University of BRISTOL
Elizabeth Blackwell Institute for Health Research

Bristol Neuroscience Newsletter

April - May 2018

bristol neuroscience

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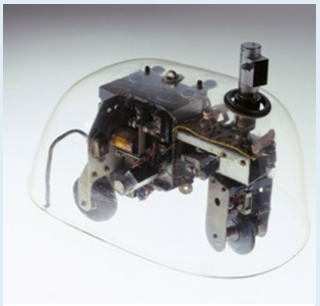
Inside this issue:



Grey Walter Prize

In July 2017 Bristol Neuroscience launched its inaugural prize for best published paper by a current or former PhD student who completed their degree here at UoB– the Grey Walter Prize.

We are delighted to announce that he **call for submissions to the 2018 round is now OPEN.**

William Grey Walter (1910-1977) conducted basic and applied neurophysiological research over a career spanning 35 years, the majority of which was spent at the Burden Neurological Institute in Bristol. He is best known for constructing some of the first electronic autonomous robots. These three-wheeled vehicles had a light sensor, touch sensor, propulsion motor, steering motor, and a two-vacuum tube analog computer. He wanted to prove that rich connections between a small number of brain cells could give rise to very complex behaviours. He called his creation *Machina Speculatrix* after their speculative tendency to explore their environment. The first robots, named Elmer and Elsie (ELectro MEchanical Robots, Light Sensitive), were constructed between 1948 and 1949, and were capable of phototaxis, by which they could find their way to a recharging station when they ran low on battery power. His robots were unique because they didn't have a fixed behaviour. The robots had reflexes which, when combined with their environment, caused them to never exactly repeat the same actions twice.

Bristol Neuroscience named the prize in memory of Grey Walter's contribution to the field of neuroscience.

Deadline for applications: 28 September 2018

- Full details can be viewed on the BN website.
- Download the application form

EVENTS

Bristol Brain Research: Showcase and Networking Day 2018
debrief

The event, held on 11 April 2018, comprised 14 oral presentations chosen on a competitive basis from submitted abstracts and ranged from a PhD student in the Bristol Veterinary School to a Consultant Neurologist from Southmead, covering a breadth of topics from tissue storage to recognition memory formation to sleep abnormalities to glioblastoma. The oral programme also included two pitches to a mock panel to gain feedback on a potential funding application.

We also hosted two poster sessions with 71 offerings on display. **Congratulations to our poster presentation winners** who will each receive £50: Jonathan Crook (PPN) , Kathryn Bennett (PPN) and Hussah Alobaid (BMS).

UoB staff and students who couldn't attend on the day are welcome to view a number of presentations which have been uploaded: Access presentations on OneDrive (UoB only)
NB: PRESENTATIONS REMAIN THE PROPERTY OF THE PRESENTER AND CANNOT BE REPRODUCED WITHOUT PRIOR CONSENT. PLEASE DO NOT SHARE THE PRESENTATIONS WITH OTHERS WITHOUT PRIOR CONSENT.

If you'd like to view more photos and get more info on the day, take a look at the twitter feed, @BristolNeurosci. Our curator, Jamini Thakrar, did an amazing job of summarising talks and there are some great videos there as well.

The main aim of the day was to share research interests and discuss latest achievements to develop closer links between researchers. It brought together a mix of staff (Principle Investigators, Lecturers, Research Assistants, Technicians), students (Masters and PhD) and clinicians to encourage greater communication across Schools, Faculties and research areas. Presentations (oral and poster) covered a variety of themes such as a finished project that we need to hear about, a work in progress that could benefit from added-value, a data conundrum that needs a fresh pair of eyes, a grant / fellowship idea that needs constructive feedback, a piece of technology or methodology that could benefit others etc.

Feedback has been overwhelmingly positive, with 50% of respondents rating the event as excellent, 45.8% as very good and 4.2% as good. The range of speakers, topics and the five invited speakers were particularly singled out, and appreciation for the short talk times allowing for a quick overview without becoming too heavy was expressed. We have noted where we can do better - a shorter lunch time, more time for Q&As, and the length of the day overall were listed as dislikes - and we'll take all feedback received into account for the next jamboree.

Bristol Brain Research
Showcase and Networking Day
11 April 2018

bristol neuroscience

THANK-YOU TO EVERYONE WHO TOOK PART and a special thank-you to our sponsors who made the day possible: World Precision Instruments, Tocris Bioscience, Cambridge Instruments, Stratech and Qiagen.

Inaugural Bristol BioDesign Institute Conference
10 May 2018, 9.00 - 17.00, School of Chemistry

ERC Workshop
10 May 2018, 14.00 - 16.30, Hepple Lecture Theatre, Geographical Sciences

DNA: Not Merely the Secret of Life
10 May 2018, 18.00 - 19.00, Prof Nadrian C. Seeman (Professor of Chemistry at New York University), School of Chemistry

International Clinical Trials Day
14—20 May 2018, University Hospital Bristol

The importance of receptor binding and rebinding kinetics on drug action
14 May 2018, 13.00 - 14.00, Steven Charlton (University of Nottingham), C42 Biomedical Sciences Building

Protective factors in the recovery from psychological trauma – insights from social neuroscience
15 May 2018, 12.30 - 13.30, Dr Anke Karl (University of Exeter), OS6, Oakfield House

Different Algorithms for Accosiative and Relational Learning
16 May 2018, 13.00 - 14.00, Prof John Hummel (University of Illinois), 2D1 Priory Road Complex, 12a Priory RD

Royal Society open presentation
17 May 2018, 11.00 - 13.00, G1S Hepple Lecture Theatre, Geographical Sciences

Mediation analysis with high-dimensional mediators
17 May 2018, 12.30 - 13.30, Rhian Daniel (Reader in Medical Statistics, Division of Population Health, Cardiff University), Room OS6, Second Floor, Oakfield House

Grandmother Cells and Spiking Neural Networks
18 May 2018, 13.00 - 14.00, Simon Thorpe, Director of the CerCo UMR 5549 (CNRS -UT3), Senior Common Room, Level 2 (2D17), Priory Road Complex

Cell type specific translation profiling in fragile X syndrome
21 May 2018, 13.00 - 14.00, Emily Osterweil (The Centre for Discovery Brain Sciences, University of Edinburgh), C42 Biomedical Sciences Building

