that are often under-represented in health research, won a [Health Services Research \(HSR UK\) Innovation in Inclusion Award](#) on 5 July 2023.

The [Health Research Ambassadors pilot initiative](#) focused on developing and supporting people from under-served communities to participate directly in

making decisions about research that affects their lives. The team recruited three people – Olivia Sweeney, Roy Kareem and Asia Yousif – to become



Health Research Ambassadors. They took part in training, including in public involvement and co-production in health research. The ambassadors then ran workshops with women who have experience of seeking asylum in the UK. The workshops benefitted them individually and helped build relationships between

women from different migrant communities, as well as with the research team. The Health Research Ambassadors quickly facilitated the development of trust and connection with the migrant women that would have been difficult for the research team alone to develop.

The ambassadors have since taken part in an [NIHR Applied Research Collaborations national workshop](#) discussing knowledge mobilisation about research and implementation, and one is involved in a NIHR Health Protection Research Unit advisory group.

Butterflies can remember where things are

Heliconius butterflies are capable of spatial learning. Results of a study provide the first experimental evidence of spatial learning in any butterfly or moth species.

The findings also suggest *Heliconius* butterflies may be able to learn spatial information at large scales, consistent with the apparent importance of long-range spatial learning for traplining, which involves foraging within a home range of a few hundred square metres.

Spatial learning is known in insects, but much of the research has focused on ant and bee species which live socially in a communal nest. This study provides the first direct evidence of spatial learning in butterflies or moths, and sug-



gests that complex learning skills, such as the use of spatial information, may be more common in insects than previously thought.

Couto A, Montgomery S *et al.* (2023). [Rapid expansion and visual specialisation of learning and memory centers in the brains of Heliconiini butterflies](#). *Current Biology*.

Image: Butterfly maze © Stephen Montgomery

Stealth swimmers

An experiment on coral reefs provides the first evidence that predators use other animals for motion camouflage to approach their prey without detection.

A new study provides the first experimental evidence that the trumpetfish, *Aulostomus maculatus*, can conceal itself by swimming closely behind another fish while hunting – and reduce the likelihood of being detected by its prey.

In this ‘shadowing’ behaviour, the long, thin trum-

petfish uses a non-threatening species of fish, such as parrotfish, as camouflage to get closer to its dinner.



This is the only known example of one non-human animal using another as a form of concealment.

Matchette SR *et al.*

(2023). [Predatory trumpetfish conceal themselves from their prey by swimming alongside other fish](#). *Current Biology*.

You can view a video about this research here: [Stealth swimmers: the fish that hide behind others to hunt - YouTube](#)

Image: In this ‘shadowing’ behaviour, the long, thin trumpetfish uses a non-threatening species of fish, such as parrotfish, as camouflage to get closer to its dinner. © Sam Matchette/ University of Cambridge

FUNDING OPPORTUNITIES

Research Professional provides access to an extensive database of funding opportunities, and can send out tailored alerts based on specific keywords input by the user. UoB staff and students have **FREE** online access to the database from any device.

You can search for funding information by discipline, sponsor, database searches, by recent calls or by upcoming deadlines. If you register for the site and log in, you'll be able to:

- **Set up automated funding opportunity email alerts - tailored according to your discipline and research interests**
- **Save searches and bookmarks**
- **Sign up for higher education news bulletins**

Find out more about the platform on the [RED website](#). Note that some calls may have an internal process; check the [major bids webpage](#) to see if such a process is in place.

The following listings represent a *brief selection* of available funding for the Bristol Neuroscience community. **Full listings of opportunities** are sent out via Faculty and/or School Research Directors, and **are available on the [Research Development website](#)**.

Research Professional

Alzheimer's Research UK [Pilot project grants](#)

Closing date: 4 October 2023

Award amount: £70,000

These support novel research ideas that if successful would lead to a major project or programme application to ARUK or other funding body. Grants are worth up to £70,000 each for up to two years, and may be used to cover staff salaries, equipment, animal costs and running costs.

National Institutes of Health

[BRAIN Initiative: Targeted BRAIN Circuits Planning Projects – TargetedBCPP \(R34 Clinical Trials Not Allowed\)](#)

Closing date: 4 October 2023

Award amount: USD \$450,000

Solicits applications that offer a limited scope of aims and an approach that will establish feasibility, validity, or other technically qualifying results that, if successful, would support, enable, and/or lay the groundwork for a potential, subsequent Targeted BRAIN Circuits Projects - Targeted BCP R01. Applications should be adventurous, exploratory research projects that use innovative, methodologically-integrated approaches to understand how circuit activity gives rise to mental experience and behaviour.

