University of BRISTOL
Elizabeth Blackwell Institute for Health Research

Bristol Neuroscience Newsletter

2021: Issue 3

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Inside this issue:

Project to study chronic pain

Chronic pain is a major global public health challenge that causes significant disability. A new research consortium and national chronic pain data hub could improve outcomes for the many people living with painful and debilitating conditions, such as fibromyalgia, lower back pain, headaches and migraines, thanks to a joint £14 million grant from UKRI and Versus Arthritis.

The new **Advanced Pain Discovery Platform** will see four new research consortium and a national chronic pain data hub. One of the projects, a four-year £3.8 million study focusing on the psychosocial aspect of chronic pain, will be led by the University of Bath and involve researchers from the Universities of Bristol, Bath Spa, Cardiff, Keele, Royal Holloway, University College London, and UWE Bristol.

The project will study the psychological and social factors that influence people's experience of pain. To date, researchers understanding of their relative importance is limited and little is known how psychosocial factors influence biological signals of pain.

The work being carried out by Bristol researchers will also include the use of data from the world-renowned health study Children of the Nineties. Researchers will ask people taking part in the study to tell them about their pain, and will find out how many are living with pain as well as the impact that this has on their daily lives including, mental health, relationships, social lives, work and other important details. By looking at how daily life and pain are connected, the research team will have a clearer understanding of what it means to live with pain, and what could help in the management of their pain.

Read the full press release

EVENTS

49th Meeting of the European Brain and Behaviour Society
4 - 7 September 2021, Lausanne, Switzerland & virtual

Discovering Organoids: Intestine and Cerebral course
9 - 14 September 2021, online

How to win at Twitter
9 September 2021, 10.00 - 12.00, Zoe Trinder-Widdess (Communications Manager at NIHR ARC West), online

CAJAL workshop: Ageing cognition
20 September 2021 - 8 October 2021, Bordeaux School of Neuroscience

Medical Physics and Engineering Conference 2021: Breaking Through Barriers
21 - 23 September 2021, online

Writing for a lay audience
21 September 2021, 10.00 - 12.00, Zoe Trinder-Widdess (Communications Manager at NIHR ARC West), online

Cat Behaviour Conference: In the Company of Cats
24 September 2021, 9.00 - 17.30, online

Neural Dynamics Forum
1 October 2021, 13.00 - 14.00, Roshan Cools (Motivational and Cognitive Control Lab, Donders Institute for Brain, Cognition and Behaviour, Centre for Cognitive Neuroimaging, Radboud University), online

1st International Advanced Course & Symposium on Artificial Intelligence & Neuroscience (ACAIN 2021)
5 - 8 October 2021, The Wordsworth Hotel & SPA, Grasmere, Ambleside, Lake District, Cumbria, LA22 9SW and online

Wolfson Research Institute for Health and Wellbeing Public Lecture: Skills for all - Primary care and community-based chronic pain self-management
6 October 2021, 12.00 - 13.00, online

Bristol Health Partners AHSC virtual conference
12 October 2021, 13.00 - 15.00, online

Brain Conference: RNA Mechanisms & Brain Disease
20 - 23 October 2021, Rungstedgaard, Denmark

FULL EVENTS LISTINGS ARE AVILABLE ON THE BN WEBSITE

NEWS

The social complexities of giraffes

Dr Zoe Muller (Biological Sciences) has demonstrated that giraffes spend up to 30% of their lives in a post-reproductive state. This is comparable to other species with highly complex social structures and cooperative care, such as elephants and killer-whales. In these species, it has been shown that the presence of post-menopausal females offers survival benefits for related offspring. In mammals this is known as the 'Grandmother hypothesis', which suggests that females live long past menopause so that they can

help raise successive generations of offspring, thereby ensuring the preservation of their genes. Researchers propose that the presence of post-reproductive adult female giraffes could also function in the same way, and supports the author's assertion that giraffes are likely to engage in cooperative parenting, along matrilines, and contribute to the shared parental care of related kin.

Muller Z & Harris S (2021). A review of the social behaviour of the giraffe Giraffa camelopardalis: a misunderstood but socially complex species. *Mammal Review*.