Sensing, New Materials, Micro- and Nanofabrication
23 May 2018, 12.30 - 13.30, Salzitsa Anastasova (Hamlyn Centre, Imperial College), Room OS6, Second Floor, Oakfield House

Changing Minds about Changing Behaviour
23 May 2018, 14.30 - 16.00, Prof Dame Theresa Marteau (Director of Behaviour and Health Research Unit, University of Cambridge), Lecture Theatre 1, Chemistry Building

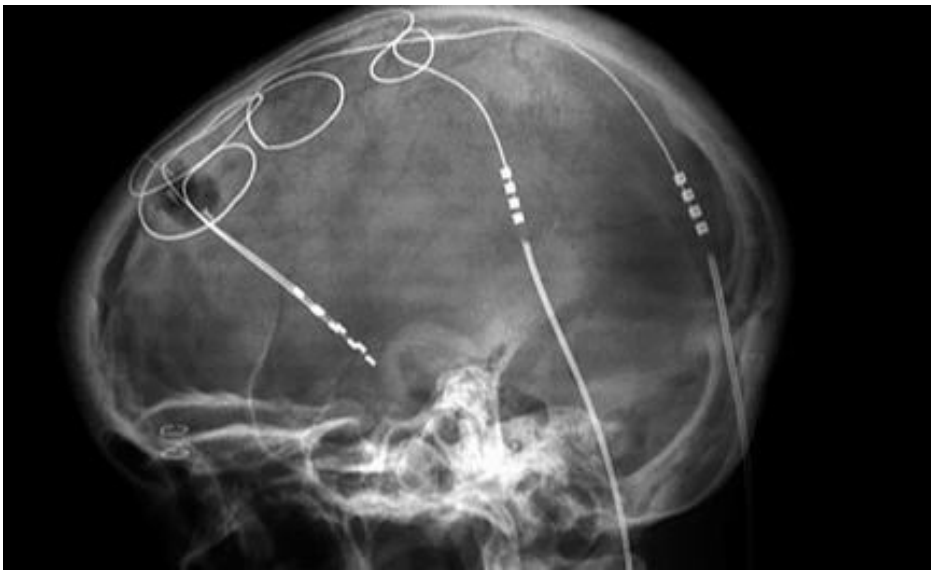
From top: Nadrian Seeman, Anke Karl, John Hummel, Rhian Daniel, Emily Osterweil, Salzitsa Anastasova

FULL EVENTS LISTINGS ARE AVILABLE ON THE BN WEBSITE

NEWS

Documentary on Deep Brain Stimulation

Channel 4's documentary *Can You Rebuild My Brain?* shown on 30 Jan '18 gave an insight into how Deep Brain Stimulation (DBS) can improve people's lives. DBS is a type of surgery that helps control movement symptoms for patients with Parkinson's, tremor and dystonia. It is only carried out a small number of specialist centres in the UK, including North Bristol NHS Trust. A DBS Nurse working at the Trust who contributes to the Movement Disorders Health Integration Team (MOVE HIT) took part in the documentary. From the perspective of a patient, the show looks at the many novel ways science is being used to help people with neurological conditions. MOVE HIT wants to increase the number of people able to access and benefit from this advanced treatments.



From top: Jonathan Hanley, Jeremy Henley, Michael Ashby

Funding successes: Part 1

Jonathan Witton (PPN) from **Alzheimer's Research UK** for *Training in* in vivo *epifluorescence microscopy to enable characterisation of the dynamics of impaired hippocampal network function in mouse models of dementia* . £3,000from 1 Mar '18 for one year.

Dr Jonathan Hanley (Biochemistry) from the **BBSRC** for *Regulation of microRNA-mediated local translation in neurons by Argonaute phosphorylation*, £490,662 from 1 Jun '18 for 3 years.

Prof Jeremy Henley (Biochemistry) from the *BBSRC* for *Understanding the roles of SUMO proteases in neuronal function and viability*, £839,255 from 1 Jun '18 for 5 years.

Dr Michael Ashby (PPN) from the **EBI** Proximity to Discovery Industry Engagement People Exchange award for *Synaptic pathway degeneration in the early stages of dementia*, £18,576, 1 Nov '17 for 5 months.

Treatment for Friedreich's ataxia

A small pilot study aims to find out if the bone marrow stem cell mobilising drug, granulocyte-colony stimulating factor (GCSF), could improve blood markers and potentially treat the condition. GCSF, which is commonly used in diseases related to the blood, as well as in healthy people prior to bone marrow donation, activates stem cells within the bone marrow and causes them to circulate around the body. People with FA will be invited to take part in the study and if they are suitable, GCSF will be injected just under the skin for five consecutive days. The injections will be at identical doses to those given to 'healthy' people prior to bone marrow donation. Blood samples will then be taken over the subsequent two weeks to find out whether the drug has led to changes in blood markers, which would indicate a positive response to the drug. The blood samples will be analysed to determine how GCSF changes blood markers that are relevant to FA. The research team will also analyse the biochemical composition to see if there are changes and how long the change lasts for.

A larger and longer clinical trial should be carried out if the study shows there is an improvement in blood markers and a positive response to the drug. The pilot study will also help researchers to define the dosage and selection of patients for a future larger clinical trial. The study was Elizabeth Blackwell Institute for Health Research and the ataxia charities FARA and Ataxia UK.

Funding successes: Part 2, and Awards

Prof James Uney (BMS/THS) from the **EBI Proximity to Discovery Industry Engagement People Exchange** scheme for *Technology exchange with Cerevance Cambridge to identify new drug targets for neurodegenerative diseases*. This is a short term two-way people exchange between industry and academia which align to MRC strategic priorities in population health, cardiovascular research, infection and immunity, neuroscience and cancer.

Dr Sarah Sullivan (BMS/PHS) from the **NIHR - RCF** for *A pilot study using movement and perspective-taking as a diagnostic aid for psychosis*, £4,131 from 1 Nov '17 for 10 months.

Dr Sarah Sullivan (BMS/PHS) from the **Jean Golding Institute** for Social movement differences and risk of psychosis, £3,249 from 1 Dec '17 for 7 months.

