University of BRISTOL

Elizabeth Blackwell Institute for Health Research

Bristol Neuroscience Newsletter

2021: Issue 1

bristol neuroscience

@BristolNeurosci

bristol.ac.uk /neuroscience

b-n@bristol.ac.uk

+44 117 428 4012

Inside this issue:

Evolutionary theory of stress

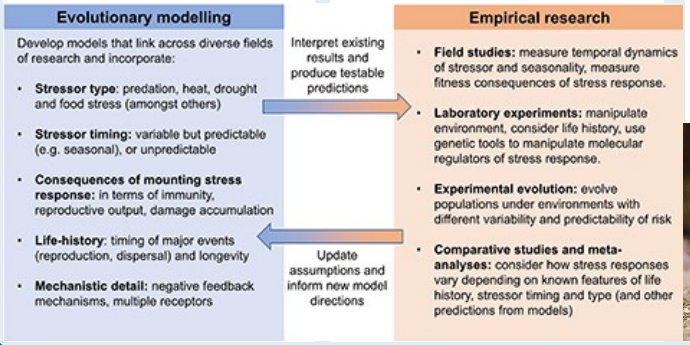
Almost all organisms have fast-acting stress responses, which help them respond to threats; but being stressed uses energy, and chronic stress can be damaging. An international study suggests most animals remain stressed for longer than is optimal after a stress-inducing incident. The reasons for this are not clear, but one possibility is that there is a limit to how quickly the body can remove stress hormones from circulation.

The work has shown that considering both mechanisms of hormone clearance, and features of the environment - how predictable the threat is across time - can help explain the universal stress response, and how it varies. The findings are all the more relevant today when we live in such uncertain times, and stress being a topic of every day discussion.

Dr Sinead English, School of Biological Sciences

The team have created one of the first mathematical models to understand how organisms have evolved to deal with stressful events. It combines existing research on stress physiology in a variety of organisms with analysis of optimal responses that balance the costs and benefits of stress. The approach reveals environmental predictability and physiological limits as key factors shaping the evolution of stress responses; more research is needed to advance understanding of how this core physiological system has evolved.

Taborsky B, English S, Fawcett TW *et al.* (2020). Towards an evolutionary theory of stress responses. *Trends in Ecology & Evolution*.



The study suggests most animals remain stressed for longer than is optimal after a stress-inducing incident.

EVENTS

The translational cognitive neuroscience of anxiety
12 February 2021, 12.00 - 13.00, Oliver J Robinson (Anxiety Lab, Neuroscience and Mental Health Group, Institute of Cognitive Neuroscience, University College London), online

Navigating in a turbulent environment
15 February 2021, 16.00 - 17.00, Prof Mimi Koehl (University of California, Berkeley), online

Looking beyond serotonin: astrocyte mechanisms in mood disorders
16 February 2021, 15.00 - 16.00, Dr Valentina Mosienko (Neuroscientist at University of Exeter Medical School), online

Launch of the Institute for Ethics in AI - AI in a Democratic Culture
16 February 2021, 17.00 - 18.30, online

Ethics, wellbeing and security
17 February 2021, 14.00 - 15.30, Magda Mogilnicka and Lydia Medland, online

Cholinergic interneurons inhibit striatal dopamine release
19 February 2021, 12.30 - 13.30, Yanfeng Zhang (Cragg group, University of Oxford), online

The BHP Chronic Pain Health Integration Team: Helping those with chronic pain to access the support they need / A bit of a To and Fro with population pain science
22 February 2021, 13.00 - 14.00, Prof Candy McCabe PhD RGN (Chronic Pain Health Integration Team and UWE) & Prof Tony Pickering (University of Bristol), online

The influence of reward expectation on hippocampal spatial maps
22 February 2021, 16.00 - 17.00, Prof Mark Sheffield (Department of Neurobiology, University of Chicago), online

Research and Engineering of Robust Machine Learning Systems
25 February 2021, 11.00 - 12.00, Tom Diethe (Applied Science Manager, Amazon AWS), online

Bristol Neuroscience hosted their 2nd

Bristol Brain Research Day

on 14 January 2021

This full day, virtual event welcomed 18 invited speakers grouped into five sessions which mirrored BN's research Hubs: Memory, Mental Health, Movement, Neural Computation, and Sleep. It was opened by BN's Director Prof Matt Jones and introduced by the University's Pro-Vice Chancellor (Health and Life Sciences) Prof John Iredale. The full programme can be viewed on the event webpage. The event showcased the diverse and interdisciplinary nature of neuroscience research at the University of Bristol across three faculties, six schools, and two NHS Trusts (Bath and Avon & Wiltshire Mental Health Partnership). The day was complemented by keynote presentations by Prof Sir Michael Owen (Cardiff) and Prof Eve Marder (Brandeis).

Watch the recordings

FULL EVENTS LISTINGS ARE AVILABLE ON THE BN WEBSITE

NEWS

Behavioural similarities of foragers living in the same place

Foraging humans find food, reproduce, share parenting, and even organise their social groups in similar ways as surrounding mammal and bird species, depending on where they live in the world. The study shows environmental factors exert a key influence on how foraging human populations and non-human species behave, despite their very different backgrounds. The team analysed data from more than 300 locations around the world, observing the behaviours of foraging human populations alongside other mammal and bird species living in the same place. Their findings show that for almost all behaviours, 14 of the 15 investigated, humans were more likely to behave similarly to the majority of other non-human species living in the same place than those elsewhere. The evidence shows how remarkably pervasive and consistent the effect of the local environment is on behaviour. The similarities are not only present for behaviours directly relating to the environment, such as finding food, but also for reproductive and social behaviours, which might seem less dependent on the local environment.

Barsbai T *et al*. (2021). Local convergence of behavior across species. *Science*.

BaYaka people live in the Congo basin of Africa and were among the foraging populations included in the study. © Sarah Pope

Testing memory could predict Alzheimer's risk

New research suggests testing people's memory over four weeks could identify who is at higher risk of developing Alzheimer's disease before it has developed. Importantly, the trial found testing people's ability to retain memories for longer time periods could predict this more accurately than classic memory tests, which test memory over half an hour.

The study wanted to find out whether testing people's memory of a word list four weeks after they were initially read it could predict who will experience the most cognitive decline over the following year, even if they have no cognitive or memory problems to begin with.

Participants performed three memory tasks on which delayed recall was tested after 30 minutes and four weeks, as well as the Addenbrooke's Cognitive Examination III (ACE-III) test (a commonly used test for detecting cognitive impairment) and an MRI brain scan. The ACE-III test was repeated after 12 months to assess the change in cognitive ability.

The research found the memory of 15 of the 46 participants declined over the year and that the four-week verbal memory tests predicted cognitive decline in these healthy older people better than the clinical gold standard memory tests. The prediction was made even more accurate by combining the four-week memory test score with information from the MRI brain scan that shows the size of a part of the brain responsible for memory, which is damaged by Alzheimer's disease.

Testing long-term memory recall could enable earlier detection of Alzheimer's disease.

Wearn AR *et al*. (2020). Accelerated long-term forgetting in healthy older adults predicts cognitive decline over 1 year. *Alzheimer's Research and Therapy.*

Funding successes: Part 1

Dr Jon Lane and Dr Lucy Crompton (Co-I, both Biochemistry) were successful in their application to **Parkinson's UK** for an 18-month project entitled *Molecular profiling of neuroinflammation as a driver and promising early biomarker for Parkinson's* which was awarded £111, 800.

