

# Bristol Neuroscience Newsletter

2021: Issue 4



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## Drug targets for memory enhancement

Loss of memory is a core feature of many neurological and psychiatric disorders including Alzheimer's disease and schizophrenia. Current treatment options for memory loss are very limited and the search for safe and effective drug therapies has, until now, had limited success.

flowing through memory circuits in the hippocampus. Acetylcholine is released in the brain during learning and is critical for the acquisition of new memories.

effects. The discovery of specific receptor targets that have the potential to provide the positive effects whilst avoiding the negative ones is promising.



The [research](#) was done in collaboration with colleagues at the international biopharmaceutical company Sosei Heptares. The findings identify specific receptors for the neurotransmitter acetylcholine that re-route information

Until now, the only effective treatment for the symptoms of cognitive or memory impairment seen in diseases such as Alzheimer's is using drugs that broadly boost acetylcholine. However, this leads to multiple adverse side

Palacios-Filardo J *et al.* (2021). [Acetylcholine prioritises direct synaptic inputs from entorhinal cortex to CA1 by differential modulation of feedforward inhibitory circuits.](#) *Nature Communications*.

# EVENTS

## **Evolution, Intelligence, and Open-Endedness**

2 December 2021, 17.00 - 18.00, Kenneth Stanley, OpenAI (San Francisco, USA), online

## **Challenges and opportunities for neuroscientists in the MENA region**

3 December 2021, 20.00 - 21.30, online

## **Well-being and Mental Health – an integrated policy approach**

6 December 2021, 13.00 - 16.00, online

## **Simulation-based inference for neuroscience and astrophysics**

6 December 2021, 14.00 - 15.00, Speakers: Professor Jakob Macke and Max Dax (University of Tübingen), online

## **Bristol Neuroscience Showcase**

**13 January 2021, 13.30 - 18.30**

The Bristol Neuroscience Research Network at the University of Bristol is delighted to host this afternoon event to welcome new neuroscience research staff at the institution. The event will comprise a series of presentations by University of Bristol staff and two invited, external keynote speakers, and will be followed by a pizza and drinks reception.

Keynotes:

- ◆ Prof **Loren Frank** (University of California at San Francisco)
- ◆ Prof **Essi Viding** (UCL)

**Further information and to register:**

<http://www.bristol.ac.uk/neuroscience/events/2022/bn-showcase.html>

## **Beyond Digital Twins: Advancing innovation in cities, health and manufacture**

7 December 2021, 8.30 - 11.00, M Shed, Wapping Road, Bristol, BS1 4RN

## **Morphogenesis as collective intelligence: from bioelectric mechanisms to synthetic proto-organisms**

8 December 2021, 12.00 - 13.00, Prof Michael Levin (Tufts University), online

## **Bristol and Bath Psychology Seminar Series**

8 December 2021, 16.00 - 17.00, Sander Los (Vrije Universiteit Amsterdam), online

## **Bristol and Bath Psychology Seminar Series**

15 December 2021, 16.00 - 17.00, Paul Rozin (University of Pennsylvania), online

## **Organization of long-distance neural circuits into specific connectivity patterns**

16 December 2021, 15.00 - 16.00, Euseok Kim, online

**FULL EVENTS LISTINGS ARE AVAILABLE ON THE [BN WEBSITE](#)**

# NEWS

## Smoking paraphernalia displays

Efforts to discourage people from smoking by banning tobacco retail displays in shops and supermarkets could be weakened by prominent displays of electronic (e) cigarettes and smoking paraphernalia, suggests new research.

The team found that the vast majority of retailers that sell tobacco, albeit out of view, had prominent displays of e-cigarettes and smoking paraphernalia, such

as cigarette lighters. Displays of tobacco products at the point of sale in retail stores are banned in many countries because of their potential link to the harmful habit of increased smoking and higher susceptibility to smoking in children. Data from 166 stores in Bristol and Cambridge showed that both e-cigarette and smoking paraphernalia point of sale displays were present in 96% of cases. Just over half of stores had some form of promotional material

for e-cigarettes, with the most common types involving price, ease of use and flavours. The high frequency and visibility of these displays could be undermining the effectiveness of the tobacco point of sale display ban.

Brocklebank LA *et al.* (2021). [Electronic cigarette and smoking paraphernalia point of sale displays: an observational study in England](#). *Tobacco Control*.

## Study into welfare of therapy horses

A new study will examine the selection, training and welfare of thoroughbred horses as they transition from race-track to therapy horse.

The pioneering project, led by academics at the University of Bristol's Veterinary School in collaboration with Racing to Relate, will develop a recognised global welfare standard for former racehorses who are moving into Equine Assisted Therapy (EAT). Thoroughbreds are recognised for their sensitivity and this project will provide a research-based approach to retraining them for therapy work. EAT careers could include work with a di-

verse group of people, from veterans and disabled children to those struggling with mental health issues.



The main aim of the research is to create a global standard for selection and training, to help the racing industry to improve welfare

support for off-track racehorses going into a career in EAT. The research will help industry and stakeholders to improve

Thoroughbred welfare through a successful transition to their new career in EAT. In particular, the study will analyse the educational process for all horses within the EAT sector, to gain a clearer picture of why and how horses are selected for particular roles. The aim is to fully understand the current selection and training methods within the sector and identify specific characteristics of the thoroughbred suited to a career in EAT.

[Read more](#)

## Funding successes: Part 1

Prof [Mike Mendl](#) and Dr [Poppy Statham](#) (Bristol Veterinary School) have been awarded a **Biotechnology and Biological Sciences Research Council** (BBSRC) grant of £157,000 (January 2022 - 2025) to continue running the [UK Animal Welfare Research Network](#) (AWRN). The AWRN has been led from Bristol by Mike and network manager Poppy since its inception in 2016. It has been supported by two previous BBSRC grants, making this third round of funding quite exceptional; the award indicates recognition of AWRN's work for the animal welfare science community. The current application is joint with

Queens University Belfast who are funded separately with Dr Gareth Arnott as Principal Investigator. Mike will hand over to Gareth as the new network lead in 2022.

Mike is also a co-investigator on a recently awarded **National Centre for the Replacement, Refinement and Reduction of Animals in Research** grant starting in December 2021 for three years. Led by Prof Alistair Lawrence at Scotland's Rural University College, the collaboration will enhance rodent welfare using new handling / 'tickling' protocols. The award is worth £21,500 to Bristol.

Dr [James Hodge](#) (School of Physiology, Pharmacology and Neuroscience [PPN]) has been awarded a £671,000 **BBSRC** project grant entitled *Determining the membrane circadian clock across evolution* with Dr Edgar Buhl (also PPN) as co-investigator performing fly clock neuron electrophysiology and circadian rhythm experiments and performing mouse clock neuron electrophysiology and circadian rhythms experiments in co-applicant, Prof Hugh Piggins (PPN) and Mino Belle's (Exeter University) labs. Computational modelling will be performed with Prof Krasimira Tsaneva-Atasova (Exeter).