Dr Kevin Kemp (BMS/THS) from the **Pathological Society of GB & Ireland** for *Investigating Bone Marrow Stem Cell Mobilisation For Cardiac Protection And Repair In Friedreich's Ataxia*, £9,974, 1 Feb '18 for 1 year.

Dr Oliver Davis (BMS/PHS) and Dr Claire Haworth (ExpPsy) from the **ESRC** and **MRC** for *A framework for linking and sharing social media data for high-resolution longitudinal measurement of mental health across CLOSER cohorts*, £103,371.

Congratulations again to Prof Athimalaipet Ramanan (BMS/THS) who won the **Vice Chancellor's Impact Award 2017** in the Health and Wellbeing category. He and the study team have facilitated world-wide access to the sight-saving adalimumab medication for children suffering from uveitis. Watch the video explaining all about the research and its global impact.

Funding boost for healthcare research centres

Three interdisciplinary research consortia, including the University of Bristol's SPHERE project, have been allocated more than £11 million to continue healthcare sensing systems research that is revolutionising how we identify and respond to outbreaks of infectious diseases, diagnose and manage lung diseases, and recognise and solve emerging health and wellbeing issues in the home environment.

The additional investment will enable vital collaborations to continue addressing many of the most pressing health and wellbeing issues, boosting the UK's status as an innovation nation.

EPSRC's IRCs are centres of internationally acknowledged scientific and technological excellence, bringing together researchers, clinicians, industry and other professionals to make a real impact in areas of key future industrial relevance to the UK.

SPHERE (Sensor Platform for HEalthcare in a Residential Environment), led by the University of Bristol, is developing sensors for use in the home in order to spot health and wellbeing problems ranging from depression and obesity to cardiovascular and musculoskeletal diseases .

Professor Tavaré to lead new Faculty of Life Sciences

Prof Jeremy Tavaré will take up the role of Dean when UoB's new Faculty of Life Sciences is officially launched on 1 August this year.

Jeremy, a Biochemist and the current Director of Research (Health & Life Sciences) is ideally placed to lead the new faculty which will bring together the schools of Biochemistry, Biological Sciences, Cellular & Molecular Medicine, Experimental Psychology, and Physiology, Pharmacology & Neuroscience. His career began at UoB where he obtained a BSc and PhD in Biochemistry, before holding a succession of key roles including Director of Bristol's Wolfson BioImaging Facility, Chair of the Bristol Proteomics Facility, Faculty Research Director for the Faculty of Medical and Veterinary Sciences, Deputy Director of the EPSRC-funded SPHERE Interdisciplinary Research Centre and Co-Director of the £5.2M Wellcome Trust-funded GW4 Clinical Academic PhD Training Programme. He was also the inaugural Director of the Elizabeth Blackwell Institute for Health Research from 2012 -2017.

The creation of the new Faculty of Life Sciences is part of the University's Vision and Strategy to become a life sciences destination for students, academics and research funding.

Health Integration Teams

Dr Phil Clatworthy, director of the Stroke Health Integration Team (HIT) and stroke survivor Chris Priestman were guests on **Dr Phil Hammond's BBC Bristol** show on 30 December 2017. Chris talked about his personal experience of having a stroke three years ago, and his journey to recovery, which is still very much ongoing. Phil talked about how stroke treatment has changed in recent years, what the risk factors are as well as how to identify when one is happening to you or someone you're with. Listen to the full interview.

A new video from the Dementia Health Integration Team (HIT) showcases opportunities to get involved in dementia research, both locally and nationally. There are lots of studies for people who want to contribute to get involved in. You don't need to have dementia, and there are studies recruiting people from all walks of life.

Sleep and dementia, emergency care, and notions of citizenship were among the highlights of the Dementia Health Integration Team (HIT) Research Showcase 2018 held at BAWA on 19 April 2018. Other topics included hi-tech imaging to better understand the changes in the brains of people with dementia, the science of boosting alertness and other brain functions, and the experiences of people with dementia in different communities. The event was an opportunity to bring together a wide range of professionals to discuss their work in dementia and make new connections with others. More than 60 people attended.

Nerve regeneration in spinal cord injury

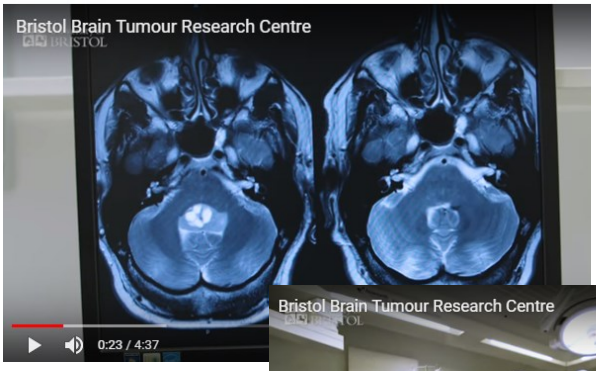
A new way of triggering nerve regeneration to help repair spinal cord injury and in the longer-term potentially paralysis has successfully been demonstrated. A team led by Drs Liang-Fong Wong and Nicolas Granger has transplanted genetically modified cells that secrete a treatment molecule shown to be effective at removing the scar following spinal cord damage. The scar in the damaged spinal cord typically limits recovery by blocking nerve regrowth. Previous work by the team proved olfactory ensheathing cells could be genetically modified to secrete the enzyme chondroitinase ABC (ChABC). This enzyme is key in breaking down the glial scar at the injury point of the spinal cord and helping to promote nerve regrowth. In this study, researchers treated rodents with spinal cord injury with genetically modified olfactory ensheathing cells to express ChABC. Following transplantation of the cells the team were able to demonstrate the successful secretion of ChABC enzyme and removal of some of the glial scar. This led to increased nerve sprouting in the spinal cord, suggestive of successful nerve regeneration. The study provides an important proof-of-concept that this cell transplant strategy is a viable method to deliver ChABC in a rodent model of spinal cord injury and could be potentially used to allow the cells to be more efficient at repairing the spinal cord.

The research was covered by Daily Express, Medical Xpress, Futurism, The Sun, Yorkshire Post, The Herald, World News Australia.

Carwardine D *et al*. (2017). Transplantation of canine olfactory ensheathing cells producing chondroitinase ABC promotes chondroitin sulphate proteoglycan digestion and axonal sprouting following spinal cord injury. *PLOS ONE* .