Image © Zoe Muller

Violence, Health and Society project

A new multi-million-pound research project that will provide world-leading data on violence coincides with the launch of a new consortium which aims to reduce harms caused by violence.

Funded with a £7 million UK Prevention Research Partnership (UKPRP) grant, the five-year (2021 to 2026) data analysis 'Violence, Health and Society' project is one of three major research projects UKPRP launched this week, with the common aim of understanding and influencing social, economic and environmental factors that affect health.

Findings from the consortium's research programme, led by Prof Sylvia Walby OBE, Director of the Violence and Society Centre at City, University of London, with the collaboration of researchers from the University of Bristol's Domestic Violence and Health Research Group will be used to improve the data that underpins theory, policy and professional practice. It will also improve research on the effectiveness of interventions to reduce violence and associated harms to health and health inequalities.

Consortium members will work with providers of data in public services (e.g. police, justice and health professionals), third sector specialised services to survivors of domestic and sexual violence, and national surveys (Crime Survey for England & Wales, Adult Psychiatric Morbidity Survey, and the UK Household Longitudinal Study). They will have a special interest in domestic and sexual violence as it is a significant cause of inequalities in mental health.

Read more

Funding successes: Part 1

Ben Ward-Cherrier (Engineering Mathematics) was awarded a **Royal Academy of Engineering** Research Fellowship for his project *Shared autonomy neuroprosthetics: Bridging artificial and biological touch*, worth £500,000.

A jointly funded University of Bristol **Elizabeth Blackwell Institute (EBI) / Development and Alumni Relations** scheme for COVID-19 aimed at early career researchers awarded Dr Jenny Barke (School of Education) a portion of the £50k budget for her project *Loneliness and Social Connections of Older People: Lessons from lockdown*.

The **EBI**'s Health Data Science Strand awarded just under £10,000 to several Bristol projects following their funding call earlier this year, including:

- Dr Phil Clatworthy (Bristol Medical School): *Developing a scaleable stroke imaging and clinical database to facilitate artificial intelligence research, innovation and adoption*
- Dr Michael O'Breasail (Bristol Medical School): *Embedded digital technologies to measure and modulate Life Space Mobility in older adults*
- Dr Yvette Pyne: *Natural Language Processing of Primary Care Consultation Notes*

The **Research Council of Norway** awarded Prof Caroline Relton (Bristol Medical School) £6,895 for TeraEpi: Teratogenicity of antiseizure medication: the roles of epigenetics and folic acid supplements starting 1 Aug '21 for 39 months.

Andrew Boyd (Bristol Medical School) received £86,460 from the **Medical Research Council** for his four-year project entitled *A longitudinal genetic approach to understanding the development and intergenerational transmission of common mental health conditions*.

UKRI Medical Research Council

Predicting hospital admissions for dementia sufferers

The characteristics of GP surgeries could help predict both planned and unplanned hospital admissions for people with dementia, according to modelling work published by National Institute for Health (NIHR) Applied Research Centre (ARC) West.

As the population ages, the number of people living with dementia is increasing. People with dementia are more likely to go to hospital and to do worse once they're there. This study aimed to see if factors relating to care in GP practices influenced whether people with dementia go to hospital. Using information up to March 2018, the researchers modelled hospital admissions from GP practices of people with dementia.

They looked at which factors could explain both types of admission for people with dementia, and also how much this varied by GP practice and NHS area. They found that GP practice factors predicted both types of admission almost equally, but that GP practices varied greatly in terms of admissions. The mental health budget impacted admissions differently: for avoidable admissions, a larger mental health budget showed a decrease in those with dementia going to hospital, and the opposite was true for unavoidable ones. This means that improving the mental health budget could help prevent avoidable visits to hospital for people with dementia.

Eyles E *et al*. (2021). Associations of GP practice characteristics with the rate of ambulatory care sensitive conditions in people living with dementia in England: an ecological analysis of routine data. *BMC Health Services Research*.

Pregnancy and COVID-19 vaccination

Pregnant women said taking their routine vaccines like whooping cough and flu was even more important during the COVID-19 pandemic but they have doubts about the safety of taking new COVID-19 vaccines during their pregnancy. The findings from the study (Pregnant in a Pandemic), which looked at the impact of the pandemic on attitudes towards vaccines and how pregnant women felt about taking a new COVID-19 vaccine, were presented to the British Psychological Society's Division of Health Psychology conference held on 30 June 2021 by BPS chartered member, Dr Emma Anderson (Bristol Medical School).