## Dementia-friendly allotment

Bristol's first dementia friendly allotment launched on 23 July 2021 at an event attended by Bristol Mayor Marvin Rees, alongside older people, their carers, families, and the volunteers who had turned the idea into reality.

The space at Charlton Road allotments in Brentry, north Bristol is designed to help people living with dementia and their carers engage with their community, gardening and the many benefits of horticultural therapy.

The allotment is managed by [Alive](#), the UK's leading

charity enriching the lives of older people in care and training their carers.



With a compost toilet and a social shed, it has all the facilities needed and is now a peaceful haven. Participants can choose what they do: they can come and potter about on

personal projects, work with a volunteer, or just sit and have a cup of tea and chat and enjoy being outside

From 16 August 2021, Alive will be running two sessions a week at the allotment for people living with dementia and their carers, on Monday and Tuesday afternoons.

### Book a session

For enquiries, please email [communitygardening@aliveactivities.org](mailto:communitygardening@aliveactivities.org) or call 0117 377 4756.

*Image does NOT show Bristol allotment*

## Bereavement during the pandemic

New research shows impact of grief during the pandemic as two thirds of bereaved people report experiencing social isolation and loneliness. Those bereaved due to COVID-19 were also less likely to be involved in care decisions and be well supported by healthcare professionals after the death of their loved one.

The study, carried out by the University of Bristol and Cardiff University's Marie Curie Palliative Care Research Cen-

tre, found that participants reported high levels of challenges relating to bereavement during the pandemic



with the three most common being restricted funeral arrangements, limited contact with other close relatives or friends, and experiencing social isolation and loneliness.

When deaths were unexpected rather than expected the bereaved person was less likely to be involved in care decisions. Almost half of participants reported that a healthcare or other care professional had not provided information about bereavement support services, even though this would have been relevant to them.

Selman LE *et al.* (2021). [Place, cause and expectedness of death and relationship...](https://doi.org/10.1101/2021.05.14.21258888) *medRxiv*.

## Neural Computation Hub updates

Researchers affiliated with Bristol Neuroscience's [Neural Computation Research Hub](#) apply computational and mathematical approaches to the study of the brain.

Recent news from the Hub:

Two papers have been accepted for presentation at the at Thirty-Fifth Neural Information Processing Systems Foundation ([NeurIPS](#)) 2021 conference. This interdisciplinary event is taking place online 6 - 14 December 2021 and will bring together researchers in machine learning, computational neuroscience, statistics, optimisation, economics, computer vision, natural language pro-

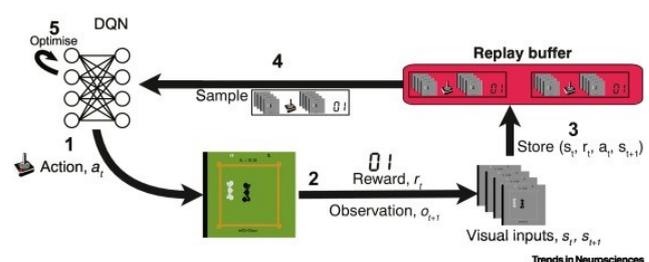
cessing, computational biology, and related fields. One paper, submitted by the [Neural and Machine Learning group](#), is on cortico-cerebellar networks as decoupled neural interfaces; the other from the [Laurence Aitchison](#) group is on variational approximate posterior for deep Wishart processes.

[Conor Houghton](#) (Hub lead, Computer Science) has been awarded a Leverhulme Research Fellowship to pursue his interests on computational models of language.

The groups of [Nathan Lepora](#) (Engineering Mathematics) and

the Neural and Machine Learning group have published a review on contrasting the role of replay in neuroscience and artificial neural networks:

Roscow EL *et al.* (2021). <https://www.sciencedirect.com/science/article/pii/S0166223621001442?dgcid=coauthor>. *Trends in Neurosciences*.



## Understanding the development of Alzheimer's disease

Research that will for the first time examine changes in how genes function in specific brain cell-types to better understand the development of Alzheimer's disease has received a £1.5 million grant from the Medical Research Council.

In one of the biggest projects ever funded in this area, a team at the University of Exeter, with co-investigators from the Universities of Bristol and Essex and the UK Dementia

Research Institute at Imperial College London, will analyse patterns of gene activity in different cell-types in the



brain to find changes associated with Alzheimer's. It is known that Alzheimer's disease is characterised by

changes occurring in certain cell-types, for example it involves the extensive loss of neurons. Therefore, it is critical to measure gene activity in each different brain cell-type individually to understand how they are linked to the development of the condition. Mapping the differences will potentially enable a step-change in unravelling the mechanism of Alzheimer's disease.

[Read more](#)

## Giant pandas' effective camouflage

Researchers at the University of Bristol, Chinese Academy of Sciences and the University of Jyväskylä have used state-of-the-art image analysis techniques to demonstrate, counterintuitively, that the unique colourings work to disguise the giant panda.

The team analysed rare photographs of the giant pandas taken in their natural environment. They discovered that their black pelage patches blend in with dark shades and tree trunks, whereas their white patches match foliage and snow when present. Also, infrequent pale brown pelage

tones match ground colour, providing an intermediate colour which bridges the gap between the very dark and very light visual elements in the natural habitat. The results are consistent whether



viewed by human, felid or canine vision models, the latter two being panda predators.

Next, they examined disruptive colouration, in which highly visible boundaries on the surface of an animal break

up its outline - in the panda's case the borders between the large black and white patches of fur. They found that giant pandas show this form of defensive coloration especially at longer viewing distances. Finally, they utilised a colour map technique to compare a similarity-to-background metric across a variety of species; analysis confirmed that the background resemblance of the giant panda fell solidly within other species that are traditionally considered as well camouflaged.

Nokelainen O *et al.* (2021). [The giant panda is cryptic.](#) *Scientific Reports.*

## Long-term antidepressants reduces risk of relapse

When people stop taking antidepressants after a long period of use, just over half (56%) experience a relapse within a year, compared to 39% of those who stay on medication. The study was led by UCL and involved researchers from the Universities of Bristol, Southampton, York and McMaster University in Canada. The findings can help doctors and patients to make an informed decision together on whether or not to stop their antidepres-

sants after recovery from a depressive episode. The study is the first publication from a large discontinuation trial of people taking antidepressants for multiple years in primary care.

Of the 56% who experienced relapse after discontinuation, only half then chose to return to an antidepressant prescribed by their clinician. The researchers say that some relapses, as well as possible withdrawal symptoms, might not have been severe enough

for the person to decide they needed to return to their medication. Those who discontinued their antidepressants were more likely to experience withdrawal symptoms. Despite this, by the end of the study, 59% of the discontinuation group were not taking antidepressants.