Bristol Brain Tumour Research Centre

The Bristol Brain Tumour Research Centre, under Dr Kathreena Kurian, put a bid together for recognition as a Centre of Excellence. A short video (4mins37secs) explains what the Centre does, who is collaborates with (including Molecular Biology and Engineering Mathematics) and which facilities the University benefits from.



Teenagers with incontinence

Continence problems are among the most common paediatric health problems. It's commonly believed that continence problems resolve with age in all children. However, severe incontinence in childhood can persist into adolescence. New research has found teenagers with incontinence are at greater risk of underachieving academically, and need more support to remove barriers so they can reach their academic potential.

The prevalence of urinary incontinence in teens is around 3-4% and around 1% suffer from bowel incontinence. The study team explored the impact of the secondary school environment on young people with incontinence and is the only detailed qualitative study carried out in this area in the UK. Five themes relating to school experiences were produced from the data: boundaries of disclosure - friends and teachers; social consequences of avoidance; strict and oblivious gatekeepers; intimate actions in public spaces and interrupted learning. The study found it was rare for young people to speak about continence problems at school to both friends and teachers, due to fears of being stigmatised, bullied or teased.

The study found there is a need to increase teachers' awareness of the frequency of continence problems in young people, and to provide guidance on how best to provide support at school. A worrying finding from the study is the impact of continence problems on learning and academic performance and the disadvantages faced by young people with continence problems. Participants said that their lessons were disrupted due to frequent toilet visits and those with severe daytime continence problems reported leaving the classroom three or four times during a lesson to use the toilet.

Whale K, Cramer H and Joinson C (2018). Left behind and left out: The impact of the school environment on young people with continence problems. *British Journal of Health Psychology*. 23 (2): 253-277.

The pro-active reading brain

When people read or listen to a conversation, their pro-active brains sometimes predict which word comes next. But a scientific team led by the Max Planck Institute for Psycholinguistics in the Netherlands, supported by scientists from UoB, now demonstrates that the predictive function of the human language system may operate differently than the field has come to believe in the last decade.

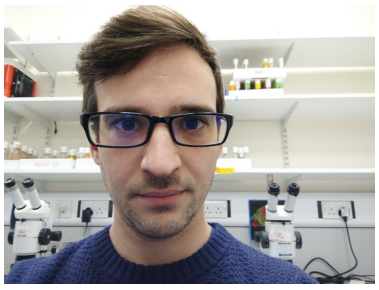
Their study is the first large-scale, multi-laboratory replication effort for the field of cognitive neuroscience. When listening to a speaker, we often feel that we know what the speaker will say next. How is this possible? It is assumed that our brain routinely uses clues within a sentence to estimate the probability of upcoming words.

Activating information about a word before it appears helps to rapidly integrate its meaning, once it appears, with the meaning of the sentence. Inspired by recent demonstrations for the need for large subject-samples and more robust analyses in psychology and neuroscience research, they followed the original methods and applied improved and current analysis methods. The team embarked on a massive brain imaging study; 334 participants - 10 times the original amount - read sentences that were presented one word at a time, while electrical brain activity was recorded at the scalp. Each sentence contained an expected or unexpected combination of an article and a noun (for example: “The day was breezy so the boy went outside to fly a kite/an airplane”). Unexpected nouns generated an increased brain response compared to expected nouns. Just like the original study. Nevertheless this reaction (the enhanced N400 response), is not the core argument that the participants’ brains actually anticipated the nouns. It was generated after the nouns were read, and could mean that nouns like ‘kite’ are merely easier to process than nouns like ‘airplane’. The key evidence for prediction of a yet unseen noun was originally obtained on the preceding *articles*.

Read the full story

Observing the battle of the stem cells

Stem cells must compete with one another to remain among a smaller number of pluripotent, self-renewing cells rather than transform into a specialised cell. But how does this process play out, and with what effects? Dr Marc Amoyel, a developmental biologist, received an EBI Early Career Fellowship award to examine stem cell competition in *Drosophila*. The preliminary data from his work at Bristol yielded a surprising result. It showed that when stem cell proliferation in fruit flies is impaired, the niche itself loses its quiescence and begins to proliferate and give rise to new stem cells. This shows that stem cells signal back to their niche to maintain the right balance of proliferating cells.
Dr Amoyel is submitting a paper on these findings, in collaboration with Dr Erika Bach’s laboratory at the New York School of Medicine, which is doing complementary research. He has also secured a five-year Career Development Award from the Medical Research Council.



Elizabeth Blackwell Institute staffing updates

Dr **Richard Seabrook** MBA joined EBI in January 2018 as **Director of Business Development**. Richard will provide leadership to support the growth of partnerships and alliances with industry in the space across the health arena (ranging from pharmaceuticals, to devices, analytics and novel genomic and informatics methodologies) and assist with maximising opportunities to benefit from external funding streams to support these activities such as the government's new Industry Strategy Challenge Fund. He will also play a central role in identifying new opportunities to translate fundamental research across UoB's entire health research portfolio into commercial impact.

Lauren Curtis started as the EBI **Diversity & Inclusion Champion** (Mon-Wed) in late 2017. Lauren's focus is on championing and challenging equality, diversity and inclusion within health and biomedical research communities at UoB.

Karen Wallace is now job-sharing the EBI **Executive Assistant** (Wed-Fri) role with **Jocelyn Egginton** (Mon-Wed). Contact ebih-admin@brsitol.ac.uk if you need to contact the team.

Jo Barrell began her role as EBI **Senior Communications Officer** (Tues and Thurs) role in February 2018. Jo has a lot of experience in communications in a range of contexts; her most recent role was Communications Manager at 'Together for Short Lives', the UK charity for children's palliative care.

Didier Laval is the EBI **Public Engagement Associate**, covering for Georgia Bladon who is currently on secondment to the Wellcome Trust. **Ellie Shipman** acts as the EBI **Public Engagement Officer/Fun Palaces Ambassador**. All EBI staff are based in Royal Fort House.

Twitter can reveal our shared mood

Researchers have analysed mood indicators in text from 800 million anonymous messages posted on Twitter. These tweets were found to reflect strong patterns of positive and negative moods over the 24-hour day.