Interviews with 31 pregnant women in Bristol showed that they saw routine maternal vaccines as important but they were concerned about attending surgeries/health centres due to the risk of COVID-19. They were wary of new COVID-19 vaccines and thought the risks of vaccination were greater than catching the virus, especially because of a lack of evidence of vaccine safety for pregnant women.

Anderson E *et al*. (2021). Maternal vaccines during the Covid-19 pandemic: A qualitative interview study with UK pregnant women. *Midwifery*.

How whiskers amplify texture

How we sense texture has long been a mystery. It is known that nerves attached to the fingertip skin are responsible for sensing different surfaces, but how they do it is not well understood. Rodents perform texture sensing through their whiskers. Like human fingertips, whiskers perform multiple tasks, sensing proximity and shape of objects, as well as surface textures.

Mathematicians from the University of Bristol's Department of Engineering Mathematics, worked with neuroscientists from the University of Tübingen in Germany, to understand how the motion of a whisker across a surface translates texture information into neural signals that can be perceived by the brain.

By carrying out high precision laboratory tests on a real rat whisker, combined with computation models, the researchers found that whiskers act like antennae, tuned to sense the tiny stick-slip motions caused by friction between the surface and the tip of the whisker.

The research reveals the tapering of the whisker has the effect of amplifying tiny high-frequency motions into appreciable pulse-like changes in forces and movement at the whisker follicle. In turn, the nerve cells in the follicle sense these changes and transmit them to the brain. The findings could have far-reaching benefits including how textures could be designed to provide optimal cues for the visually impaired, for human safety operation in low light environments, or for immersive artistic installations.

Oladazimi M *et al*. (2021). Conveyance of texture signals along a rat whisker. *Scientific Reports*.

BioMed2 Doctoral Training Partnership

The GW4 Alliance, comprising Bath, Bristol, Cardiff and Exeter Universities, has been awarded a share of £79 million funding from the Medical Research Council (MRC) to support 64 studentships over the next three years.

The GW4 BioMed2 MRC Doctoral Training Partnership is one of 17 successful Doctoral Training Partnerships (DTPs) to receive the awards across 34 UK research organisations through the MRC's DTP competition which focuses on scientific excellence, positive research culture and wider training opportunities.

Led by Cardiff University, the Partnership will train postgraduate research students in three main areas: neuroscience and mental health; infection, immunity, antimicrobial resistance and repair; and population health sciences. The programme will focus on three cross cutting strands: data science, interdisciplinary skills and translation and innovation and includes opportunities for students to broaden horizons through industry placements, research visits, public engagement internships and a bespoke online core skills training element.

Read the full press release

The link between physical and mental health problems

A research team led by the Medical Research Council (MRC) Centre for Neuropsychiatric Genetics and Genomics (CNGG) at Cardiff University and involving researchers from the University of Bristol has received significant funding for an international collaborative project to study the link between physical and mental health problems. The £3,632,000 grant from the MRC and the National Institute for Health Research will enable research teams across the UK and Denmark to work together over the next four years as part of the *LIfespaN multimorbidity research Collaborative* (LINC).

The collaborative will study why people with mental health disorders are more likely to develop physical health conditions and vice versa, that is, it will study physical and mental health multimorbidity. In particular, LINC will focus on multimorbidity between internalizing disorders (depression and anxiety) and cardiometabolic disorders (such as cardiovascular disease and type 2 diabetes) and explore the early life factors that can be changed to prevent these diseases.

LINC will bring together five large research cohorts, in which close to 760,000 people are participating. These cohorts are diverse in nature. They include participants of different ages (from children to the elderly), ethnic backgrounds and socio-economic positions. Their health is followed over time, with information available from medical notes, study interviews and questionnaires, and laboratory-based assessments. The availability of DNA across all five cohorts will allow the study of the role of genes in multimorbidity development. The research will shine a light on some of the factors that cause children to have special educational needs and disability (SEND) and help identify approaches to support these children in school settings to improve their health in the long term. Read more

GCSE results linked to school enjoyment at age 6

The research team used data from world renowned health study Children of the 90s, to answer three research questions:

- Is school enjoyment patterned by biological sex at birth, socioeconomic background of cognition?
- How does school enjoyment relate to GCSE achievement?
- Does school enjoyment relate to social or sex differences in GCSE achievement?