Prof Paul Mitchell, Prof Joanna Coast and Dr Samantha Husbands (Bristol Medical School: Population Health Sciences) have been awarded funding from the **Worldwide Universities Network** special grants scheme: Addressing research needs triggered by the COVID-19 pandemic. The title of their study is *Capability Wellbeing and COVID-19: general population surveys in the UK, Australia and the Netherlands*. Collaborators include Rachael Morton at the University of Sydney and Mickaël Hiligsmann at Maastricht University. Read more about the project.

The **Cabot Institute Innovation Fund** 2020/2021 awarded funds aimed at supporting bold, ambitious, and impactful ideas that transcend disciplinary boundaries. One of the supported projects was Reducing food emissions without unintended consequences on health or wider sustainability which received £6429 and will be led by Dr Taro Takahashi (Bristol Veterinary School) alongside Louise Rutterford (University of Exeter), Dr Angeliki Papadaki (School for Policy Studies), and Prof Jeff Brunstrom (School of Psychological Science).

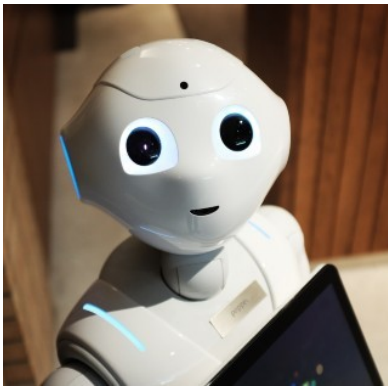
Dr Vikki Neville (Bristol Veterinary School) was awarded £3,255.34 from **Universities Federation for Animal Welfare** for *Refining the housing and husbandry of laboratory rats; a systematic review*.

Prof Gene Feder (Bristol Medical School: Population Health Sciences) received £128,552 from **UK Research and Innovation** for Primary care response to domestic violence and abuse in the COVID-19 pandemic: interrupted time series and qualitative study, starting November 2021 for one year.

Investigating the trustworthiness of future robots

Would you trust a robot surgeon? A robot pilot, shop assistant or emergency responder? Would you trust them if they had the ability to adapt and change how they functioned? What would it take to make them trustworthy?

Funded by a £3m grant from UK Research and Innovation (UKRI), the team of social scientists, ethicists, computer scientists and engineers are pooling their expertise to explore how autonomous systems could function in a safe, secure and resilient manner. November 2020 saw them start a three-and-a-half-year project that will focus on the processes used to design and develop the evolving functionality of autonomous systems. Ultimately, the findings could influence the development of technologies designed to assist modern life, from boosting productivity of industry, through emergency response systems, to robotic surgery. The team will focus on functionality; creating processes to develop technologies with the ability to adapt their functionality to real world conditions. They will focus on three technologies that adapt in fundamentally different ways: swarm systems, soft robotics and unmanned air vehicles.



Using artificial intelligence to identify sick livestock

The welfare of livestock could be improved thanks to a new research project that will use novel artificial intelligence methods combined with behavioural analytics to provide rapid and reliable insights to animal health for farmers across the UK. The research and commercial feasibility program, co-funded by Innovate UK, the UK's innovation agency, will be led by the Quant Foundry (QF) in collaboration with the University of Bristol Vet School and Agri-EPI Centre.

The team headed by Dr Chris Cormack at QF will run a feasibility study with Prof Andrew Dowsey and animal welfare experts, Dr Siobhan Mullan, Dr Suzanne Held and Prof Michael Mendl (all Bristol Veterinary School) and Agri-EPI Centre at their South West Dairy Development Centre in Somerset.

The project aims to provide a new cost-effective solution for farmers and vets to identify illness in livestock providing not only cost savings but also a means to reduce the impact of farming on the environment.

Throughout the project the collaborative team will be actively seeking partners to help them commercialise and build capability as the project matures.

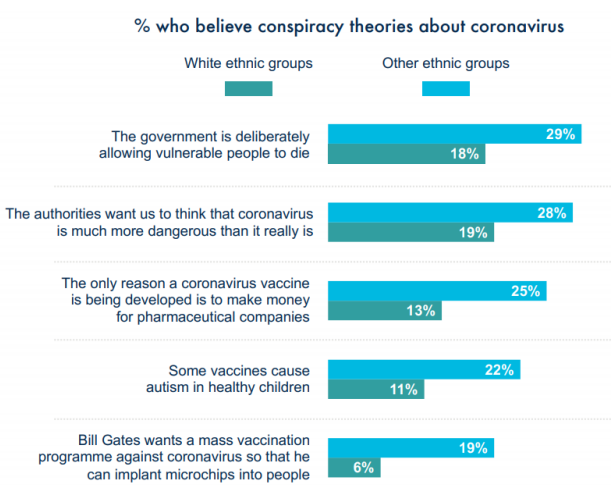
COVID conspiracies linked with vaccine hesitancy

A study has shown that low likelihood of accepting a coronavirus vaccine is associated with having "conspiracy suspicions" about the pandemic.

Fifteen per cent of the UK public believe that reporters, scientists, and government officials are involved in a conspiracy to cover up important information about coronavirus" – but this almost triples, to 42%, among those who say they're unlikely to or definitely won't get vaccinated against the virus.

The study finds that this dynamic holds for belief in a number of conspiracy-related statements, and that people from BAME groups are also particularly likely to report believing such claims.

Relying on social media for a lot of your information about the pandemic appears to play a role, too, as well as being linked to greater levels of potential concern about getting vaccinated. Those whose knowledge about coronavirus comes primarily from certain online sources, including social media platforms, are significantly more likely to have conspiracy suspicions about the pandemic and think various conspiracy theories are true.

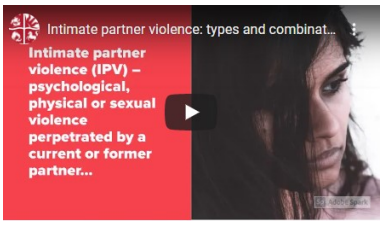


The findings are based on a survey of 4,860 UK adults aged 18-75 between 21 November and 22 December 2020.

Report: Coronavirus conspiracies and views of vaccination by Daniel Allington, Siobhan McAndrew, Bobby Duffy and Vivienne Moxhall-Hal.

Combined intimate partner violence is common

Intimate partner violence – psychological, physical or sexual violence perpetrated by a current or former partner – is the most common form of violence experienced by women worldwide. The study, led by researchers at the University of Bristol's Centre for Academic Primary Care and conducted in collaboration with the World Health Organization (WHO) and University of Melbourne, found that all types of intimate partner violence were associated with long-lasting damage to health but combinations that included sexual violence were more common and markedly more damaging to women's physical and mental health. The team found that over 15%of ever-partnered women had experienced a combination of intimate partner violence that included sexual violence.



Those who had experienced this in the last year were ten times more likely to attempt suicide than those who had not. Women who had experienced multiple forms of abuse were also more likely to experience difficulty walking, difficulty with daily activities, pain or discomfort, poor memory or concentration, dizziness, and vaginal discharge, and to be taking sleeping pills or painkillers.

Read the paper in the *International Journal of Epidemiology*

Public engagements

Dr Denize Atan (Bristol Medical School: Translational Health Sciences) took part in the Channel 4 show "Food Unwrapped" with a contribution to episode 4, aired on 16 November 2020, which explored *How Dangerous is Fussy Eating?* Presenter Kate Quilton investigates the junk food diets of fussy-eating kids. On meeting families where young lives are at risk, she asks what's 'normal' and when parents should seek help? Watch the episode

PhD student Jack Greenhalgh (Biological Sciences) featured on a BBC Radio 4 programme. Jack is using underwater microphones to survey wildlife in ponds, and the programme *Open Country, Ghost Ponds and Underwater Songs* contains an interview with him regarding the use of sound to survey freshwater biodiversity in ponds, and underwater sounds he has recorded in Bristol & Norfolk.