Circadian rhythms allow people's bodies to predict their needs over the dark and light periods of the day. Most of this activity is regulated the suprachiasmatic nucleus, which is particularly sensitive to light changes at dawn and dusk, and sends signals through to every tissue in the body. The team looked at the use of words relating to positive and negative emotions in Twitter over the course of four years.

Public expressions of affect and fatigue were linked to the time they appeared on the social platform to reveal changes. Whilst previous studies have shown a circadian variation for positive and negative emotions, the current study was able to differentiate specific aspects of anger, sadness, and fatigue. The team found distinct patterns of positive emotions and sadness between the weekends and the weekdays, and evidence of variation of these patterns across the seasons. Since many mental health disorders are affected by circadian rhythms, it is hoped this study will encourage others to use social media to help in our understanding of the brain and mental health disorders.

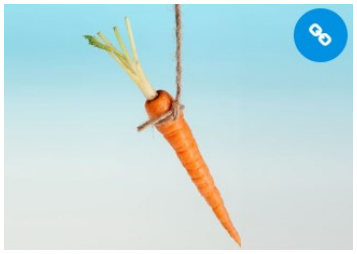
New NIHR Dementia Researcher website

The National Institute for Health Research has launched a new website and online network aimed at early career dementia researchers, called Dementia Researcher.

Despite dementia being one the biggest global health challenges we face – five times fewer researchers choose to work in dementia than cancer. A key objective of the new website is around addressing this issue by encouraging and supporting emerging talent to get involved in dementia research.

The website - developed by the office of the National Director for Dementia Research with support from Alzheimer's Research UK, Alzheimer's Society and the Medical Research Council - provides a variety of support and resources for early career researchers – covering everything from jobs and funding opportunities, how to produce grant proposals, opportunities to 'ask a dementia expert', and a range of podcasts.

The site also features an online community – helping early career researchers to stay in touch or collaborate with their peers, share ideas and best practice, or network through the website's forum and messenger service.



DISSEMINATION

We need more carrots: give academic researchers the support and incentives to share data

18/04/2018 EDITOR

Cognitive interventions for depression

A new study has examined whether cognitive bias modification (CBM) for facial interpretation, a digital health intervention that changes our perception for emotional expressions from negative to positive, might be useful in treating depression. We all occasionally focus on the negative rather than the positive, and sometimes ruminate over a negative event, but a consistent tendency to perceive even ambiguous or neutral words, faces, and interactions as negative (a negative bias), may play a causal role in the onset and rate of relapse in depression. A growing field of psychological interventions known as cognitive bias modification (CBM) propose that by modifying these negative biases it may be possible to intervene prior to the onset of depression.

Given that access to proven psychological and pharmacological treatments for mood disorders is limited, and that in countries like the UK public treatment for depression is affected by long waiting lists, high costs and low overall response rates, there is a need for effective treatments which are inexpensive, and both quick and easy to deliver. The study tested a new CBM paradigm which has previously shown robust bias modification effects, but for which the impact on mood and mood-relevant measures was unclear. They ran a proof of principle trial in a non-patient population. While the intervention successfully shifted the interpretation of facial expressions (from negative to positive), there was only inconclusive evidence of improved mood and the CBM procedure failed to impact most measures.

Peters SE *et al*. (2017). Cognitive bias modification for facial interpretation: a randomized controlled trial of transfer to self-report and cognitive measures in a healthy sample. *Royal Society Open Science*.

Parliamentary self-harm and suicide prevention group

The Improving Care in Self-Harm Health Integration Team (STITCH HIT) presented their work to the All Party Parliamentary Group (APPG) on Suicide and Self-Harm Prevention on 13 March 2018. STITCH Director Salena Williams (pictured) was invited to present to the group, which is chaired by Madeleine Moon MP, alongside Jim Bolton, a psychiatric liaison nurse from South London.

She talked about the work of STITCH, including the Bristol Self-Harm Surveillance Register, and the trends in self-harm that its data is revealing. She presented the team's successful work to reduce waiting times and hospital stays among people who have attended A&E following self-harming, which an NIHR CLAHRC West economic evaluation estimated has saved the NHS £170k a year. The APPG members were particularly interested in STITCH's recommendation to change the law so that anti-depressants are subscribed in safe instalments to people who are at risk of suicide, rather than in larger batches that could be used to overdose. Moon has now written to Health Minister Jackie Boyle to highlight the issue.

Postnatal depression and child development

Postnatal depression which persists beyond 6 months after birth and is severe, increases the risk of children exhibiting behavioural problems, achieving lower GCSE mathematics grades at 16 years and having depression at 18 years of age. Postnatal depression which is persistent (whether moderate or severe) increases mothers' risk of continuing to experience depressive symptoms beyond the postnatal year, with high levels found up until 11 years after childbirth.

Identifying women at most risk is important both for women's mental health and children's development. A team investigated whether depression has a similar impact when it is, or is not, persistent at either moderate or severe levels. Researchers from the Universities of Oxford, Bristol, Reading and UCLA tracked changes in mothers' depressive symptoms following the postnatal year and differences in children's development when postnatal depression was, or was not, persistent.

The study identifies a group of mothers and children who should be prioritised for treatment both to address maternal depression that is more likely to continue, and to mitigate the effects on children's development. The authors have recently shown that treatment for women with persistent postnatal depression can be delivered effectively with high rates of sustained remission using home-based delivery of a psychological therapy.

Netsi E *et al*. (2018). Association of Persistent and Severe Postnatal Depression With Child Outcomes. *JAMA Psychiatry*. 75(3): 247-253.

Relationship factors for people with dementia

Although all families affected by dementia need support, some seem to be better at coping than others and we don't really understand why that is. CLARHC West explored what impact the quality of the relationship with their family carers had on outcomes for people with dementia. These outcomes might include 'challenging behaviour', or how long the person with dementia could stay in their own home. They found 20 studies but all of these were poorly conducted and so the results are not reliable. Many studies did not provide full details of what they found or the relationship quality factors they assessed. Also, most relationship quality aspects have only been researched once or twice and each found different results from the previous studies. This makes it very difficult to reach agreement on what kind of effect that factor really has on dementia patients. Although they did not find any relationship quality factor that affected chances of being put in a care home, they did see that a better quality relationship was related to delay in the worsening of patient's dementia. These findings don't provide a basis on which GPs or other health professionals could reliably identify people at high risk of early care home placement, hospitalisation or low quality of life on the basis of relationship factors.