The team found that pupil's school enjoyment measured at six years old is patterned by their sex and cognitive ability but not their family's socioeconomic background. For example, girls were twice as likely to report enjoying school than boys. School enjoyment strongly related to GCSE achievement at age 16 even after consideration of their socioeconomic background and cognitive ability. Pupils who reported enjoying school at age 6 went on to score on average 14.4 more GCSE points, equivalent to almost a three-grade increase across all GCSE's and were 29% more likely to obtain five plus GCSE's grade A*- Cs, including Maths and English, than those who did not enjoy school.

Morris T *et al*. (2021). Associations between school enjoyment at age 6 and later educational achievement: evidence from a UK cohort study . *Science of Learning*.

Long COVID in children

The clinical definition of long COVID in children is at present very limited and poorly understood by doctors. It has also been found that symptoms typically associated with long COVID were having a significant physical and psychological impact on children's day-to-day lives. Long COVID is commonly used to describe signs and symptoms that continue or develop after acute COVID-19. The report, led by the University of Bristol, is the first step in a COVID-19 testing in schools study to obtain opinions and experiences of long COVID from different groups of people.

Enhancing the utilisation of COVID-19 testing in schools is an ongoing study that will bring together the Bristol-based COVID-19 Mapping and Mitigation in Schools (CoMMinS) study, Electronic Patient Records, and the COVID-19 Schools Infection Survey (SIS) to address additional questions not initially included in the individual studies. One of these questions is the extent and features of long COVID in children.

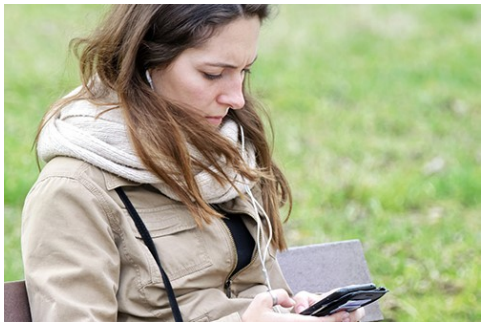
Doctors said that long COVID in children is not well defined, and it may be difficult to distinguish between long COVID and other conditions. Doctors still need to understand whether long COVID is a new condition, or a group of conditions like post-viral fatigue, which is already recognised and can arise after common infections, such as the flu and glandular fever. It is not known how many children have or will develop long COVID. To date, studies that have attempted to measure this suggest it is rare, however, a lack of clinical understanding of long COVID including no agreed clinical definition has made this difficult.

Report: Looker KJ *et al*. Long COVID in children: A report summarising the views of young people, parents and doctors.

Supporting victims of domestic violence during the pandemic

In usual times, women experiencing domestic abuse reach out to those around them for support, but the COVID-19 pandemic and the associated social restrictions have made this more difficult to do. New research has found friends, family, neighbours and colleagues (informal supporters) used creative ways to keep in touch with and to continue offering support domestic abuse survivors.

The study by researchers from the Centre for Academic Primary Care and Centre for Gender and Violence Research at the University of Bristol explored how the pandemic had impacted people's assessment of abusive situations and their ability to provide informal support.



The research team found creative ways informal supporters used to remain in contact included establishing support bubbles with survivors, even at the cost of forming a bubble with another family member or breaking lockdown rules; adapting WhatsApp messages monitored by the perpetrator to keep communication channels open; communicating through a third-party contact; keeping an eye on the survivor's activity on social media accounts; and bridging the gap when professional services support was affected by the pandemic.

Gregory A and Williamson E (2021). I think it just made everything very much more intense': A qualitative secondary analysis exploring the role of friends and family providing support to survivors of domestic abuse during the COVID-19 pandemic. *Journal of Family Practice.*

Funding successes: Part 2

Prof Paul Moran (Bristol Medical School: Population Health Sciences) was awarded £258,456 from the **National Institute for Health Research** for *Emotional Skills for perinatal women with Borderline Personality Disorder: a randomised feasibility trial*. The project will start in January 2022 and will continue for 18 months.