Prof Andy Radford (Biological Sciences) was involved in a new episode of the BBC World Service's Discovery series on *Birds: Singing for Survival*, which explores how birds are adapting their calls to be heard.

Dr Nathalie Stroeymeyt (Biological Sciences) was interviewed for BBC Radio 4 on ant disease and social distancing. The programme, part of the NatureBang series, aired on 17 November 2020 and can be listened to online: https://www.bbc.co.uk/programmes/m000pffm:

Becky Ripley and Emily Knight delve into an anthill to see what ants can teach us about surviving a pandemic. From self-isolation to social distancing, the ants lead the way.

A paper published in *PNAS* [Neil TR, Shen Z, Robert D, Drinkwater BW and Holderied MW (2020). Moth wings are acoustic nanomaterials.] made headlines in the NY Times, Smithsonian Magazine, and a review in *Nature Materials*.

Urban gulls forage to human patterns

Fitting birds with GPS trackers inside mini backpacks reveals what has been long suspected: urban gulls know exactly when and where to forage for human food. In comparison to natural environments, urban environments are novel for animals on an evolutionary timescale and present a wide array of potential food sources. In urban environments food availability often fluctuates according to patterns of human activity, which can follow a daily or weekly cycle. However, until now, little has been known about how urban animals adapt to these time differences in human food availability. A team from Bristol's Faculties of Engineering and Life Sciences used different data to record the behaviour of urban gulls at three different settings in the city: a public park, a school and a waste centre.

The team found the birds' foraging patterns closely matched the timing of school breaks and the opening and closing times of the waste centre, but that their activity in the park appeared to correspond with the availability of natural food sources. The findings suggest gulls may have the behavioural flexibility to adapt their foraging behaviour to human time schedules when beneficial, and that this trait helps them to thrive in cities.

Spelt A *et al*. (2020). Urban gulls adapt foraging schedule to human-activity patterns. *International Journal of Avian Science*.

Young people's anxiety during lockdown

The number of young people with anxiety doubled from 13% to 24% during the early stages of the COVID-19 pandemic and lockdown 1, according to new research. The study, using Bristol's Children of the 90s questionnaire data, showed that young people (27-29 years) reported higher levels of anxiety during the early phases of the pandemic in the first national lockdown and this was higher than their parents.

Researchers also found that anxiety levels continued to remain high even when lockdown restrictions were eased in June and thus a similar situation may be expected this winter. The findings also suggest that this could be worse for individuals with a history of mental health problems, women and those who had experienced pre-pandemic financial problems. These findings have been highlighted by Public Health England to help influence policy and the government's understanding of the impact of COVID-19 on mental health.

There was no evidence that depression was higher overall, however, specific groups of individuals were more likely to experience greater levels of depression and anxiety during the pandemic. These were women, those with pre-existing mental and physical health conditions, those living alone during the pandemic, those self-isolating as a result of COVID-19 and those who had experienced recent financial problems. Interestingly, some factors, such as living alone, were only linked to greater depression and others, such being a parent, only linked to anxiety. Researchers did not find evidence of an elevated risk of anxiety in key workers or healthcare workers.

Kwong ASF *et al*. (2020). Mental health before and during COVID-19 in two longitudinal UK population cohorts. *The British Journal of Psychiatry.*

Funding successes: Part 2

To Prof Stephan Lewandowsky (Psychological Science), £324,597 from the **Volkswagen Foundation** for *Reclaiming individual autonomy and democratic discourse online: How to rebalance human and algorithmic decision making*, starting 1 Feb '21 for four years.

Dr Abi Merriel (Bristol Medical School: Population Health Sciences) received £16,501 from the **David Telling Trust** for *Shared Decision Making*, starting Jan '21 for one year.

A grant of £9,809 was awarded to Dr Hannah Macgregor (Biological Sciences) by the **Association for the Study of Animal Behaviour** for *Developing a protocol to quantify the effects of turbidity on shoaling behaviour in fish*, starting Feb '21 for two months.

From the **Wellcome Trust**, £3,000 to Dr James Hodge (Physiology, Pharmacology and Neuroscience/PPN) for *Investigating Alzheimer's Disease risk genes in Drosophila melanogaster.*

Dr Matthew Ridd (Bristol Medical School: Population Health Sciences) received £1,410,710 from the **National Institute for Health Research** (NIHR) for *AmiTritypline for the prevention of post-Herpetic NeuralgiA*, starting Jan '21 for 22 months.

Also from the **NIHR**, £677,377 was awarded to Dr Anna Pease for *Preventable infant deaths: Improving uptake of safe sleep messages in high-risk families*, starting Feb '21 for 5 years.

An award of £24,217 was made by **For Effective Global Action** to Dr Sean Fox (Geographical Sciences) for *Combining Satellite Imagery and Machine Learning to Target Social Protection*, starting Dec '20 for one year.

To Dr Robert Meech (PPN), £12,000 from the **Royal Society** for *Mechanisms of escape swimming in jellyfish*, starting Dec '20 for two years.

Turing AI Fellowship

Dr Raul Santos-Rodriguez (Department of Engineering Mathematics) is one of 15 UK researchers awarded a Turing AI fellowship to develop Artificial Intelligence (AI) technologies.

Named after AI pioneer Alan Turing, the fellowships are supported by a £20m investment from the Engineering and Physical Sciences Research Council in partnership with the Department for Business Energy and Industrial Strategy, Office for AI and the Alan Turing Institute. The fellows will develop novel AI techniques that could have wide-ranging impact, for example through combatting cancer, developing digital twins that can aid us in modelling and understanding air pollution, and improving cybersecurity through developing more robust and transparent AI algorithms. Raul's fellowship will focus on machine learning, in particular annotations, the process of labelling data to educate machines so they can detect patterns in medical data, identify objects in images or recommend products in online platforms. His team will design and establish protocols for transparent annotations that empower the data curator to accurately report on the process, the AI practitioner to automatically evaluate the value of annotations and the end-user to provide the most informative and actionable feedback.

Treatment for drug addiction during lockdown

Before COVID-19, it was the norm for a patient to be dispensed a daily dose of opiate substitutes such as methadone, and this was often taken under the supervision of a pharmacist. However, treatment protocols have been turned on their head during the pandemic, with the majority of patients taking home with enough medication to last a week or two. This change was introduced to minimise contact between patients and pharmacists, and to keep people safely at home.

The study set out to explore the impact of these new prescribing habits on people living in rural South West England. Through telephone interviews, participants share their experiences of drug use and services during the pandemic. There was a big concern when people in drug treatment were first given quantities of supplies to cover up to two weeks. Drug-related deaths are higher than they've ever been (In 2019, 2,160 drug poisoning deaths in the UK involved opiates) and no one knew whether people would manage to take their take-home treatment as prescribed.

Some have changed the time of day when they take their medication, others have split the dose to suit themselves. All have reported managing to cope and not taking more than the prescribed dose.

Dr Jenny Scott, Bath

The project What C-OST? The Impact of the Covid-19 pandemic on people who receive opioid substitution therapy published its interim report in November 2020.

Doctoral thesis prize

From remembering the Holocaust to creating an evolutionary timescale of life on earth, six Bristol postgraduates were awarded the University's Doctoral Dissertation Prize for the outstanding quality of their research degree theses. Internal and external examiners were invited to nominate suitable theses and one winner was selected from each faculty by members of the Research Degrees Exam Board.

The winner for the Faculty of Life Sciences was Dr Anna Sales in the School of Physiology, Pharmacology and Neuroscience. Her dissertation was entitled Theoretical, Electrophysiological and Optogenetic Interrogation of Locus Coeruleus Contributions to Cognition which she completed under the supervision of

Profs Tony Pickering and Matt Jones, and Dr Rosalyn Moran.