Edwards HB *et al*. (2018). Quality of family relationships and outcomes of dementia: a systematic review. BMJ Open. 8(1).

Data Visualisation Challenge

Two teams have won £8,000 funding each to take their data visualisation projects to the next level and work with leading creative companies in Bristol. Researchers at UoB will work with the new Bristol Virtual Reality Lab to develop their 360, virtual reality prototypes and We The Curious who will provide their expertise in storytelling and public engagement. Aimed at bringing complex data to a format that can be accessed in an immersive environment, the winning projects of the first Jean Golding Institute for Data Intensive Research Data Visualisation Challenge in VR/360 are:

(1) Drs Jade Thai, Jon Brooks and Karen Luyt from the Clinical Research & Imaging Centre for their project *The secrets of better brain health* to address challenges in neuroscience and mental health. They will work with BDH Immersive to create the first in a series of virtual reality visualisations using brain imaging data. The project will integrate the latest scientific discoveries from brain imaging with virtual reality to tell the story of how the brain develops and matures and how complex neural networks are formed.

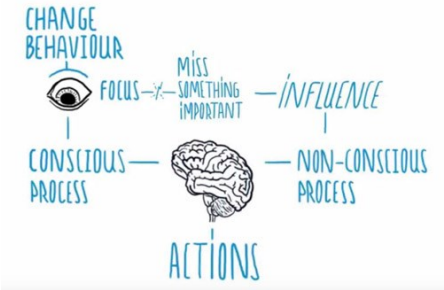
(2) Drs Oliver Davis, Tom Gaunt and Gibran Hemani from the MRC Integrative Epidemiology Unit for their project *Playable data for human health* to improve understanding of the causes of disease and the complexities of developing health policies. This is a collaboration with Free Ice Cream to create a simulation that will be used to visualise the input of hundred of players simultaneously. Participants will be able to make behavioural and social decisions for human health such as investing in drugs for reducing cholesterol, encouraging people to stay in education, or promoting a low cholesterol diet. The outcomes of these decisions will be mapped by a visualisation engine providing an immediate response to their decision making.

Both prototypes will be unveiled at the We The Curious Data Dome from 25 June '18.

Nudging towards healthy habits

Behavioural and cognitive scientists at the Universities of Cambridge and Bristol launched a new four year programme of research funded by a Wellcome Collaborative Award in Science to investigate ways to 'nudge' people towards healthier behaviour. This includes improving diets, reducing alcohol consumption, and stopping smoking – in order to improve health across the population. The research will also investigate how best to implement this evidence. There is growing evidence that behaviours such as smoking, drinking alcohol and eating unhealthily are powerfully driven by messages and other cues in the environments that surround us.

The programme will systematically investigate the design of supermarkets, bars and restaurants to help make healthier behaviours more likely. The research is made possible by an unprecedented set of collaborations that include the National Union of Students (NUS) and the Institute of Grocery Distribution (IGD) to test interventions in field studies in supermarkets, bars and restaurants. Laboratory studies to understand promising mechanisms will also be carried out alongside these real-world studies to ensure the changes have the best chance of success.



Drinkers' attempts to cut down

January is a popular month for people trying to reduce their alcohol intake but how successful are they in doing so? A new study by the University of Bristol that assessed data on the drinking patterns of nearly 3,000 drinkers who reported that they were planning to reduce their alcohol consumption found that very few managed it when followed up six months later. The NIHR School for Public Health Research-funded study, led by Dr Frank de Vocht, aimed to find out whether peoples' motivations to reduce intake did result in reduced alcohol consumption. Key reasons for wanting to reduce alcohol intake included: to lose weight, improve fitness levels, save money, and avoid health problems. A total of 2,928 drinkers at risk were interviewed and around 20 per cent reported that they wanted to cut down on their drinking. When followed up six months later, those who had not made plans to cut down on their drinking had reduced their alcohol consumption by the same amount as those who had.

De Vocht F *et al*. (2018). Motivation to reduce alcohol consumption and subsequent attempts at reduction and changes in consumption in increasing and higher-risk drinkers in England: a prospective population survey. *Addiction.* 113(5): 819-827.

HRT and improved memory in adrenal patients

Better timing for cortisol replacement therapies, to more closely replicate the secretion patterns of people with normal levels of the hormone, has shown a significant improvement in patients' cognitive function. The findings underline the case for novel therapeutic approaches, as patients on cortisol replacement therapy often have side effects that make it difficult for them to lead normal lives. Cortisol regulates a wide range of physiological functions from metabolism and immune responses through to blood pressure and blood sugar levels. It plays an important role in memory formation and other cognitive processes, and helps the body respond to stress. Low levels of cortisol are associated with debilitating fatigue, muscle weakness, dangerously low blood pressure and depression.

Cortisol-deficient patients who are diagnosed with adrenal insufficiency and placed on treatment recover from their worse symptoms with daily hydrocortisone replacement therapy. However, the condition is life-long and even with current optimal regimes of cortisol replacement this oral therapy is associated with impaired quality of life affecting cognitive function, mood, sleep and immune response. The team found significant variation in the response patterns of certain glucocorticoid-sensitive brain regions to emotional images of facial expression, when they compared outcomes across the three treatment methods that study participants undertook.

Kalafatakis K *et al*. (2018). Ultradian rhythmicity of plasma cortisol is necessary for normal emotional and cognitive responses in man. *PNAS*. 115(17): E4091-E4100.

Loneliness and isolation study

A team of researchers based at three Universities, including UoB, are working with the National Institute for Health Research (NIHR) to help people who may be lonely in our communities.

In total, £976,000 is being invested by the NIHR over three years to carry out the work. Recent figures show that around 30 per cent of people in the UK feel lonely. Southampton city council surveyed 1,500 people and found that in the city the figure was nearer 40 per cent. Researcher Dr Rebecca Kandiyali, in the Health Economics at Bristol (HEB) team, will be leading on the health economics aspects of the study. She said: "My role will be to look at the long-term costs and consequences that loneliness and social isolation can bring. We know that social networks are important and we'll be looking at what the impact is in terms of health and wellbeing.