Lewis G *et al.* (2021). [Maintenance or discontinuation of antidepressants in primary care](#). *New England Journal of Medicine*.

## Moth wingtips an acoustic decoy

Researchers at the University of Bristol have discovered that the tips of some saturniid moth forewings are curiously rippled and folded. They found that these unique structures strongly reflect sound, meaning that a bat hunting using echolocation is more likely to attack the wingtip region of the moth over the body, potentially saving the moth's life.

They also discovered that the ripples and folds of the forewing tips have evolved to act as hemispheric and corner retroreflectors respectively, meaning that they reflect sound strongly back to its point of origin. Coupled together, the folds

and ripples of these wingtips cover a huge range of incident sounds angles, meaning that over the entire wingbeat cycle of a flying moth and most possible positions of an attacking



bat, the wingtip would consistently produce the strongest echoes. The acoustic protection of wingtips is even stronger than that of common hindwing decoys.

Structurally, the wingtips act

as acoustic retroreflectors, reflecting sound back to its source from numerous angles, meaning a bat would be more likely to strike the wingtip over the more vulnerable body of the moth.

Neil T *et al.* (2021). [Wingtip folds and ripples on saturniid moths create decoy echoes against bat biosonar](#). *Current Biology*.

*Image: The Atlas moth has a strong anti-bat acoustic decoy at the tip of its forewings. Composite image with photograph on right half and acoustic tomography on the left. Colour indicates echo strength on a dB scale and red indicates highest echo amplitude. Note the red highly reflecting stripe created by the rippled part of the wingtip. © Dr Thomas Neil and Prof Marc Holderied*

## Allergies not linked to mental health traits

Researchers from the University of Bristol wanted to find out whether allergic diseases actually cause mental health traits including anxiety, depression, bipolar disorder and schizophrenia or vice-versa.

The team sought to isolate the effects of these allergic diseases by using Mendelian Randomisation, which allowed them to identify genetic variants linked to these allergic diseases and then investigated how these variants were causally related to the presence of mental health conditions based on a sample of 12,000-344,901 individuals. Although re-



searchers identified observational associations between allergic disease and mental health traits, these were not replicated in the team’s causal analysis. Little evidence of

a causal relationship between the onset of allergic disease and mental health was found, suggesting that the observational associations found were due to confounding or other forms of bias.

The authors conclude that intervening on the initial presentation of allergic disease is unlikely to improve mental health outcomes. Likewise, preventing the onset of mental health traits will unlikely reduce the risk of allergic disease. However, further research is required to investigate whether intervening on the progression of allergic disease after onset has any causal impact on mental health.

Budu-Aggrey A *et al.* (2021). [Investigating the causal relationship between allergic disease and mental health](#). *Clinical and Experimental Allergy*.

## Surroundings affect rhythm of an individual’s walk

Scientists have discovered that people who felt more at ease in urban environments had as regular stepping patterns as folk who felt relaxed walking in nature. The findings that rather than being a quality exclusive to natural environments, the key factor of an environment is how comfortable people feel in it and that defines how beneficial it is for wellbeing.



As our cognitive faculties begin to decline in older

age, the stepping patterns we make with our feet become slower and more variable; the same thing happened when

people walked toward images of urban and nature scenes they didn’t feel comfortable with. This suggests that envi-

ronments in which we feel comfortable and safe place fewer processing demands on our brains, and shows how measuring the real-time dynamics of our gait provides us with a powerful new tool for informing on the cognitive impacts of architecture and urban design.

Burtan D *et al.* (2021). [Nature benefits revisited: differences in gait kinematics between nature and urban images disappear when image types are controlled for likeability](#). *PLoS One*.

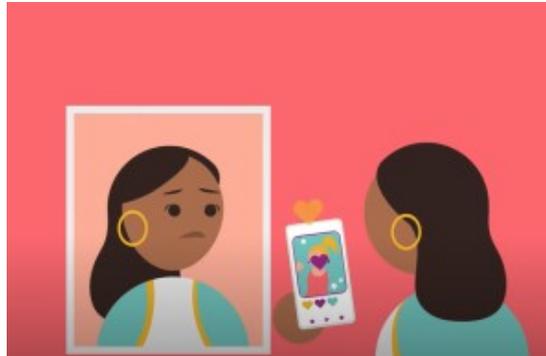
## Animation for those with eating disorders

Researchers from Loughborough University, UWE Bristol and Bristol Health Partners' Eating Disorders Health Integration Team (HIT) have teamed up with UK charity Beat to create an animated video that explores how social media affects people with an eating disorder.

The short film, released on 13 September 2021, looks at how social media can be both harmful and helpful, and provides useful advice for those being negatively affected by what they see online and to support

recovery.

Produced by [a dozen eggs](#), a design company founded by Loughborough graduates, and funded by the [Higher Educa-](#)



[tion Innovation Fund](#), the animation is based on research by [Dr Paula Saukko](#).

The video gives top tips on how to keep boundaries on

social media by unfollowing content on diets or that fuel negative thoughts and moderating consumption and interaction with friends by muting or switching off when feeling overwhelmed. The team hope that the video encourages people with or at risk of eating disorders to reflect on their social media use and adopt a few tips to avoid harm and make the most of their benefits in order to support recovery.

*How does social media affect people with eating disorders?*  
[Watch the video on YouTube](#)

## Mongoosees give bullies the cold shoulder

Management of within-group conflict is a key feature of human lives and those of many social animals, with contestants known to adopt various strategies in the immediate aftermath to minimise costs. This study shows that individuals not involved in the altercations can both track the aggressive behaviour of others and act on that information at a later time.

Conflict management strategies have evolved to keep the peace in species as varied as chimpanzees, ravens and domestic dogs. This work demonstrates that

dwarf mongooses have sufficient cognitive ability to monitor vocal cues about aggressive interactions and to re-



member who the bullies are, refusing to groom with them later.

Working with wild groups of mongooses, the research team collected detailed observations in natural conditions. On evenings that followed the

simulation of increased within-group conflict, subordinate mongoose group members groomed with one another more than on control evenings. Most strikingly, the subordinates also ignored the perceived aggressors, who received substantially less grooming than on other occasions.

Morris-Drake A *et al.* (2021). [Experimental evidence for delayed post-conflict management behaviour in wild dwarf mongooses](#). *eLife*.

*Image © Shannon Wild shows a dwarf mongoose engaged in an aggressive interaction over food*

## Baby teeth: identifiers of mental health disorders?

Social and psychiatric epidemiologist Erin Dunn at Massachusetts General Hospital studies the effects of childhood adversity, which research suggests is responsible for up to one-third of all mental health disorders. However, there is a lack effective tools for measuring this exposure.