Anna's research encompassed a diverse set of projects including a theoretical exploration of the role of noradrenaline in cognitive flexibility, and the experimental characterization of noradrenergic neurons deep in the brainstem. She also collaborated with an academic anaesthetist, helping to develop open-source recording methods in human peripheral nerves, and worked with a visiting Japanese urologist who was making recordings from brainstem neurons that control the bladder – contributing analysis and modelling which enabled the team to propose a new model for the control of voiding.

Online approach to cognitive therapy for depression

A clinical trial led by researchers at the University of Bristol's Centre for Academic Primary Care and Centre for Academic Mental Health will develop and evaluate a new way of delivering Cognitive Behavioural therapy (CBT) for patients with depression. The six-year INTERACT (Integrated therapist and online Cognitive Behavioural Therapy for depression in primary care) programme will test an approach that integrates the use of online CBT materials with therapist-led CBT for depression delivered online. It will blend high intensity therapy with innovative use of technology. The aim is to recruit over 400 participants over the next two years. Participants will be patients with depression recruited through GP practices in three locations: Bristol, London and York.

GPs will be able to refer patients and potential participants will be identified during consultations or from patient records. Participants will be randomised to either usual care or usual care plus the INTERACT CBT intervention. Participants receiving the intervention will be offered nine sessions of therapy. The first will be delivered face-to-face or by video call, and subsequent sessions will be delivered using instant messaging. Participants will also be able to access the study website and CBT materials at any time, as working outside the therapeutic session is an important ingredient in the effectiveness of CBT.

Funding successes: Part 3

Dr Ela Chakkarapani (Bristol Medical School: Translational Health Sciences) received £94,833 from **Action Medical Research** for *Neurodevelopment and mental health impact of SARS-CoV-2 exposure during pregnancy and neonatal period on infants*, starting Jan '21 for 18 months.

The **Royal Society** awarded Prof David Murphy (Bristol Medical School: Translational Health Sciences) funding to pursue *The role of Magnocellular Vasopressin Neurons in the Pathophysiology of Preeclampsia Research*, starting Oct '20 for 3 years.

A project entitled *Exploring community resilience assets in Wales during the COVID-19 outbreak* has been supported with a £74,792 award from **Aetiological Epidemiology** made to Dr Oliver Davis (Bristol Medical School: Population Health Sciences), starting Jan '21 for one year.

Prof Jack Mellor (Physiology, Pharmacology and Neuroscience) was awarded £489,840 from the **Biotechnology and Biological Sciences Research Council** for *Regulation of plateau potentials by dendritically targeted inhibitory synaptic transmission*.

Prof Russ Jago (Policy Studies) will lead the project *The public's role in public health - understanding and negotiating public support for policies designed to improve population health* thanks to a £72,178 award from the **National Institute for Health Research**, starting Feb '21 for 7 months.

UK Research and Innovation (UKRI) awarded Dinithi Wijedasa (Policy Studies) £207,378 for MH-CAT: A longitudinal survey of the mental health of children in State care in England through the COVID-19 pandemic, starting Nov '20 for 18 months.

Dr Andrew Moore (Bristol Medical School: Translational Health Sciences) was awarded £35,942 from **Southmead Hospital Charity** for *Exploring the long term impact of COVID19 on patients and their families*.

PReCePT shortlisted for 2020 HSJ Awards

The Prevention of Cerebral Palsy in PreTerm Labour (PReCePT) quality improvement (QI) programme led by clinicians at University Hospitals Bristol & Weston NHS Foundation Trust and at the West of England Academic Health Science Network, has been shortlisted for Workforce Initiative of the Year at the 2020 Health Service Journal Awards.

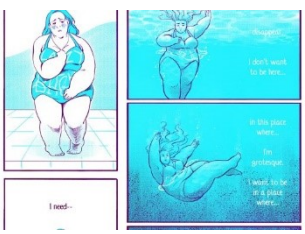
PReCePT aims to increase awareness and knowledge among maternity and neonatal staff about using magnesium sulphate ($MgSO_4$) as brain protection during preterm birth. Through PReCePT, women going into early labour before 30 weeks are offered magnesium sulphate, which helps to protect their babies' brains. As a result, fewer babies are likely to develop cerebral palsy, improving quality of life for both preterm babies and their families. A dose of magnesium sulphate costs from just £1. PReCePT hopes that every maternity unit in England will adopt National Institute for Health and Care Excellence (NICE) guidance and achieve 85% uptake of $MgSO_4$ in eligible mothers in preterm labour and to mobilise and enable high functioning perinatal teams around the country, focused on reducing avoidable newborn brain injury and cerebral palsy.

Winners will be announced at the ceremony in March 2021.

Medical Humanities Awards

The 2020 Medical Humanities awards supported by the Arts and Humanities Research Council, in association with Wellcome, recognised research which has challenged the way we approach medical science and informed health policy in the UK and internationally.

Best Doctoral or Early Career Research: Weight of expectation (Oli Williams, Kings College London). Oli's doctoral research joins the dots between inequality, health, and everyday life. It demonstrates how the 'war on obesity' promotes stigma. His aim was to understand how this stigma impacted people living in one of the most deprived areas in England. His findings highlight how ineffective weight-based stigma is at preventing weight-gain or promoting weight-loss. Instead this stigma detrimentally impacts people's health and discriminates against poorer sections of society. The comic is the result of art collective Act With Love's collaboration with illustrator Jade Sarson to visualise Oli's research. Oli held the NIHR CLAHRC West Dan Hill Fellowship in Health Equity from 2016-17. Read more



Leadership Award: Victoria Bates, University of Bristol
Dr Victoria Bates is Senior Lecturer in Modern History. Her expansive research expertise ranges from 19th Century forensic medicine to current-day sensory studies. Victoria has recently focused on developing new types of impactful interdisciplinarity, through partnerships between medical humanities researchers and professionals in creative and design industries. Her Future Leaders Fellowship, 'Sensing Spaces of Healthcare: Rethinking the NHS Hospital', brings together history, medical humanities, spatial or sensory studies and design for the first time.

Impact on preschoolers' behaviours during lockdown

Parents of children (aged 3-5 years) due to start school in September 2020 shared their children's experiences of the spring lockdown with academics from the Universities of Bristol, Birmingham and Glasgow. The researchers explored how 'lockdown' and its subsequent easing changed young children's everyday activities, eating and sleep habits to gain insight into the impact for health and wellbeing. The study found the spring 2020 COVID-19 lockdown negatively impacted on pre-school children's eating, activity and sleep routines. While some positive changes were reported, there were wide-spread reports of lack of routines, habits and boundaries which, at least in the short-term, were likely to have been detrimental for child health and development.

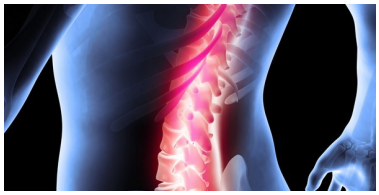
With on-going restrictions likely, families need support to establish revised routines which maintain healthy behaviours without increasing parental burden or guilt. Rates of overweight and obesity in children starting school are high, so longer-term impacts of restrictions must be monitored. The researchers suggest guidance and support for families during times of COVID-19 restrictions could be valuable to help them maintain healthy activity, eating, screen-time and sleeping routines to protect child health and ensure unhealthy habits are not adopted.

Clarke JL *et al*. (preprint). Impact of COVID-19 restrictions on pre-school children's eating, activity and sleep behaviours: a qualitative study. *medRxiv*.

Changes to chronic pain services

Bristol Health Partners' Chronic Pain Health Integration Team (HIT) conducted a survey of chronic pain service providers across Bristol and Bath during the Summer of 2020 to see how the COVID-19 pandemic has impacted them.