The **Engineering and Physical Sciences Research Council** awarded Prof Carol Joinson (Bristol Medical School: Population Health Sciences) £4,449 for *URApp: A Smartphone App To Support Behaviour Modification For The Treatment Of Urinary Incontinence In Young People*. The project started in June 2021 and is expected to be completed by March 2022.

Prof Patrick Kehoe (Bristol Medical School: Translational Health Sciences) received £39,485 from **Wellcome** for Stroke imaging and clinical database for Artificial Intelligence. The project, which started in June 2021, is expected to be completed within one year.

The **Guarantors of Brain** awarded Dr Paul Anastasiades (Bristol Medical School: Translational Health Sciences) a BRAIN Non-Clinical Post Doctorial Fellowship (to be completed by Shinjini Basu) worth £411,301. The fellowship commenced in July 2021 and is for three years.

BRAIN | THE GUARANTORS

Digital tools for remote clinical research

A team from Cambridge Cognition and the University of Bristol have been developing digital assessments for remote clinical research. Researchers are keen to carry out psychological research remotely, so they can study cognition and behaviour when and where they naturally occur. Remote methods such as web-based platforms and personal devices improve accessibility and allow researchers to broaden the diversity of their samples. However, it is still unclear how best to validate digital tools for remote clinical research.

The process for developing these tools is complex - data need to be collected at a frequency that is meaningful but

not burdensome. Traditional techniques, which rely on fixed conditions to validate assessments, may be inappropriate for validating tools designed to capture data under flexible conditions. An alternative is to compare outcomes from a high-frequency field assessment to outcomes from another high-frequency field assessment, both administered in the same time and place. In the absence of controlled laboratory conditions, researchers must instead rely on collecting information on the respondent context, and accounting for this in further analyses.

Ferrar J *et al*. (2021). Developing Digital Tools for Remote Clinical Research: How to Evaluate the Validity and Practicality of Active Assessments in Field Settings. *Journal of Medical Internet Research*.

Mental health for care-experienced young people

A new research programme will investigate factors linked to the mental health and wellbeing of care-experienced young people during two transition periods: moving from primary to secondary school, and moving from adolescence into adulthood. The four-year programme is led by an interdisciplinary team from the Universities of Bath and Oxford, in collaboration with colleagues at Cardiff University and the University of Bristol.

The programme aims to identify key processes linked to the mental health and wellbeing of care-experienced young people, with a specific focus on psychological process and the role of support systems and services, to identify targets for future intervention and prevention programmes. The work will be supported by Adoption UK and Coram Voice, as well as three panels of care-experienced young people.

By involving young people with direct experience of foster care, residential care and/or adoption, the researchers want to develop a deeper understanding about individuals' pre-care experiences (ie. challenges they faced before coming into care), their experiences in care and at school, as well as how individuals see themselves and others, and manage their emotions.

One in 30 UK children are taken into care at some point before their 18th birthday. Many of these young people have experienced abuse, neglect, and other difficulties. Once in care, they are often separated from siblings and live with multiple carers, and this ongoing instability can compound their early experiences and have long-term consequences. This topic addresses a pressing issue for practitioners and policymakers.

Read more

Friend-finder App

An app trialled by University of Bristol alumni Julian Issa and Miguel Bravo and fellow flatmate Gerardo Rodriguez in Sydney in July 2021 allows users to link up with like-minded strangers. Fethr aims to combat loneliness and develop meaningful connections and friendships when living in an unfamiliar town or city.

Fethr users fill out a questionnaire about their personality, values, interests and friendship preferences. A sophisticated algorithm developed by Miguel uses artificial intelligence to match strangers together, with no swiping required.

The app also draws on research from psychologist Dr Kelly Campbell, one of Fethr's advisors.

In groups of four to six users can then choose to do anything from drinks and dinner to yoga and gallery-hopping. After their mate date, attendees anonymously feedback on who they clicked with. If both parties liked one another, the app puts them in contact to continue their friendship.

Fethr now has a team of 11. The app was launched in London on 17 August 2021 with plans to roll out to other UK cities, including Bristol, by the end of the year.