Exposure to sources of physical stress, such as poor nutrition or disease, can affect the formation of dental enamel and result in pronounced growth lines within teeth, called stress lines. Tooth growth lines can also vary based on the environ-

ment and experiences a child has *in utero* and shortly thereafter. Thicker stress lines are thought to indicate more stressful life conditions. Dunn hypothesised that the width

of one, the neonatal line (NNL), might serve as an indicator of whether an infant's mother experienced high levels of psychological stress during pregnancy (when teeth are already forming) and in the early period following birth.

Analysis of primary teeth collected from participants of the [Children of the 90s study](#) showed that children whose mothers had lifetime histories of severe depression or other psychiatric problems, as well as mothers who experienced depression or anxiety at 32 weeks of pregnancy, were more likely to have thicker NNLs; children of mothers who received significant social support shortly after pregnancy tended to have thinner NNLs.

Dunn EC *et al.* (2021). [Association of Maternal Stress and Social Support During Pregnancy With Growth Marks...](#) *JAMA Network Open*.

## Funding successes: Part 2

Prof [Jeremy Henley](#) (Biochemistry) was awarded £430,000 from the **Medical Research Council** for *AMPA receptor mediated drive of epileptogenic processes in the mammalian brain*, in collaboration with Gavin Woodhall at Aston University.

Dr [Michael Ashby](#) (Physiology, Pharmacology and Neuroscience) also received funding from the **Medical Research Council**. The three-year award of £537,124 will support project *Vulnerability of long-*

*range axons in tauopathy*. Early in dementia impaired coordination of activity in different brain areas is linked to cognitive symptoms. In fact, this regional disconnection is impacted before local activity. This suggests that long-range axons that connect neurons in distant regions are especially vulnerable. The team propose that impaired axonal trafficking associated with dementia-related aberrant tau has preferentially detrimental effects on long-range axons, impacting their synapse function and driving their pathology. They will use a combination of

imaging approaches to compare long-range and local axon branches from the same neuronal population in a mouse model of tauopathy. Using *in vivo* 2-photon microscopy, they will measure the dynamics of axonal transport of intracellular cargoes in different parts of the axon and relate this to function and plasticity of synapses in those locations as they become affected by the disease. This will reveal how distinct regions of the axon are differentially affected by abnormal tau signalling.

## Misinformation on Twitter affects health decisions

Adult smokers who were considering using e-cigarettes were deterred when exposed to tweets falsely implying the devices are more harmful than conventional cigarettes. The study, led by researchers at the Universities of Bristol and Pennsylvania, is the first to examine the effect of this type of exposure which has implications for public health.

Participants in the online randomised controlled trial were shown different types

of health-related information and asked for opinions about e-cigs. They were asked questions on their intention to quit smoking, intention to purchase e-cigarettes, and perceived relative harm of e-cigs compared to regular cigarettes. After randomisation they were asked to view one tweet at a time and answer questions on the perceived effectiveness of the tweet; likelihood of replying, re-tweeting, liking, and sharing the tweet; and their emotional response to the tweet. Results showed that US and

UK adult current smokers were deterred from considering using e-cigs even after brief exposure to tweets that e-cigarettes are as or more harmful than smoking, suggesting that misinformation about e-cigarette harms may adversely influence decisions to consider using e-cigs as a way of stopping smoking.

Wright C *et al.* (2021). [Effects of brief exposure to misinformation about e-cigarette harms on twitter: a randomised controlled experiment.](#) *BMJ Open.*

## Capturing humour's earliest emergence

Researchers from Bristol's [School of Education](#) sought to determine what types of humour are present in early development and the ages at which different types of humour emerge. Data found the earliest reported age that some children appreciated humour was one month, with an estimated 50% of children appreciating humour by two months, and 50% producing humour by 11 months. They also show that once children produced humour, they produced it often, with half of children having joked in the last three hours.

Children under one year of age appreciated physical, visual and auditory forms of humour. This included hide and



reveal games, tickling, funny faces, bodily humour, funny voices and noises, chasing, and misusing objects. One-year-olds appreciated humour that involved getting a reaction from others such as teasing, showing hidden body parts, scaring others, taboo

topics and acting like something else. Two-year-olds' humour reflected language development, including mislabelling, playing with concepts and nonsense words; they also demonstrated a mean streak as they appreciated making fun of others and aggressive humour. Three-year-olds were found to play with social rules and showed the beginnings of understanding tricks and puns.

Hoicka E *et al.* (2021). [The Early Humor Survey \(EHS\): a reliable parent-report measure of humor development for 1- to 47-month-olds.](#) *Behaviour Research Methods.*

## Birds learn to avoid plants that host dangerous insects

Young birds that eat insects with conspicuous warning colouration to advertise their toxicity to would-be predators quickly learn to avoid other prey that carry the same markings. Building on this, a University of Bristol team have shown that birds don't just learn the colours of dangerous prey, they can also learn the appearance of the plants such insects live on.

They exposed artificial cinnabar caterpillars, characterised by bright yellow and black stripes, and non-signalling fake caterpillar

targets to wild avian predation by presenting them on ragwort and non-toxic bramble. Both target types survived better on ragwort com-



pared to bramble when experienced predators were abundant in the population.

To test whether birds use ragwort's bright yellow flowers as a cue for avoidance they

removed spikes of flowers from the ragwort and pinned them onto bramble, then recorded target survival on either plant. This time, only the non-signalling targets survived better on plants with ragwort flowers, compared to the same plant type without the flowers. The survival of the cinnabar-like target was equal across all plant treatments.

McLellan C *et al.* (2021). [Birds learn to avoid aposematic prey by using the appearance of host plants.](#) *Current Biology*. Image © Callum McLellan Cinnabar larvae feeding on ragwort

## Do tobacco and alcohol increase use of illegal drugs?

Legal consumption of alcohol and tobacco may directly increase the level of illicit drug use, however, the relationships are complex. Consuming one drug does appear to increase the consumption of another, but it may also be the case that people have underlying risk factors which increase their chances of consuming both alcohol and tobacco and illicit drugs.

The study found evidence for a possible gateway effect between:

1. Tobacco use and subsequent alcohol and

2. cannabis use
3. Cannabis use and subsequent tobacco use
3. Opioid dependence and subsequent alcohol con-



sumption

It is possible that there may be bidirectional relationships – for example between tobacco and cannabis use – where cause and effect is operating in both directions. However, given that

tobacco and alcohol use usually begin before other drug use, it is also possible that there may be shared risk factors – possibly a common genetic predisposition to substance use – underlying these relationships. Further examination of these specific relationships is required to determine the exact mechanisms behind these possible gateway effects.

Reed ZE *et al.* (2021). [Using Mendelian randomisation to explore the gateway hypothesis: Possible causal effects of smoking initiation and alcohol consumption on substance use outcomes.](#) *Addiction*.