The majority of services moved to online and/or telephone formats to replace face to face appointments, assessments and therapies. The healthcare professionals that completed the survey found, in their experience, the majority of their patients responded positively to these adjustments. The healthcare professionals found that there was improved patient attendance and were generally impressed with how well remote services could work. Based on the service providers' experience of the changes, patients seemed to find remote services more convenient, flexible and it reduced the need for travel. This made it easier for patients with reduced mobility or whose pain is made worse by travel. They also found that their patients seemed more 'relaxed and less anxious' which they felt made it easier to have more meaningful discussions about their condition and treatment. However, the survey respondents highlighted that some of their patients found it challenging to access services once they changed to online and/or telephone formats. This was down to a variety of reasons including limited IT access, language barriers, conditions which limited accessibility (e.g. hearing difficulties or learning difficulties), and limited time and space/privacy within the home to engage with remote services.



COVID-19 and misinformation

Researchers at the University of Bristol and King's College London are leading a major new study to investigate COVID-19 perceptions and misperceptions, lockdown compliance and vaccine hesitancy. The team is gathering longitudinal survey data on trust and compliance with public health requirements over the course of the pandemic, enhancing and extending the 'Life Under Lockdown' study fielded between April and June 2020. The study will examine whether trust and perceptions are stable over time - and whether the fundamental drivers of misperceptions and conspiracism can be identified. The research project will also assess whether endorsement of COVID-19 and vaccine conspiracies undermine trust and compliance. It

will be delivered through analysis of new, high-quality survey data studying respondents over time. The project will be led by Dr Siobhan McAndrew (Sociology, Politics and International Studies at Bristol) alongside KCL colleagues Dr Daniel Allington (Senior Lecturer, Social and Cultural Artificial) & Bobby Duffy, Professor of Public Policy.

The 18-month Economic and Social Research Council - funded project (£169,339) began on 2 November 2020.

Funding successes: Part 4

The **Biotechnology and Biological Sciences Research Council** awarded Dr Ellen Brooks Pollock (Bristol Veterinary School) £17,017 for *Farmer behaviours into models,* starting Dec '20 for two years.

Prof Graeme Were (Department of Anthropology and Archaeology) received £34,619 from the **Arts & Humanities Research Council** for *The Rise of Private Museums and Heritage in East and Southeast Asia: Understanding Memory and Transformation*, starting Apr '21 for 9 months.

To Dr Cheryl McQuire (Bristol Medical School: Population Health Sciences), £26,312 from the **National Institute for Health Research** (NIHR) for *Exploring the landscape of prenatal alcohol prevention in the UK: a collaborative review*.

Also from the **NIHR**, £20,606 was awarded to Emily Widnall (Bristol Medical School: Population Health Sciences) for Exploring the longer-term impacts of Covid-19 on young people's mental health and additional support required post-lockdown.

Dr Ali Bienemann (Bristol Medical School: Translational Health Sciences) was awarded £303,254 from **Neurochase Ltd** for *Kings AAV vectors (Material) as a therapy for a form of fronto-temporal dementia.*

An award of £71,320 was made to Prof Peter Vickerman from the **NIHR** for *Understanding the contextual factors that impact on the effective provision of opiate substitution therapy (OST) and needle and syringe programmes (NSP) in the UK: a multimethod study and realist evaluation of what works, for whom and under what* circumstances, starting Dec '2– for two years.

To Prof David Abbott (Policy Studies), £6,672 from the **Medical Research Council** for *COVID-19 and people with learning disabilities*.

Royal Society award to study neurodegenerative disease

Professor Peter Cullen, a Wellcome Trust Investigator from the School of Biochemistry at the University of Bristol, has been awarded the Royal Society Noreen Murray Professorship to expand his research into neurological sciences.

The award, announced in January 2021 as part of seven research professorships from the Royal Society, will allow Prof Cullen to apply his expertise in endosomal sorting to understand why defects in protein and lipid transport lead to the development of neurodegenerative diseases, including Alzheimer's disease and Parkinson's disease.

To function normally, all human cells must efficiently transport thousands of different proteins and lipids. When such transport is perturbed, the function of cells is adversely affected leading to a range of human disease that include neurodegenerative disease. Pete will establish new experimental approaches to generate insights into these transport defects, with the ultimate aim of assisting in the design of therapeutic strategies to alleviate and manage the symptoms of these neurological diseases.

The Research Professorships help release these exceptional researchers from competing duties, such as teaching and administration, allowing them to focus on ambitious and original research of the highest quality.

Challenges to dementia services during the pandemic

A survey done of 19 dementia services across Bristol, North Somerset and South Gloucestershire has revealed the difficulties they have faced between May - July 2020. Issues around patient and carer safety were a key challenge for many care homes and community services. Personal protective equipment (PPE) supplies were either limited or unavailable to those working in these settings, and that resulted carers feeling significant levels of stress and exhaustion. The lack of support for carers of people living with dementia during lockdown meant that they felt the burden when other support services stopped or reduced. Some services were able to offer support in the form of follow-up phone calls and virtual meetings but the survey shows that more carer support is required if another wave of COVID infections occurs.

The survey also found that there were increased feelings of fear and anxiety in services users and staff from Black, Asian and minority ethnic (BAME) backgrounds as it has been shown in recent reports that there is an increased COVID risk in BAME communities.

As many services moved online during the start of the pandemic, the survey showed that some older people found it hard to use online communication tools and they were at risk of 'digital exclusion'. There was also the major issue of isolation and loneliness as many services moved online or stopped entirely. Some services were able to adapt and offer alternative support over the phone which proved to be more effective and accessible to people.

The survey was led by the Dementia Health Integration Team which is supported by Bristol Health Partners.

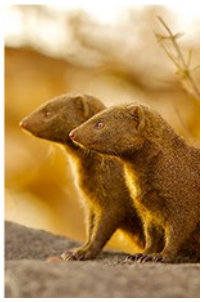
Jean Golding Institute seed corn funding 2021

The Jean Golding Institute has an annual funding call which fosters interdisciplinary research in data science (including AI) and data-intensive research. This year's awardees included:

- Christopher Williamson and Matthew Jones (Geographical Sciences): *Convolutional Neural Networks for Environmental monitoring*
- Richard Owen, Vivienne Kuh and James Ladyman (Management): *What is the best relationship between humans and AI? Investigating researcher perceptions of AI through immersive experience*
- Cheryl McQuire, Luisa Zuccolo, Christopher Woods and Mike Jones (Centre for Public Health / Bristol Medical School): *Pandemics and 'infodemics': the nature, extent and reach of public health misinformation on social media during the COVID-19 pandemic*
- Valerio Maggio, Oliver Davis and Claire Haworth (Bristol Medical School): *Secure machine learning on sensitive ground truth data held by UK birth cohorts*
- Kevon Parmesar (Bristol Medical School): *Evaluating fairness, bias and equality in Artificial Intelligence for skin disease*
- Ahmed Elhakeem and Matteo Sattler (Bristol Medical School): *Effects of adolescent physical activity on physical and mental health in adulthood: novel multivariate pattern analysis of the intensity spectrum*
- Denize Atan and Neil Davies (Bristol Medical School): *Non-invasive imaging of the eye to predict Alzheimer's disease*

How to blackmail your family

Raising kids can be tough, and sometimes you need all the help you can get. Biologists at the University of Bristol argue that some animals might be able to blackmail reluctant relatives into assisting with the rearing of young. In a Darwinian sense, family members are valuable as vehicles for shared genes. Whether helping evolves depends on a simple cost–benefit calculation known as 'Hamilton's rule': help if it will lead to a net increase in copies of your genes in the population.