Fethr is going to disrupt the way people socialise. Traditional avenues for making friends continue to be squeezed by the pandemic, working from home and increased digitisation. "Now more than ever before, people want it to be easier to make meaningful connections, whether short-term or long-term.
Co-founder Julian Issa

L-R: Fethr co-founders Julian Issa, Miguel Bravo and Gerardo Rodriguez

A lasting legacy of grief

New research has highlighted the difficulties and distress people experienced when trying to get support after the death of a loved one during the pandemic, with more than half of people experiencing high or severe vulnerability in their grief and those seeking support facing long waiting lists or being told they are ineligible.

The survey, carried out by Cardiff University's Marie Curie Palliative Care Research Centre and the University of Bristol, found that of bereaved people demonstrating high or severe levels of vulnerability, three quarters were not accessing formal bereavement services or mental health support. The majority of people seeking help with their grief said they had struggled to access bereavement services. Of the 40% who tried to get support, just over half experienced difficulties such as long waiting lists, ineligibility or a lack of appropriate support. The study found that the pandemic had a major impact on the quality of support for the bereaved and disrupted collective mourning practices which people said compounded feelings of isolation.

Harrop E *et al*. (preprint). Support needs and barriers to accessing support: Baseline results of a mixed-methods national survey of people bereaved during the COVID-19 pandemic. *medRxiv*.

Converting the COVID-19 vaccine doubters

Informing people about how well the new COVID-19 vaccines work could boost uptake among doubters substantially. The study shows the importance of raising awareness of vaccine efficacy, especially if it compares very favourably to another well-established vaccine. The research focused on adults who were unsure about being vaccinated against COVID-19. Those who were given information about the vaccine's efficacy scored 20% higher on a measure of willingness to be vaccinated, compared to those who received no information. This improved receptivity increased by as much as double

among survey respondents who were also given information about how COVID-19 vaccines perform in comparison to the annual flu vaccine.

The extra benefit of providing comparative information is a novel finding which underscores the vital role of communication in improving vaccine uptake.
Prof Colin Davis
Chair in Cognitive Psychology

The latest figures show vaccine uptake is slowing among younger groups, especially the 18-24-year-olds.

Davis C *et al*. (2021). Efficacy information influences intention to take COVID-19 vaccine. *British Journal of Health Psychology*.

Air pollution and increased mental health service use

Exposure to traffic-related air pollution is associated with increased mental health service-use among people recently diagnosed with psychotic and mood disorders. Increased use of mental health services reflects mental illness severity, suggesting that initiatives to lessen air pollution could improve outcomes for those with these disorders and reduce costs of the healthcare needed to support them.

The study found people exposed to higher residential levels of air pollutants used mental healthcare services more frequently in the months and years following their initial presentation to secondary mental healthcare services compared to those exposed to lower air pollution. The researchers found

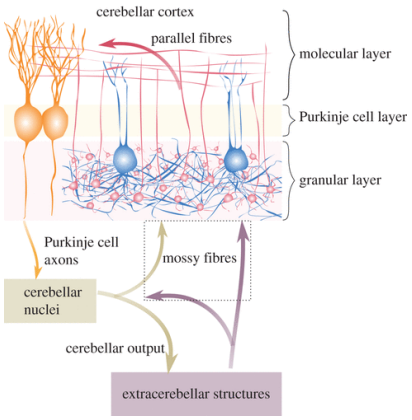
that for every 3 micrograms per cubic meter increase in very small particulate matter ($PM_{2.5}$) and 15 micrograms per cubic meter increase in nitrogen dioxide (NO_2) over a one-year period, there was an increased risk of having an inpatient stay of 11% and 18%. Results also showed increases in $PM_{2.5}$ and NO_2 were associated with a 7% and 32% increased risk of requiring community-based mental healthcare for the same period. These findings were also replicated over a seven-year period.

Newbury JB *et al*. (2021). Association between air pollution exposure and mental health service use among individuals with first presentations of psychotic and mood disorders: retrospective cohort study. *The British Journal of Psychiatry*.

Accounting for uncertainty

Sensorimotor coordination is thought to rely on cerebellar-based internal models for state estimation, but the underlying neural mechanisms and specific contribution of the cerebellar components is unknown. A central aspect of any inferential process is the representation of uncertainty or conversely precision characterising the ensuing estimates.