## Future Leader Fellowship looking at brain organoids

Tackling some of the world's greatest challenges, 97 of the UK's most talented researchers will be backed with £113 million to help bring their innovative ideas from lab to market and provide bold solutions to tackle major global issues. The investment, delivered through UK Research and Innovation's (UKRI) flagship *Future Leaders Fellowships* scheme, will enable researchers to fund vital equipment and wages



to help drive forward their studies more quickly with awards of up to £1.5 million each.

Bristol awardees include Dr [James Armstrong](#) (Bristol Medical School, pictured) who will lead a study into brain organoids – tiny, self-organized three-dimensional tissues that are derived from stem cells, which have been used to model human brain development and neurological condi-

tions. Dr Armstrong's project seeks to use new bioengineering tools to produce organoids with an asymmetry that matches the developing human brain. These organoids will provide new opportunities to study many serious neurological conditions, while the bioengineering tools will be tested in other organoids, such as those that model the pancreas or endometrium.

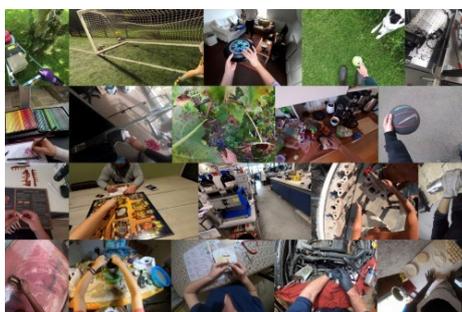
[Read the press release](#) for details on other Bristol awardees.

## World's first massive egocentric dataset

The University of Bristol is part of an international consortium of 13 universities, in partnership with Facebook AI, that have collaborated to advance egocentric perception.

As a result of this initiative, they have built the world's largest egocentric dataset using off-the-shelf, head-mounted cameras. Progress in the fields of artificial intelligence (AI) and augmented reality (AR) requires learning from the same data humans process to perceive the world. Our eyes allow us to explore places, understand people, manipulate objects and enjoy activities - from the

mundane act of opening a door to the exciting interaction of a game of football with friends.



[Egocentric 4D Live Perception \(Ego4D\)](#) is a massive-scale dataset that compiles 3,025 hours of footage from the wearable cameras of 855 participants in nine countries. The data captures a wide range of activities from the 'egocentric' perspective – that

is from the viewpoint of the person carrying out the activity. The University of Bristol is the only UK representative in this diverse and international effort, collecting 270 hours from 82 participants who captured footage of their chosen activities of daily living – such as practicing a musical instrument, gardening, grooming their pet or assembling furniture.

*In the not-too-distant future you could be wearing smart AR glasses that guide you through a recipe or how to fix your bike; they could even remind you where you left your keys*

Prof Dina Damen

[Read the full story](#)

## Smart birds need more mental stimulation

The study provides the first empirical evidence that intelligent animals can struggle in captivity, and could help pet owners identify which species may be more challenging to cater for as pets because of their welfare requirements.

Conducted by researchers at the Universities of Bristol and Utrecht, findings revealed for the first time that the issue can particularly hinder large-brained parrots in confinement and highlight cognitive stimulation and foods to improve care of birds.

The team looked at housing conditions, brain size-body weight ratios - a marker for intelligence - diets and other



factors, and used a form of analysis that allows evolutionary biologists to tease out inherited traits that predispose species to risk. They found that species whose natural diet involves nuts, seeds and tough-coated insects were

more likely to pluck, chew or even eat their feathers. Parrot species with relatively large brains were more at risk for all other forms of stereotypical behaviour. This suggests that owners need to ensure naturalistic diets rather than providing processed foods to pet birds. Wild parrots normally spend 40 to 75% of their active time foraging.

Mellor E *et al.* (2021). [Nature calls: intelligence and natural foraging style predict welfare problems in captive parrots.](#) *Proceedings of the Royal Society B.*

## Lure of gambling adverts on social media to children

A new report has exposed how children and young people are vulnerable to the growing popularity of gambling adverts on social media, prompting calls from leading experts for much tighter regulations.

The research, published on 26 October 2021 as part of a [policy briefing](#) led by the University of Bristol, found gambling advertising is vastly more appealing to children than adults. Most notably, the study findings showed disguised gambling marketing and ads for betting on esports – professional online competing in computer

games – were nearly four times more appealing to children than adults. It also revealed nearly half of chil-



dren are exposed to such advertising weekly and around a quarter encounter it daily. Whereas results showed the vast majority of adults were wary or annoyed when faced with gambling ads, children mainly reacted positively.

The overwhelming strong appeal of gambling advertising on social media to children is of huge concern, as it is known the earlier people start gambling the more likely it will become habitual and problematic.

The authors call for much stricter and clearer rules in place to clamp down on the issue, which could easily spiral out of control given how long children and young people spend on social media.

Rossi R & Nairn A (2021). [What are the odds? The appeal of gambling adverts to children and young persons on Twitter.](#) Policy briefing 107.

## Research Paper of the Year award

A study that demonstrated the 'real world' effectiveness (outside a clinical trial) of IRIS, a specialist domestic violence and abuse training, support and referral programme for general practice teams, has won the 2020 Royal College of General Practitioners' Research Paper of the Year award.

The National Institute for Health Research funded [study, published in BMC Medicine](#) in March 2020, was led by Dr Alex Sohal from Queen Mary Universi-

ty of London in collaboration with Prof Gene Feder and Dr Natalia Lewis from the University of Bristol's Centre for Academic Primary Care (CAPC) and others. The study found that implementation of the IRIS programme led to a 30-fold increase in domestic violence and abuse referrals for women across 205 general practices in London.



Royal College of  
General Practitioners

IRIS (Identification & Referral to Improve Safety) had previously been positively evaluated in a randomised

controlled trial, led by Prof Feder. It is now the flagship programme of IRISi, a social enterprise established in 2017 by Prof Feder and IRISi's CEO, Medina Johnson.

The winning paper: Sohal AH et al. (2020). [Improving the healthcare response to domestic violence and abuse in UK primary care: interrupted time series evaluation of a system-level training and support programme](#). *BMC Medicine*.

[Read the full press release](#)

## Exploring impact of school discipline on pupil wellbeing

A new National Institute for Health (NIHR) Applied Research Centre (ARC) West project has kicked off, working with young people to understand the mental health and wellbeing impacts of school discipline on pupils. The project will use creative methods to understand pupils' experience of school discipline and how they think poor behaviour could better be addressed in schools.

In England, a variety of approaches are used in schools to manage behaviour. These include preventing poor behaviour by

creating a positive learning environment, working with parents and carers to ensure consistent messaging, welcoming pupils to class and offering free school break-



fasts. They also include ways to stop poor behaviour when it happens, like speaking with pupils, isolation, detentions or temporary or permanent exclusions.