The team used simple kin-selection models to extend the theory of 'blackmail' -first suggested four decades ago by Israeli biologist Amotz Zahavi in relation to parental care - to the evolution of altruism between any relatives. Logic said that if animals can tie more of their own survival or reproductive success to a partner's behaviour, they can make a threat of self-sabotage credible. Shrewd use of resources may be a promising focus to uncover blackmail among animals. For instance, a mother wasp could lay a large clutch and all but exhaust her energy reserves; unless relatives' step in to help, the babies may not leave the nest alive. Their publication looked at whether blackmail between kin is theoretically possible; they showed that, under the right conditions, it can indeed evolve. Underlying the illusion of harmonious co-operation, some animals could be making their families an offer you can't refuse.

Kennedy P and Radford N (2021). Kin blackmail as a coercive route to altruism. *The American Naturalist*.

Brain-related visual problems in children

A brain-related visual impairment, which until recently was thought to be rare, may affect one in every 30 children according to new research investigating the prevalence of Cerebral Visual Impairment [CVI].

The brain is just as important as the eyes when it comes to seeing, and many vision problems are caused by areas of the brain that are needed for sight not working properly and cannot be resolved by wearing glasses. Brain-related vision problems include difficulties with moving the eyes, seeing things in the space around (visual field) and recognising objects accurately and quickly. The study investigated how many school-aged children may have undiagnosed brain-related vision problems.

The team found that based on their results, on average, every class of 30 children, would have one or two children with at least one brain-related vision problem. They found no single problem was most common: the difficulties observed included problems with eye movements, visual field, recognition of objects and seeing things in clutter. The team also found that children who were struggling with their learning and were already being given extra help at school, were more likely to have brain-related vision problems: four in every ten children with support for special educational needs had one or more brain-related vision problems, whilst for all children it was only about three in 100.

Williams C *et al*. (2021). Cerebral visual impairment-related vision problems in primary school children: a cross-sectional survey. *Developmental Medicine & Child Neurology*.

Funding successes: Part 5 & publications

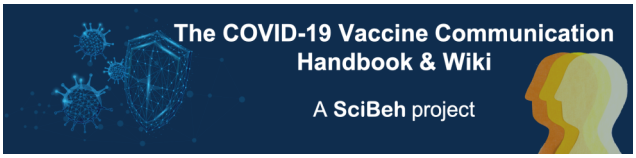
Dr Liz Coulthard (Bristol Medical School: Translational Health Sciences) was awarded £69,926 from Alzheimer's charity **BRACE** to pursue *Long term memory testing to predict the presence of Alzheimer's disease pathology*.

The **British Society for Neuroendocrinology** awarded Dr Soledad Barez López (Bristol Medical School: Translational Health Sciences) £7,000 for *Role of Opsin3 in AVP neurones activity-synthesis-secretion coupling*, starting Feb '21 for one year.

Dr Dave Lyons (Physiology, Pharmacology and Neuroscience) received £5,6572 from the **British Society for Neuroendocrinology** for Circadian regulation of TIDA neurons and the lactotrophic axis, starting Nov '20 for one year.

To Prof Charlie Foster (Policy Studies), £31,916 from the **Centre for Better Aging** for *Understanding the experiences of physically inactive people in mid-life*.

Profs Stephan Lewandowsky (Psychological Science) and Adam Finn (Cellular and Molecular Medicine), alongside other international experts, joined forces to create an online guide to help fight the spread of misinformation about COVID-19 vaccines. Published on 7 January 2021, the *The COVID-19 Vaccine Communication Handbook* sets out the facts, highlighting how the vaccines are overwhelmingly safe and effective, and contains practical tips combined with the very latest information and evidence to talk reliably about the vaccines, constructively challenge associated myths, and allay fears. Vaccination holds the key to beating the deadly pandemic and releasing countries from debilitating lockdown restrictions.



National data may be underestimating illicit drug use

Researchers compared data from the Crime Survey England and Wales (CSEW) with that of the Bristol-based longitudinal health study Children of the 90s. They found that the estimate of lifetime drug use among young people was 20% higher in Children of the 90s than the CSEW data (62.8% versus 40.6%). The difference in lifetime illicit drug use between Children of the 90s and the CSEW was greatest for cannabis and powder cocaine. The two data sets use very different methodologies to collect the data, which may be a contributing factor to these differences. The Crime Survey is a one-off face to face whereas Children of the 90s has a long-standing relationship of trust with their participants, who have completed questionnaires every year since they were teenagers. Our study suggests that this trusted relationship, built over decades, could lead to young people reporting their drug use more accurately. Findings from this study suggest that we are potentially underestimating illicit drug use among young people in the UK which has implications for how well we are able to support young people's health and mental well-being and reduce the negative impact of drug use. Reliable measures of illicit drug use are vital for developing effective policy and treatment programmes.

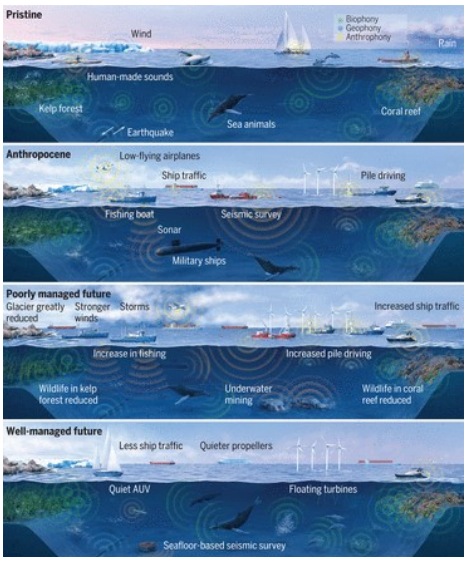
Charles H *et al*. (2021). Testing the validity of national drug surveys: comparison between a general population cohort and household surveys. *Addiction*.

Healthy oceans need healthy soundscapes

Oceans were once filled with the sounds of nature, but overfishing, climate change and human noise have fundamentally changed the natural underwater "soundtrack".

A global team of scientists, including six experts from three UK institutions, has documented how ocean soundscapes have changed, explored all impacts of noise on marine animals and ecosystems, and identified ways to restore a more natural soundscape. The team set out to understand how human-made noise affects wildlife, from invertebrates to whales, and found overwhelming evidence of negative impacts on behaviour, physiology and reproduction – causing death in extreme cases. They call for this issue to be considered a global threat to marine ecosystems, and for policy to be developed to limit its effects.

Today's marine environment,



according to the researchers, is polluted by man-made acoustic phenomena, and should therefore be restored along "sonic dimensions", as well as along more traditional chemical and climatic ones. However, current frameworks to improve ocean health ignore the need to mitigate noise as a prerequisite for a healthy ocean. Sound travels far, and quickly, underwater – and marine animals are sensitive to sound, which they use to inform many aspects of their behaviour and ecology.

Duarte CM *et al*. (2021). The soundscape of the Anthropocene ocean. *Science*.

Why being resilient won't necessarily make you happy

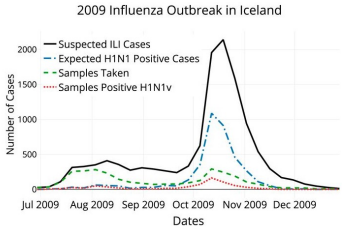
We're living in difficult and uncertain times, and are constantly reminded to stay resilient in the face of adversity. In fact, tips on how to stay strong and handle unexpected setbacks by recovering – and even growing as a person – are everywhere. This can be helpful, but we must first ask ourselves, what does it really mean to be resilient – and what good does it do? Over the past two decades there has been a huge shift in psychology from a focus on individual risk and vulnerability to one of personal strength and capacity. Around 85% of all the studies on resilience have been published in the last 20 years, reflecting our growing belief that humans can train themselves to overcome hardships. Resilience can help us avoid developing mental health problems after something negative happens to us – but it does not guarantee happiness. A recent study on bullying showed that many victims remained partially resilient by avoiding depression in early adulthood. But whether they were resilient or not, they still experienced significantly poorer wellbeing than individuals who were never bullied. These findings are quite remarkable as wellbeing was assessed ten years after the bullying experiences took place – demonstrating the potentially severe and lasting implications of adolescent bullying.