In this article, the authors discuss the possible contribution of inhibition to the encoding of precision of neural representations in the granular layer of the cerebellar cortex. Within this layer, Golgi cells influence excitatory granule cells, and their action is critical in shaping information transmission downstream to Purkinje cells. In this review, the team equate the ensuing excitation–inhibition balance in the granular layer with the outcome of a precision-weighted inferential process, and highlight the physiological characteristics of Golgi cell inhibition that are consistent with such computations.



Palacios ER, Houghton C and Chadderton P (2021). Accounting for uncertainty: inhibition for neural inference in the cerebellum. *Proceedings of the Royal Society B*.

Image: Information flow through the cerebellum

Funding successes: Part 3 and external engagements

Prof Stafford Lightman (School of Physiology, Pharmacology and Neuroscience) was awarded £925,000 from the **Wellcome Trust**'s Technology Development Grant scheme to finalise development and enable commercialisation of an automated portable bio-sampling system.

Prof Claire Haworth (School of Psychological Science) was confirmed as a Turing Fellow at the **Alan Turing Institute** from the 1 October 2021. Turing Fellows are scholars with proven research excellence in data science, artificial intelligence or a related field, whose research could be enhanced through active involvement with the Turing network of universities and partners. This fellowship scheme allows university academics to develop collaborations with Turing partners. The Fellowships span many fields including key Turing interests in urban analytics, defence and health.

Prof Matt Jones (School of Physiology, Pharmacology and Neuroscience) and Ahbi Banerjee (Medical Sciences, Newcastle University) co-hosted the *Decoding Prefrontal Cortical Physiology: Circuits of Cognition* symposium which formed part of the **Physiology 2021 conference**, held virtually 12-16 July 2021. The symposium took place on 14 July 2021 and united early-career and experienced researchers harnessing rodent and non-human primate models to understand the roles of the PFC in behaviour by studying the connectivity, plasticity, computations, and behavioural contributions of PFC circuits. One of four speakers was Dr Paul Anastasiades (Bristol Medical School) who spoke on *Prefrontal thalamocortical connectivity: Cracking the circuitry of cognition*.

ELIZABETH BLACKWELL FUNDING

Nurturing Research. Improving Health.

EBI Clinical Primer scheme

This scheme is aimed at clinically qualified medical, veterinary and dental trainees who are at an early stage of their career.

Closing date: 13 September 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

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**.

Michael J Fox Foundation
Parkinson's Pathway Molecular Data Analysis

Closing date: 28 September 2021 Award amount: unspecified

This funding program will support high-impact projects that utilize existing data resources to increase molecular understanding of Parkinson's disease (PD), correlate biological changes to clinical/other outcomes, and more deeply interrogate disrupted pathways in PD.

Medical Research Council
Research grants – neurosciences and mental health

Closing date: 29 Sept 21 Award amount: £1 million

These are suitable for focused research projects that may be short- or long-term in nature. In addition, they 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 the following areas:

- 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

Medical Research Council
Programme grants – neurosciences and mental health

Closing date: 29 Sept 21 Award amount: unspecified

Provide large, long-term and renewable programme funding for big ideas.

Alzheimer's Drug Discovery Foundation, US
Prevention pipeline

Closing date: 1 October 2021 Award amount: USD 3 million

This supports comparative effectiveness research, prevention clinical trials and epidemiological studies that probe whether the use or choice of drugs alters the risk for dementia or cognitive decline.

National Institute of Neurological Disorders and Stroke, US
Cellular and molecular biology of complex brain disorders (R01 clinical trial not allowed)

Closing date: 5 October 2021 Award amount: unspecified

This supports research on the biology of high confidence risk factors associated with complex brain disorders, with a focus on the intracellular, transcellular and circuit substrates of neural function.

Engineering and Physical Sciences Research Council
Building responsible neurotechnology research capability

Closing date: 8 October 2021 Award amount: £6 million

This supports the development of a research network for neurotechnology. The network should help to form new interdisciplinary research communities, promote responsible research and address ethical issues in neurotechnology, set a collaborative research agenda and fund small feasibility studies.