Approaches to prevent poor behaviour are usually based on evidence, especially those which aim to understand why poor behaviour happens. If the evidence shows they prevent poor behaviour and low-level disruption, and improve academic results, they are judged to be successful. They are rarely judged on the effect they have on the mental health and wellbeing of pupils.

This project will look at how ways of reducing poor behaviour affect pupils' mental health and wellbeing.

[Read more about the project](#)

## Blood pressure drug does not slow advanced Alzheimer's

A phase 2 multi-centre clinical trial known as RADAR (**R**educing pathology in **A**lzheimer's **D**isease through **A**ngiotensin **t**a**R**geting), looked into whether the drug losartan, normally used to treat high blood pressure, could slow down the progression of Alzheimer's disease (AD).

The double-blinded placebo-controlled randomised trial investigated whether losartan, compared with a placebo, could reduce brain volume loss as a measure of disease progression in people clinically diagnosed with

established AD. The trial assessed the rate of whole brain shrinkage on both sets of participants, and examined differences in memory tests, day-to



-day quality of life and in a subgroup of participants, changes in levels of vascular damage to the brain as measured by MRI. The study found that 12-months' treatment with losartan in patients with

clinically diagnosed and established mild-to-moderate probable Alzheimer's disease did not significantly slow down the progression of AD. However, it could be of benefit if prescribed for longer and if given to people with very early disease.

Kehoe PG *et al.* (2021). [Safety and efficacy of losartan for the reduction of brain atrophy...](#) *The Lancet Neurology*.

Kehoe PG *et al.* (2021). [Losartan to slow the progression of mild-to-moderate Alzheimer's disease...](#) *Efficacy and Mechanism Evaluation*.

## Likely suicide among children and young people in England

A new report based on analysis led by the University of Bristol's National Child Mortality Database [NCMD] programme, which gathers comprehensive information on all children who die in England below the age of 18 years with the aim of identifying ways that could help reduce them in future, was published on 14 October 2021.

The study examined characteristics and contributing factors of 199 child deaths that were either reported or reviewed between 1 April 2019 and 31 March 2020 in England. The deaths of 108 were

identified as highly or moderately likely to have been by suicide, with further analyses showing that it is not limited to



certain groups; rates of suicide were shown to be similar across all areas and regions in England, including urban and rural environments, and across deprived and affluent neighbourhoods. Many of the young people whose deaths were re-

viewed had endured difficult circumstances prior to their passing, including 62% who had suffered a significant personal loss such as a bereavement or the breakdown of a close relationship, and almost a quarter had experienced bullying. The [report](#) includes a number of recommendations that could help prevent suicide, including ensuring that all frontline staff have suicide prevention training and that there is continued roll out of children and young people's mental health services across community settings including schools, local authorities and the criminal justice system.

## Blind spot of shark attacks

Research suggests that sharks mistake humans for seal prey. Shark attack on humans have long fascinated the general public, but have remained a source of confusion for scientists due to the fact that they often bite, but do not subsequently eat, their human targets.

To help unlock this mystery a team from Macquarie University, in collaboration with colleagues from Bristol created a virtual white shark visual system. Videos

of human and seal movements filmed from below the water's surface where input to a computer simulation to



compare the way that seals, swimmers and surfers move on the water's surface, when viewed from the perspective of white sharks below. The models show very little differ-

ences between humans and seals from the perspective of a white shark, suggesting that sharks may easily misidentify their target. This research could question the morality of the destructive measures often taken to reduce shark frequency, suggesting they could be unwarranted.

Ryan L *et al.* (2021). [A shark's eye view: testing the mistaken identity theory behind shark bites on humans](#). *Journal of the Royal Society Interface*.

Image © Laura Ryan

## Funding for the School of Public Health Research

The National Institute for Health Research (NIHR) awarded a third round of funding to the [NIHR School for Public Health Research](#)

health; and places and communities.

Established in April 2012, the renewed School is an extended partnership between Bris-

tish in one virtual organisation. The school conducts applied public health research to increase the volume and quality evidence on cost-



(SPHR). The next round of the school, which has been awarded £25 million from April 2022, will advance and extend the school's current research themes of children, young people and families; public mental

health research excellence across England. The School aims to build the evidence base for effective public health practice by bringing together England's leading public health research exper-

effective interventions and supports local public health practitioners and policy makers to engage with research and seek out research evidence to inform their decisions.

[Read the full press release](#)

## Could amitriptyline prevent shingles pain?

Researchers at the Universities of Bristol, Oxford and Southampton have been given £1.8 million by the National Institute for Health Research to investigate whether taking low-dose amitriptyline can prevent the long-term pain that some people get after shingles.

Shingles, also known as herpes zoster, is caused by the same virus that causes chickenpox. It appears as a rash on one side of the body, which can be painful

for weeks after the rash has gone. While antiviral medicine helps reduce initial pain and rash severity, no treatments



prevent long-term pain (“post-herpetic neuralgia”).

Amitriptyline used to be prescribed at high doses to treat

depression but is now used at low dose for nerve pain. A previous small study suggested that taking a low dose of amitriptyline early on may help prevent post-herpetic neuralgia. The [ATHENA study](#) team, comprising members of the [NIHR School for Primary Care Research](#), will recruit 846 adults into a clinical trial to find out if using amitriptyline when the shingles rash first appears really prevents pain later on.

## Combined treatments best at smoking cessation

Varenicline, bupropion, and NRT are recommended as first line treatments to stop smoking by the National Institute for Health and Care Excellence (NICE). E-cigarettes can be used as aids to quit smoking, but currently there are no medically licensed e-cigarettes in the UK. As cigarette smoking is globally a leading cause of premature death and illness and is costly, the aim of the research was to find out the clinical effectiveness and safety of varenicline, bupropion, nicotine replacement therapy (NRT) and e-cigarettes when compared with each other. The researchers found that

most single and combination therapies were more effective than placebo at helping people to stop smoking with varenicline monotherapy and var-



enicline plus NRT combined being the most effective. Bupropion was also shown to be effective, but was associated with increased risks of having a serious adverse event. E-cigarettes showed promise but more research is needed to establish their safety.

The findings could have implications on the licensing of smoking cessation treatments, as e-cigarettes and combination therapies are currently unlicensed, and could influence recommended treatments.

NICE will shortly be releasing their new guidance for [Tobacco: preventing uptake, promoting quitting and treating dependence](#) which will include this study's data.

Thomas KH *et al.* (2021). [Comparative clinical effectiveness and safety of tobacco cessation pharmacotherapies and electronic cigarettes... \*Addiction\*.](#)

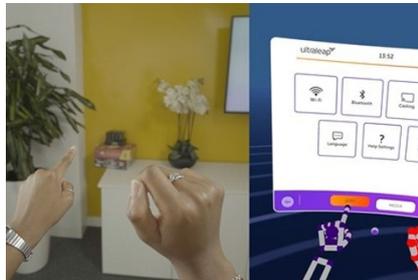
## University spin-out Ultraleap raises £60 million

Ultraleap’s hand-tracking and mid-air haptics technologies allow users to touch and manipulate the virtual world.