This study will be a really valuable addition to the national evidence base on the risks posed by loneliness and the prospects for cost-effective intervention."

The research will be taking place at the University of Southampton which hosts NIHR research teams, Liverpool John Moores University and UoB. In all, more than a dozen researchers will work on the Include project involving psychologists, social scientists, health economists, and training and support staff. One in ten older people identify as being lonely according to research by Age UK and the Campaign to End Loneliness. The idea is to use a new way of connecting people with what's around them in their community, using a web based tool called GENIE.

Buprenorphine as substitute to methadone

The less commonly prescribed opioid substitute buprenorphine may be safer than methadone for problem opioid users, especially if used during the first month of treatment, with implications for guidance on GP prescribing. The study, funded by the NIHR, analysed GP practice data for over 11,000 patients on opioid substitute treatment linked to deaths data. It assessed the relative risk of death for the two treatments, compared to not being in treatment, over three time periods. Roughly a third of patients receiving opioid substitute treatment were prescribed buprenorphine and two-thirds methadone. As previously shown, risk of death is higher at the beginning and immediately after the end of treatment, the basis for the argument that retaining patients in treatment for longer periods will save lives. The new study shows that patients on buprenorphine had substantially lower rates of overdose death during treatment compared to those on methadone: four times lower in the first 4 weeks (0.3% compared with 1.24%) and almost twice as low during the rest of time on treatment (0.18%t compared with 0.33%). These differences remained even after adjusting for differences in patient and practice characteristics for those prescribed methadone or buprenorphine. Patients on buprenorphine also had lower rates of all-cause mortality during and immediately after treatment.

Hickman M *et al*. (2018). The impact of buprenorphine and methadone on mortality: a primary care cohort study in the UK. *Addiction*.

MRC grant to use data science for mental health research

Prof John Macleod (pictured), Joint Head of Centre for Academic Primary Care at Bristol Medical School, has received £1.5 million as part of a large grant from the MRC.

Bristol is among nine leading universities across the UK to receive part of a £10-million grant from the MRC to help researchers use data science for mental health research. This was secured by the MRC as part of the government's National Productivity Investment Fund (NPIF). This is a Bristol-led, collaborative project with colleagues from the Bradford Institute for Health Research (Born in Bradford).

A key feature of these grants is to help prepare for a future Mental Health Research Platform through academic and industry collaboration. John said: "We are very excited about this substantial funding award from the MRC to enable enhancement and consolidation of two of the UK's leading life course studies, the Avon Longitudinal Study of Parents and Children (ALSPAC) and Born in Bradford, as a platform to support research that can lead to better understanding of the causes and hence the means to effectively prevent mental illness. Improving mental health is one of the major challenges currently facing society. Building on the long-standing research partnership between the University of Bristol and the Bradford Institute of Health Research we will, over the next two years, establish a world-leading resource allowing researchers to meet this challenge.

ELIZABETH BLACKWELL FUNDING

EBI Translational Acceleration and Knowledge Transfer (TRACK)
This scheme provides funding to support health related translational projects.

Closing date: **25 June 2018**

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 reviewed all year.

Returning Carers Scheme
To support academic staff across all faculties in re-establishing their independent research careers on return from extended leave (16 weeks or more) for reasons connected to caring (e.g. maternity leave, adoption leave, additional paternity leave, leave to care for a dependant.).

The deadline for applications is 30 April and 31 October each year.

EBI Bridging Funds for Research Fellows
This scheme is designed to support a small number of academic staff at the University of Bristol who currently hold an externally funded research fellowship. Applications accepted on a **rolling** basis.

University of BRISTOL
Elizabeth Blackwell Institute for Health Research

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.

Alternatively, a full calendar of funding opportunities for neuroscience research has already been set up and is available online. Subscribing to the calendar will place the entries in your own calendar, which will automatically update according to pre-specified search criteria. 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 here to see if there is an internal process.

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**.

National Institute on Aging, USA
Dynamic interactions between systemic or non-neuronal systems and the brain in ageing and in Alzheimer's disease

Closing date: 05-Jun-18 Maximum award: not specified

This supports research projects on the role of ageing-related changes in systemic, peripheral, and non-neuronal factors individually or in combination to the pathogenesis, presentation, and progression of Alzheimer's disease.

National Institute on Aging, USA
Sleep disorders and circadian clock disruption in Alzheimer's disease and other dementias of ageing

Closing date: 06-Jun-18 Maximum award: USD $2,500,000

This supports molecular, cellular, genetic, epigenetic and systems biology approaches to advance basic and clinical research on the causes and consequences of sleep deficiency and circadian clock dysfunction in Alzheimer's disease, and the roles of sleep and the circadian clock as modifiers of the progression of neurodegeneration.

International Brain Research Organization
IBRO research fellowship

Closing date: 15-Jun-18 Maximum award: €37,000

These support scientists from diverse geographic and scientific areas in broadening the scope of their neuroscience training by working in first-class laboratories. Scientists aged 35 or younger may apply. Applications from candidates who have completed their PhD within the past three years and do not have postdoctoral experience are preferred.

Alzheimer's Research UK
Major project grants

Closing date: 04-Jul-18 Maximum award: £1m

These fund research projects on Alzheimer's disease and related dementias.
The lead applicant and point of contact must be based in a UK academic or research institution, but the application may include researchers or institutions outside the UK. The lead applicant or co-applicant must hold a tenure or tenure-track appointment.

Wings for Life
Project research grants

Closing date: 04-Jul-18 Maximum award: €300,000

These support full basic or clinical research projects related to spinal cord injury.

National Institute of Biomedical Imaging and Bioengineering, USA
BRAIN initiative – theories, models and methods for analysis of complex data from the brain

Closing date: 04-Sep-18 Maximum award: USD $750,000

This supports new theories, computational models, and statistical tools to derive understanding of brain function from complex neuroscience data. Proposed tools could include the creation of new theories, ideas, and conceptual frameworks to organise or unify data and infer general principles of brain function; new computational models to develop testable hypotheses and design or drive experiments; and new mathematical and statistical methods to support or refute a stated hypothesis about brain function, or assist in detecting dynamical features and

patterns in complex brain data.