European College of Neuropsychopharmacology [Early-career scientists workshop grants](#)

Closing date: 26 October 2023

Award amount: unspecified

These enable early-career scientists to attend the next ECNP workshop, to be held from 14 to 17 March 2024 in Nice, France. The workshop aims to stimulate high-quality experimental and clinical research brain disorders and their treatments. It focuses on three recurring topics and one variable topic.

Brain Research UK

[PhD Studentships](#)

Closing date: 10 November 2023 (forecast) Award amount: £130,000

These enable graduates to gain the necessary skills and training to set them on course for the development of an independent career in the fields of brain and spinal cord tumours, acquired brain and spinal cord injury, and headache and facial pain. Research must address large unmet need and demonstrate a clear pathway to clinical impact in one of these three areas.

Wellcome

Mental Health Award: Understanding how anxiety- and trauma-related problems develop, persist and resolve

Closing date: 14 November 2023

Award amount: £4 million

This award will fund researchers to investigate the causal mechanisms through which brain, body and environment interact over time in the development, persistence and resolution of anxiety- and trauma-related disorders. Existing evidence suggests that many factors contribute to the development, persistence and resolution of anxiety-related problems. For example: genetics, childhood maltreatment, poverty. This scheme aims to move beyond correlational evidence to a deeper consideration of the causal mechanisms underpinning anxiety-related problems.

National Institute for Health and Care Research

[Health Technology Assessment Programme - commissioned workstream: 23/39, 23/40](#)

Closing date: 29 November 2023

Award amount: unspecified

These fund research about the clinical and cost effectiveness and broader impact of healthcare treatments and tests for those who plan, provide or receive care in the NHS and social care services. The following calls are available:

- Music based interventions and dementia care
- Supporting the mental health of birth mothers at risk of recurrent care proceedings

The Michael J. Fox Foundation for Parkinson's Research

[Edmond J. Safra Fellowship in Movement Disorders](#)

Closing date: 7 December 2023

Award amount: USD \$180,000

Aims to grow the global base of movement disorder specialists — neurologists with additional training in Parkinson's disease and other movement disorders — by training movement disorder clinician-researchers who can provide expert care and lead scientific advances.

SHOWCASED ARTICLE

[Bi-Touch: Bimanual Tactile Manipulation With Sim-to-Real Deep Reinforcement Learning](#)

Lin Y, Church A, Yang M, Li H, Lloyd J, Zhang D, Lepora NF (2023). *Institute of Electrical and Electronics Engineers (IEEE) Robotics and Automation Letters*.



Image: Dual arm robot holding a crisp © Yijiong Lin

Bimanual manipulation with tactile feedback will be key to human-level robot dexterity. However, this topic is less explored than single-arm settings, partly due to the availability of suitable hardware along with the complexity of designing effective controllers for tasks with relatively large state-action spaces. Here we introduce a dual-arm tactile robotic system (Bi-Touch) based on the Tactile Gym 2.0 setup that integrates two affordable industrial-level robot arms with low-cost high-resolution tactile sensors (TacTips). We present a suite of bimanual manipulation tasks tailored towards tactile feedback: bi-pushing, bi-reorienting, and bi-gathering. To learn effective policies, we introduce appropriate reward functions for these tasks and propose a novel goal-update mechanism with deep reinforcement learning. We also apply these policies to real-world settings with a tactile sim-to-real approach. Our analysis highlights and addresses some challenges met during the sim-to-real application, e.g. the learned policy tended to squeeze an object in the bi-reorienting task due to the sim-to-real gap. Finally, we demonstrate the generalizability and robustness of this system by experimenting with different unseen objects with applied perturbations in the real world.

CONTACTS



Bristol Neuroscience

Lead: [Paul Chadderton](#), Associate Professor in Neurophysiology

Memory Hub Lead: [Emma Cahill](#), Lecturer

Area of research - Physiological basis of memory and adaptive behaviour

Movement Hub Lead: [Paul Chadderton](#), Associate Professor in Neurophysiology

Area of research - to reveal the cellular and circuit mechanisms involved in motor control and learning in the cerebellum

Neural Computation Hub Lead: [Conor Houghton](#), Associate Professor in Computer Science

Area of research - understanding information processing and coding in the brain

Sleep Hub Lead: [Matt Jones](#), Professorial Research Fellow in Neuroscience

Area of research - neuronal networks in cognition and disease

Mental Health Hub Lead: in progress

Network Facilitator: [Joseph Butler](#), Research Development Manager (interim), Faculty of Life Sciences

Network Administrator: [Catherine Brown](#) (Elizabeth Blackwell Institute)



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