Sensors track the hand’s intricate movements, creating 3D projections that can interact in the digital realm.

Ultraleap CEO Tom Carter studied for an MEng in Computer Science and a PhD in Human Computer Interaction at the University of Bristol. He co-founded Ultrahaptics (now Ultraleap) in 2013.

*The metaverse concept is not new to Ultraleap. It has always been our mission to remove boundaries between physical and digital worlds.*



*The pandemic has accelerated the rise of the term as more people now understand the power of enhancing the physical world with digital elements.*

*For Ultraleap, this new era is*

*not constrained to VR headsets. Like the internet, it is a reality we will interact with in all parts of life: at home, in the office, in cars or out in public.*

*Our aim with this Series D raise is to accelerate the transition to the primary interface – your hands – because there are no physical controllers, buttons or touchscreens in anyone’s vision of the metaverse.*

*Tom Carter, CEO of Ultraleap*

*Image: Ultraleap’s hand tracking platform, Gemini © Ultraleap*

## Highly Cited Researchers 2021 List

The Highly Cited Researchers 2021 list, from Clarivate, recognises 16 University of Bristol researchers who demonstrated significant influence in their chosen field or fields through the publication of multiple highly cited papers during the last decade. Among them are:

- Prof **Tom R. Gaunt** (Bristol Medical School); Tom’s research interests lie in the development and application of computational methods in population health sciences
- Dr **Jon Heron** (Bristol Medical School) is a Research Fellow and Statistician in the Avon Longitudinal

Study of Parents and Children (ALSPAC)

- Prof **Marcus R. Munafò**’s (Psychological Science) re-



search focuses on understanding pathways into, and the consequences of, health behaviours and mental health, with a particular focus on tobacco and alcohol use.

- Prof **Eamonn Kelly** (Physiology, Pharmacology

and Neuroscience) studies the pharmacology of opioid receptors; opioid drugs

- Have wide therapeutic and societal uses
- Prof **Neil V. Marrion** (Physiology, Pharmacology and Neuroscience); the Marrion lab looks at the cellular mechanisms of the hippocampus and its role in the consolidation of memory
- Prof **Julian P. T. Higgins** (Bristol Medical School) has wide-ranging research interests which span all areas of systematic review and meta-analysis.

[See the full list](#) of highly-cited researchers at Bristol

## GW4 PhD programme for health professionals

The GW4 Alliance is a consortium of four of the most research-intensive and innovative universities in the UK: Bath, Bristol, Cardiff and Exeter. It is set to launch a new PhD programme for health professionals after receiving a £7m grant from the Wellcome Trust.

The GW4 Clinical Academic Training Programme for Health Professionals (GW4-CAT HP) will fund five annual intakes of five fellows, starting in Autumn 2022.

PhD fellows will have access to exceptional support, training and guidance from world-leading academics and re-



search environments across the GW4 member universities; this will include supportive mentorship and assisting with the transition to a post-doctoral clinical academ-

ic role. The programme is dedicated to identifying and nurturing talent by delivering an outstanding mentored and supported research training experience to establish an academic career for clinical leaders of the future.

Applications for the programme opened on 1 November 2021 and the closing date is 13 December 2021. Further information on eligibility and details on how to apply are available on the [GW4-CAT website](#).

Epigenetic variation exists but it is unclear what causes this variation – is it genetic or is it the environment? It is also unclear how genetic differences that occur between individuals' impact on our epigenomes. The atlas of genetic effects on DNA methylation (DNAm), by the [Genetics of DNA Methylation Consortium](#) (GoDMC) of 50 universities and institutes and more than 150 scientists, including the University of Bristol, University of Exeter Medical School, King's College London and Leiden University Medical Center was published on 9 September 2021.

The analysis focused on the natural differences between individuals in their DNAm levels across the genome. DNAm plays a central role in gene regulation. It helps to define



how cells respond to environmental signals and, ultimately, contributes to health or susceptibility to disease. However, the amount and the effects of differences in DNAm from one person to

another is poorly understood.

The consortium analysed 32,851 participants from across the world; by providing a world-wide platform for collaboration and combining genetic and epidemiological expertise, the scientists of GoDMC established a large resource of genetic effects on DNAm and how this [atlas](#) can be used to understand the genetic basis of DNAm variation.

Min JL *et al.* (2021). [Genomic and phenotypic insights from an atlas of genetic effects on DNA methylation](#). *Nature Genetics*

# ELIZABETH BLACKWELL FUNDING

Nurturing  
Research.  
Improving  
Health.



## **EBI Workshop Support**

Support interdisciplinary workshops in health research at new or emerging interface between two or more disciplines. **Applications are accepted on a rolling basis.**

## **Returning Carers Scheme**

The University of Bristol is running a Returning Carers Scheme (RCS) to support academic staff across all faculties in re-establishing their independent research careers. **Applications are accepted on a rolling basis.**

## **EBI Seed Fund: Public Engagement with Health Research**

Seed funding is available for health researchers who would like to deliver public engagement events and activities. **Applications are accepted on a rolling basis.**

# 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 Research Directors and/or School Research Directors, and **are available on the [Research Development website](#)**.

## \* Research Professional

### Action for A-T

#### [Project grants in ataxia-telangiectasia](#)

Closing date: 3 January 2022

Award amount: £150,000

These support medical research that has the potential to lead to treatments and cures for ataxia-telangiectasia.

### NIHR

#### [Health technology assessment programme – dementia research call: 21/559](#)

Closing date: 5 January 2022

Award amount: unspecified

This supports dementia research to address important health and social care questions. Research could involve any aspect of prevention, diagnosis, treatment, support or care, and related health and social care services. The HTA programme funds research about the clinical and cost-effectiveness, and broader impact of healthcare treatments and tests, for those who plan, provide or receive care from NHS, and social care services.

### Alzheimer's Research UK

#### [Major project grants](#)

Closing date: 5 January 2022

Award amount: unspecified

These support research projects on Alzheimer's disease and related dementias. Clinical trials and

drug discovery and development are not covered.

### **Medical Research Council**

#### [Research grants – neurosciences and mental health](#)

Closing date: 26 January 2022

Award amount: unspecified

The aim is to transform the understanding of physiology and behaviour of the human nervous system throughout the life course in health, illness, as well as how to treat and prevent disorders of the brain. The scope includes the following areas: neurodegeneration; clinical neurology and neuroinflammation; mental health; addictions and substance misuse; behavioural and learning disorders including autism; cognitive and behavioural neuroscience and cognitive systems; sensory neuroscience including vision and hearing; neurobiology and neurophysiology; underpinning support, such as neuroimaging; technology, brain banking and neuroinformatics.