Alzheimer's Research UK
PhD scholarship

Closing date: 03-Oct-18 Maximum award: £108,000

This supports a full PhD programme that addresses Alzheimer's disease and related dementias. Applications must be submitted by individual or joint supervisors on behalf of students.

International Foundation for Research in Paraplegia
Research grants

Closing date: 31-Oct-18 Maximum award: CHF 150,000

These promote basic and clinical research related to spinal cord injury. Research projects may address all aspects of central nervous system and spinal cord lesions, nerve regeneration, trophic support of lesioned neurons, and functional changes induced by lesions, preferentially in mammals.

NIH: National Institute of Mental Health, USA
From genomic association to causation: a convergent neuroscience approach for integrating levels of analysis to delineate brain function in neuropsychiatry

Closing date: 05-Feb-19 Maximum award: USD $2.5m

This aims to stimulate innovative convergent neuroscience approaches to establish causal or probablistic linkages across contiguous levels of analysis in an explanatory model of psychopathology. Applicants should focus on how specific constituent biological processes at one level of analysis contribute to quantifiable properties at other levels, either directly or as emergent phenomena.

H2020-SC1-DTH-2019 digital transformation in health and care, single stage – topics DTH 1, 5, 9, 11, HCC 2
Exploiting the full potential of in-silico medicine research for personalised diagnostics and therapies in cloud-based environments

Closing date: 24-Apr-19 Maximum award: €8,000,000

This supports projects that manage health and wellbeing while empowering the participation of citizens and facilitating the transformation of health and care services to more digitised, person-centred and community-based care models, thereby enabling better access to healthcare and the sustainability of health and care systems. The indicative budget is worth €85.5 million.

SHOWCASED ARTICLE

Fentanyl Induces Cerebellar Internal Granular Cell Layer Apoptosis in Healthy Newborn Pigs

Sabir H, Dingley J, Scull-Brown E, Chakkarapani E and Thoresen MA (2018). Frontiers in Neurology. 9: 294.

Background: Opioids like fentanyl are regularly used in neonates for analgesia and sedation. So far, they have been reported to be safe and eligible to use. The cerebellum has become a focus of neurodevelopmental research within the last years, as it is known to play an important role in long-lasting motor, cognitive, and other behavioral changes. The cerebellar cortex is of major importance in the coordinative role of the cerebellum and highly vulnerable to injury and impaired growth.

Objective: This study was performed to evaluate the apoptotic effect of intravenous fentanyl infusion on the cerebellum in healthy newborn pigs.

Methods: Thirteen healthy pigs (<median 12 h old) were randomized into (1) 24 h of intravenous fentanyl at normothermia (NTFe, n = 6) or (2) non-ventilated controls at normothermia (NTCTR, n = 7). Cerebellar sections were morphologically assessed after staining with hematoxylin–eosin. In addition, paired sections were immuno-stained for cell death [Cleaved caspase-3 and terminal deoxynucleotidyl transferase-mediated deoxyuridine-triphosphate nick-end labeling (TUNEL)], and positive cells were counted in defined areas of the internal granular cell layer. In total, cells in three cerebellar gyri were counted.

Results: We found that there was an increase in cells with apoptotic morphology in the internal granular cell layer in the NTFe group. For quantification, we found a significant increase in cell death in group (1) [median (range) number of caspase-3-positive cell group (1) 8 (1–22) vs. group (2) 1 (1–6) and TUNEL-positive cells (1) 6 (1–10) vs. (2) 1 (0–4)]. In both groups, there was no difference in the number of Purkinje cells. Both groups had comparable and stable physiological parameters throughout the 24 h period.

Conclusion: Twenty-four hours of continuous intravenous fentanyl infusion increased apoptosis in the internal granular cell layer in the cerebellum of healthy newborn pigs.

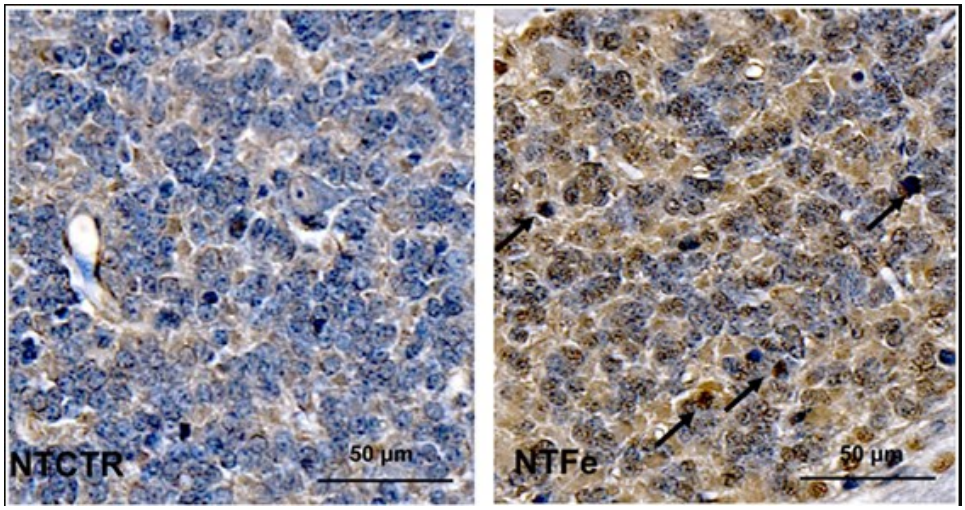


Image caption: Representative images of the inner granular cell layer after terminal deoxynucleotidyl transferase-mediated deoxyuridine-triphosphate nick-end labeling (TUNEL) staining of the NTCTR and NTFe groups. Arrows indicate TUNEL-positive cells.

CONTACTS

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- Zaf Bashir, Professor of Cellular Neuroscience
- Yoav Ben-Shlomo, Professor of Clinical Epidemiology
- Catherine Brown, Network Administrator
- Kei Cho, Chair of Neuroscience (Royal Society Wolfson Research Merit Award Holder)
- Liz Coulthard, Consultant Senior Lecturer
- Jonathan Evans, Consultant Senior Lecturer
- Iain Gilchrist, Professor of Neuropsychology
- Wade Hammett, NeuroSoc President
- Matt Jones, Physiology & Pharmacology
- Kevin Kemp, Research Collaborator; Research Associate
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