Extract from an article written by PhD student Jessica Armitage (Psychological Science) which appeared in *The Conversation*, published 3 February 2021.

Armitage J *et al*. (2021). Peer victimisation during adolescence and its impact on well-being in adulthood: a prospective cohort study. *BMC Public Health*.

Cell phone data: behavioural changes for flu-like illnesses

Being prepared for a pandemic, like COVID-19, depends on the ability to predict the course of the pandemic and the human behaviour that drives spread in the event of an outbreak. Cell phone metadata that is routinely collected by telecommunications providers can reveal changes of behaviour in people who are diagnosed with a flu-like illness, while also protecting their anonymity. The research, led by Emory University and devised by the University of Bristol, is based on data drawn from a 2009 outbreak of H1N1 influenza in Iceland.



The research team collaborated with a major cell phone service provider in Iceland, along with public health officials on the island. They analysed metadata for over 90,000 encrypted cell phone numbers and were able to link the encrypted cell phone metadata to 1,400 anonymous individuals who received a clinical diagnosis of a flu-like illness during the H1N1 outbreak, while preserving privacy at all stages. The study took ten years to complete.

The study was designed to do two things: inform mathematical models that seldom take into account behaviour change due to infection and provide evidence for infectious disease surveillance through mobile phone data. The result that behaviour change is clearly observable in the study points to the tantalising possibility that infectious disease burden is measurable through routinely collected data, the project's future research direction .

Vigfusson Y *et al*. (2021). Cell-phone traces reveal infection-associated behavioral change. *Proceedings of the National Academy of Sciences.*

Best practice framework for domestic violence research

A new framework has been developed by Women's Aid in partnership with academic colleagues - including the University of Bristol - to promote best practice in research into domestic violence and abuse (DVA).

The Research Integrity Framework aims to give policy makers and commissioners more clarity on the merits of different types of evidence and research, and the principles of integrity relating to DVA research. The framework is the culmination of two year's work led by the four Women's Aid federations of the UK, together with academic colleagues including Dr Emma Williamson (Policy Studies).

The framework was officially launched as part of the United Nations 16 days of action against violence against women in late 2020. The framework, whilst specific to the issues of research integrity in the research of domestic violence and abuse, is an example of the need for the co-production of guidance for researchers and those they work with. It is built around five pillars all research with integrity should adhere to: Safety and wellbeing; Transparency/Accountability; Equality, human rights and social justice; Engagement; and Research Ethics.

Maintaining abstinence in alcohol dependence

Specialist alcohol treatment services cannot cope with the growing problem of alcohol use disorder. Even before the recent COVID-19 lockdown, it was estimated that more than 80% of those in need of treatment were not receiving it. The predicted economic downturn is not likely to improve this figure. Given that primary care is universally accessible in the UK, we were interested in bringing together the evidence on what interventions could be delivered in primary care. Dr Vincent Cheng (Bristol Medical School) and colleagues conducted a systematic review and network meta-analysis of treatments (psychological, pharmacological, or both) for maintaining abstinence in recently detoxified, alcohol dependent adults that could be delivered in a community setting.

The review asked "what interventions to maintain abstinence from alcohol might be effective in primary care?" and looked at trials investigating the effect of treatments on alcohol dependent patients. They looked at how many people remained abstinent and how many people ended trials without dropping out. Considering these two outcomes, including the quality of evidence, the drug acamprosate came up as the only treatment with reasonable evidence in the analysis.

Before recommending the drug, the team highlighted the limitations of the review, namely that it was based on US, and not UK, data. And there are also questions about which group of people with alcohol use disorders are most likely to benefit from an intervention delivered in primary care; in the review, study participants had already stopped drinking, often after detoxification, meaning their population may have been biased towards the more severely dependent.

Cheng V *et al*. (2020). Treatment interventions to maintain abstinence from alcohol in primary care: systematic review and network meta-

Coronavirus rules: not just stopping transmission

The success or failure of coronavirus regulations is often assessed on whether they affect the rate of transmission in the community, and whether or not people comply with them. But what about the ethics behind the measures? With inevitable and complex value judgments at play, responses to COVID-19 have shown how the regulations' success also requires us to pay attention to their moral authority.

If we accept that measures such as lockdowns and regional restrictions of varying degrees of intensity have been justified as necessary to contain the spread of the virus, serious ethical questions still arise and demand attention. At the heart of these are challenges to what lends authority to the laws themselves, which requires consideration of the institutions that issue them. Public trust wavered in light of the "Dominic Cummings effect"; hypocrisy hurts public health efforts. But there are broader issues that challenge the moral authority of pandemic responses and must be taken seriously. Questions of equality under the law sit alongside structural inequalities within society. The disproportionate impact of COVID-19 on different communities – for example the ethnic inequalities we have seen in morbidity and mortality – has invigorated debates on social justice, shedding sharp light on pre-existing, systematic disadvantage. All of these ethical dimensions only heighten the importance of assuring a clear moral mandate when regulations are issued and implemented.

Excerpt from *The Conversation* written by Prof John Coggan (Bristol Law School)

Brains adapt to support new species

Scientists studying forest dwelling butterflies in Central and South America have discovered that changes in the way animals perceive and process information from their environment can support the emergence of new species.

The team, led by Dr Stephen Montgomery (Biological Sciences), compared the brain morphology of two distinct but closely related lineages of butterfly that occur in distinct tropical forest habitats. The first, including the species *Heliconius cydno*, lives in deeper forests, where the canopy light levels are low. Its sister lineage, including a species called *Heliconius melpomene*, lives around the forest edges, where light is much more abundant. Despite their ecological differences, these species are very closely related and can still produce viable offspring, suggesting they sit right at the brink of being new species.

The team found substantial differences in the brains of forest edge and deep forest species, with the latter investing more in parts of the brain that process visual information. By collecting butterflies across south and central America, as well as rearing captive individuals under controlled conditions at the Smithsonian Tropical Research Institute in Panama, the researchers showed that differences in brain morphology have accumulated in a way consistent with natural selection.

Montgomery S *et al*. (2021). Neural divergence and hybrid disruption between ecologically isolated *Heliconius* butterflies. *PNAS.*

Image © Rich Merrill

ELIZABETH BLACKWELL FUNDING

Nurturing Research. Improving Health.

Elizabeth Blackwell Institute and Cabot Institute for the Environment: Joint call on Climate Change and Health

This scheme will support projects in the area of the Climate Change and Health with the funding from the PVC-RE's strategic fund 2020/21. The aim of the call is to support new interdisciplinary collaborations between University of Bristol researchers in the area of Climate Change and Health that would lead to major research bids in this space. Initial areas of interest identified include:
food security/quality/nutrition ; ***mental health/wellbeing***; infectious diseases; health data science/ data intensive research; impact on health systems; extreme weather and hydrological exposure; environment, ecological shifts and health.

Deadline for applications: 12 noon 4 March 2021

EBI Identifying Candidates for Wellcome Trust Investigator Awards

This scheme is designed to support a small number of permanent academic staff at UoB within the first five years of their appointment, who are planning to apply for an Investigator Award from the Wellcome Trust. Applications will be accepted on a rolling basis. **Heads of School are asked to nominate** members of staff who can be eligible for this scheme by emailing ebi-health@bristol.ac.uk

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

Would you like to receive timely, tailored funding opps information?
Do you want to know what funding opportunities come up in your research area?
Get tailored funding alerts?