### **NIHR**

#### [Invention for innovation – digital approaches for dementia early detection, diagnosis and stratification](#)

Closing date: 26 January 2022

Award amount: £2 million

This supports the research and development of digital approaches for the early detection and diagnosis of dementia, or the stratification of people at risk of developing dementia or the sub-typing and prognosis of dementia patients. Projects must involve the large-scale pragmatic validation of digital biomarkers for dementia (DBDs), the development of DBDs into advanced diagnostic or prognostic prototypes or products, or clinical evaluations toward near market-ready solutions.

### **National Institute of Neurological Disorders and Stroke, US**

#### [Mood and psychosis symptoms during the menopause transition \(R01 clinical trial optional\)](#)

Closing date: 5 February 2022

Award amount: unspecified

This supports the advancement of mechanistic and translational research on the onset and worsening of mood and psychotic disorders during the menopausal transition.

### **National Institute on Aging, US**

#### [Translational bioinformatics approaches to advance drug repositioning and combination therapy development for Alzheimer's disease \(R01 clinical trial optional\)](#)

Closing date: 5 February 2022

Award amount: unspecified

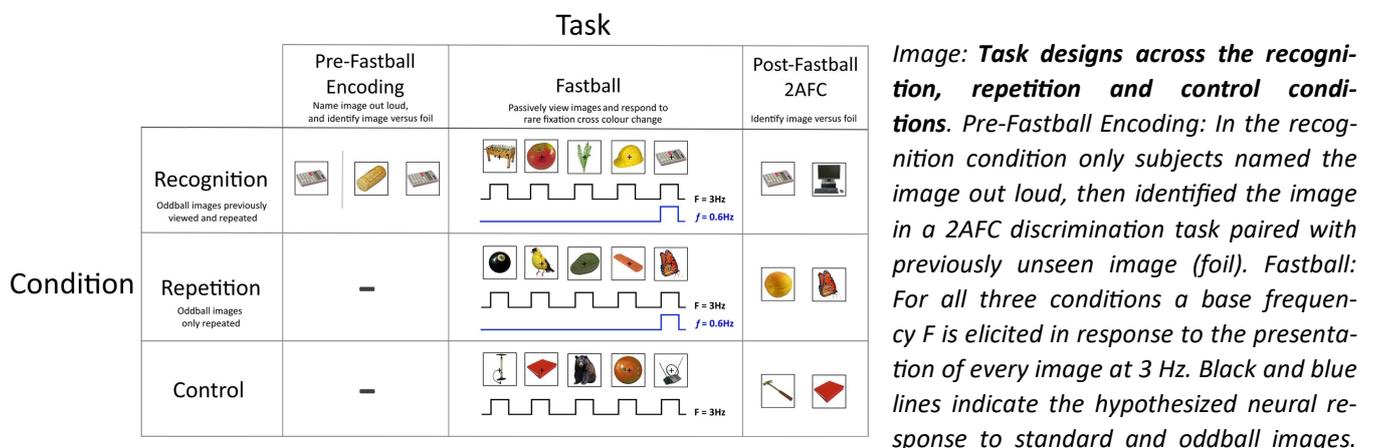
This enables data-driven drug repositioning and combination therapy for Alzheimer's disease and Alzheimer's disease-related dementias by developing computational methods and data resources or integrating computational approaches with proof-of-concept efficacy studies in cell-based models, animal models or humans.

# SHOWCASED ARTICLE

## A passive and objective measure of recognition memory in Alzheimer's disease using Fastball memory assessment

Stothart G, Smith LJ, Milton A and Coulthard E (2021). *Brain*.

Earlier diagnosis of Alzheimer's disease requires biomarkers sensitive to associated structural and functional changes. While considerable progress has been made in the development of structural biomarkers, functional biomarkers of early cognitive change, unconfounded by effort, practice and level of education, are still needed. We present Fastball, a new EEG method for the passive and objective measurement of recognition memory, that requires no behavioural memory response or comprehension of the task. Younger adults, older adults and Alzheimer's disease patients completed the Fastball task, lasting just under 3 min. Participants passively viewed rapidly presented images and EEG assessed their automatic ability to differentiate between images based on previous exposure, i.e. old/new. Participants were not instructed to attend to previously seen images and provided no behavioural response. Following the Fastball task, participants completed a two-alternative forced choice (2AFC) task to measure their explicit behavioural recognition of previously seen stimuli. Fastball EEG detected significantly impaired recognition memory in Alzheimer's disease compared to healthy older adults, whereas behavioural recognition was not significantly different between Alzheimer's disease and healthy older adults. Alzheimer's disease patients could be discriminated with high accuracy from healthy older adult controls using the Fastball measure of recognition memory, whereas discrimination performance was poor using behavioural 2AFC accuracy. There were no significant effects of healthy ageing, with older and younger adult controls performing equivalently in both the Fastball task and behavioural 2AFC task. Early diagnosis of Alzheimer's disease offers potential for early treatment when quality of life and independence can be retained through disease modification and cognitive enhancement. Fastball provides an alternative way of testing recognition responses that holds promise as a functional marker of disease pathology in stages where behavioural performance deficits are not yet evident. It is passive, non-invasive, quick to administer and uses cheap, scalable EEG technology. Fastball provides a new powerful method for the assessment of cognition in dementia and opens a new door in the development of early diagnosis tools.



For the recognition condition an oddball response  $f$  is elicited due to the previous viewing of the images during the encoding task and the repeated presentation (13 times each, pseudo-random order) of the oddball images during the Fastball task. For the repetition condition an oddball response  $f$  is elicited only due to the repeated presentation (13 times each, pseudo-random order) of the oddball images during the Fastball task. Subjects attended to the fixation cross and pressed a key when the cross turned red in 10% of randomly selected standard images. Post-Fastball 2AFC: Subjects identified previously seen oddballs and a randomly selected subset of standard images in a 2AFC task. Previously seen images were presented alongside novel, previously unseen images (foils).

# CONTACTS



## Bristol Neuroscience

**Director:** [Matt Jones](#), Professorial Research Fellow in Neuroscience  
*Area of research* - neuronal networks in cognition and disease

**Memory Hub Leader:** [Jack Mellor](#), Professor in Neuroscience.  
*Area of research* - synaptic plasticity and its role in learning and memory



**Movement Hub Leader:** [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 leader:** [Conor Houghton](#), Reader in Computational Neuroscience  
*Area of research* - understanding information processing and coding in the brain



**Sleep Hub Leader:** [Matt Jones](#) (as above)

**Mental Health Hub Leader:** in progress

**Network Facilitator:** Sandra Spencer (Research Development)



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



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