Wellcome
Career Development Awards

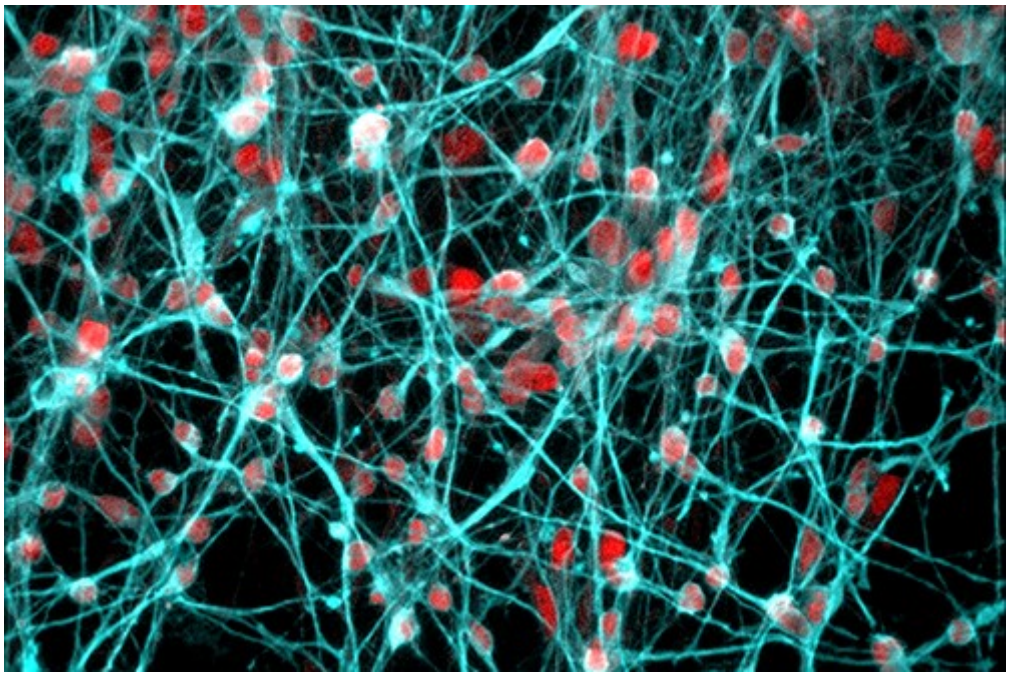
Closing date: 16 November 2021 Award amount: unspecified

This scheme provides funding (salary if required, and the resources needed for the research programme) usually for 8 years (but may be less for some disciplines) for mid-career researchers from any discipline who have the potential to be international research leaders. They will develop their research capabilities, drive innovative programmes of work and deliver significant shifts in understanding that could improve human life, health and wellbeing.

SHOWCASED ARTICLE

Distinct regulation of hippocampal neuroplasticity and ciliary genes by corticosteroid receptors

Mifsud KR, Kennedy CLM, Salatino S *et al*. (2021). *Nature Communications*.



The study has discovered a link between corticosteroid receptors – the mineralocorticoid receptor (MR) and the glucocorticoid receptor (GR) - and ciliary and neuroplasticity genes in the hippocampus, a region of the brain involved in stress coping and learning and memory.

The aim of the research was to find out what genes MR and GR interact with across the entire hippocampus genome during normal circadian variation and after exposure to acute stress. The research team also wanted to discover whether any interaction would result in changes in the expression and functional properties of these genes.

The study combined advanced next-generation sequencing, bioinformatics and pathway analysis technologies to enable a greater understanding into glucocorticoid hormone action, via MRs and GRs, on gene activity in the hippocampus. Researchers found a previously unknown link between the MR and cilia function (small hair-like structures that protrude from cell bodies). Effective cilia function is vitally important for brain development and ongoing brain plasticity, but how their structure and function is regulated in neurons is largely unknown.

The discovery of the novel role of MR in cilia structure and function in relation to neuronal development has increased knowledge of the role of these cell structures in the brain and could help resolve cilia-related (developmental) disorders in the future. The team also found that MR and GR interact with many genes which are involved in neuroplasticity processes, such as neuron-to-neuron communication and learning and memory processes.

Read the full University of Bristol press release

CONTACTS

Bristol Neuroscience

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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)