Research Professional provides access to an extensive database of funding opportunities, and can send out tailored alerts based on keywords that you input, ensuring that the funding alerts you receive are the ones you want to hear about. UoB staff and students have **FREE** online access to the database from any device – once you've registered then you can view upcoming funding opportunities from home or away, not just while on the University network.

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**, an easy process that will take just a few minutes to set up through the use of keywords
- **Save searches and bookmarks** - store items of interest for future reference, download and email to colleagues
- **Sign up for higher education news bulletins** – want to hear about what is going on in the broader HE environment? Latest news on the REF, setting up of UKRI etc? Sign up for the 8am playbook or the Research Fortnight news publications and stay up to date with the latest news.

Find out more about **Research Professional** on the RED website. Note that some calls may have an internal process; do always remember to check the major bids webpage to see if there is an internal process 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

ERA-Net Neuron II
NEURON network joint transnational call – European research projects on neurodevelopmental disorders

Closing date: 9 March 2021 Award amount: unspecified

This aims to facilitate multinational, collaborative research projects that will address important questions relating to the neurodevelopmental nature of neurological and mental disorders. Proposals should cover at least one of the following areas:

- fundamental research addressing the pathogenesis, aetiology, susceptibility and resilience mechanisms of neurodevelopmental disorders;
- clinical research to develop novel strategies for prevention, diagnosis, patient stratification,

therapy or rehabilitation of neurodevelopmental disorders.

National Institute on Aging (USA)
Research on current topics in Alzheimer's disease and its related dementias (R01 clinical trial optional)

Closing date: 11 March 2021 Award amount: unspecified

This supports research on current topics in Alzheimer's disease and its related dementias.

Hertie Foundation (Germany)
Eric Kandel young neuroscientists prize

Closing date: 1 May 2021 Award amount: €100,000

This recognises outstanding work in any field of neuroscience by European investigators under 40 years of age. Candidates must have demonstrated independent scientific creativity and productivity, their work must have been published in leading journals, and they must be nominated by their university or research institution or by an internationally renowned neuroscientist.

BRACE
Equipment grants

Closing date: 15 May 2021 Award amount: £25,000

These support the purchase of equipment to conduct research into the different forms of dementia. Research is supported in four main areas:

- understanding how the brain works and what has gone wrong in someone with dementia
- development of effective and accurate means of diagnosing the condition as early as possible
- finding new treatments and assessing their effectiveness in clinical trials
- investigating the potential link between certain DNA genes and the chances of developing dementia

Medical Research Council
Research grants – neurosciences and mental health

Closing date: 26 May 2021 Award amount: £1,000,000

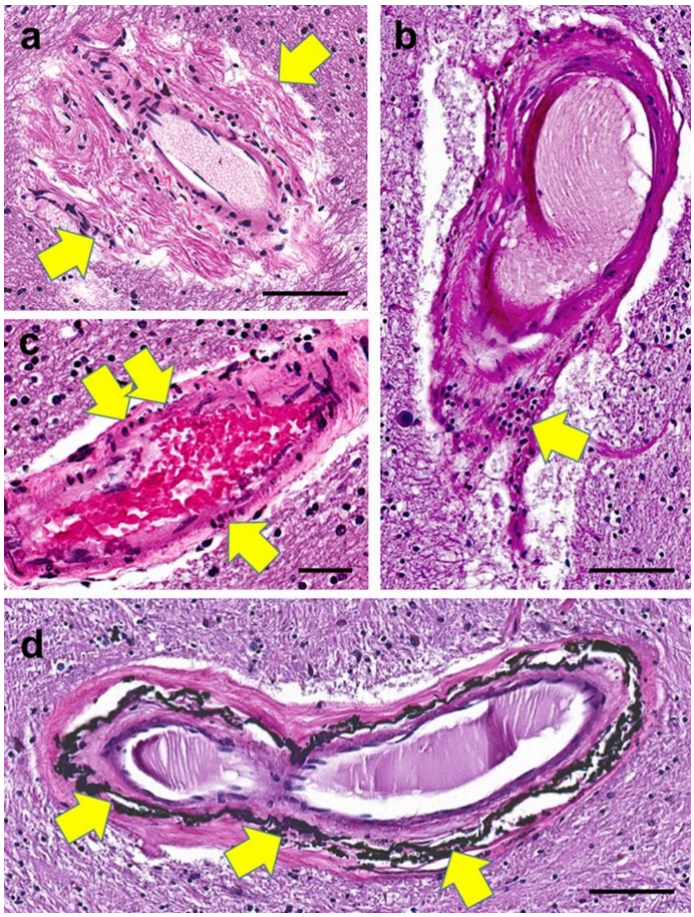
These may be used to support method development and continuation of research facilities and may involve more than one research group or institution. The board aims to support research that transforms the understanding of physiology and behaviour of the human nervous system throughout the life course in health, illness, as well as how to treat and prevent disorders of the brain. The scope includes: fundamental discovery research relating to the development, function and disorders of the human nervous system, including use of in silico systems, relevant animal models and experimental studies in humans; population-level research, using epidemiological, genetic, electrophysiological, neuroimaging, 'omic approaches, and computational modelling, to elucidate disease risks, aetiologies and progression of disorders of the nervous system; research to inform novel strategies for preventing and treating disorders of the nervous system.

SHOWCASED ARTICLE

Brain arteriolosclerosis

Blevins BL, Vinters HV, Love S *et al*. (2021). *Acta Neuropathologica*.

Brain arteriolosclerosis (B-ASC), characterized by pathologic arteriolar wall thickening, is a common finding at autopsy in aged persons and is associated with cognitive impairment. Hypertension and diabetes are widely recognized as risk factors for B-ASC. Recent research indicates other and more complex risk factors and pathogenetic mechanisms. Here, we describe aspects of the unique architecture of brain arterioles, histomorphologic features of B-ASC, relevant neuroimaging findings, epidemiology and association with aging, established genetic risk factors, and the co-occurrence of B-ASC with other neuropathologic conditions such as Alzheimer's disease and limbic-predominant age-related TDP-43 encephalopathy (LATE). There may also be complex physiologic interactions between metabolic syndrome (e.g., hypertension and inflammation) and brain arteriolar pathology. Although there is no universally applied diagnostic methodology, several classification schemes and neuroimaging techniques are used to diagnose and categorize cerebral small vessel disease pathologies that include B-ASC, microinfarcts, microbleeds, lacunar infarcts, and cerebral amyloid angiopathy (CAA). In clinical-pathologic studies that factored in comorbid diseases, B-ASC was independently associated with impairments of global cognition, episodic memory, working memory, and perceptual speed, and has been linked to autonomic dysfunction and motor symptoms including parkinsonism. We conclude by discussing critical knowledge gaps related to B-ASC and suggest that there are probably subcategories of B-ASC that differ in pathogenesis. Observed in over 80% of autopsied individuals beyond 80 years of age, B-ASC is a complex and under-studied contributor to neurologic disability.



Arteriolar walls can show different histomorphologies with aging. In panel **a**, peri-arteriolar (adventitial) fibrosis is extensive and non-concentric (arrows).

Panel **b** shows a collection of lymphocytes (arrow) in portions of the vessel wall. In panel **c**, vessel wall changes include pyknotic-appearing smooth muscle cells (arrows). Siderocalcinosis, distinct from B-ASC, has been associated with dementia and is usually seen preferentially in the globus pallidus (arrows in d).

Synonyms for this include medial vascular calcification, calcific medial arteriosclerosis, and Monckeberg's medial sclerosis. Scale bars = **a**, **b**, and **d** 100 µm; **c** 60 µm

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)