University of BRISTOL

Elizabeth Blackwell Institute for Health Research

Bristol Neuroscience Newsletter

October - December 2017

bristol neuroscience

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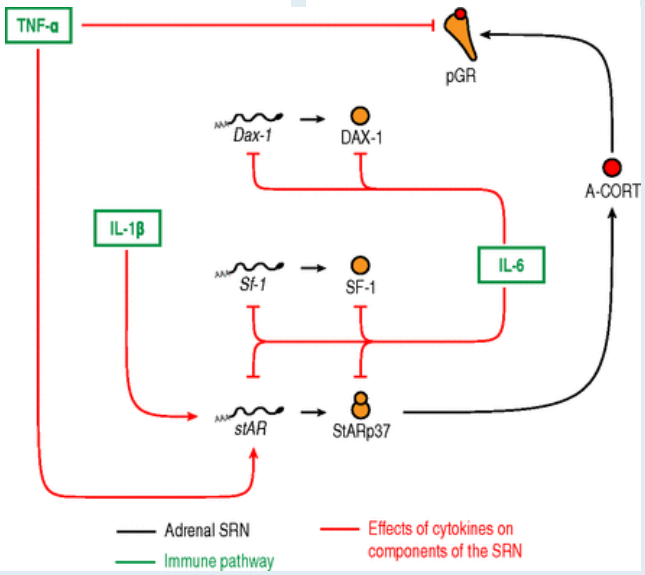
Inside this issue:

Adrenal gland activity and inflammatory stimuli

Researchers from Bristol's Henry Wellcome Laboratories for Integrative Neuroscience and Endocrinology, in collaboration with colleagues from the University of Exeter's Wellcome Trust Centre for Biomedical Modelling and Analysis, developed a novel mathematical model of the molecular network controlling glucocorticoid synthesis, used the model to predict adrenal responses to stress, and tested these prediction experimentally *in vivo* in the rat.

Using this interdisciplinary approach, the team show how the molecular network in the adrenal gland acts dynamically in unstressed physiological conditions, and how the dynamics of these processes change in the presence of inflammatory stimuli, such as infection or during surgery.

This is the first study to show just how dynamically complex the adrenal gland response to stress is, and how sensitive it is to clinically important perturbations, such as pro-inflammatory cytokines. The hope is that a better understanding of this system will improve treatment of patients with inflammatory conditions, such as those undergoing major surgery.



Spiga F, Zavala E, Walker JJ, Zhao Z, Terry JR and Lightman S (2017). Dynamic responses of the adrenal steroidogenic regulatory network. *PNAS*. 114(32).

Image caption: Cytokine effects upon targets within the adrenal SRN considered in the model. The transient cytokine pulses elicited by LPS were used as additional input functions to ACTH.

EVENTS

Top: David Parker; bottom: James Ainge

Hippocampal-Medial Entorhinal Interactions Underlying Memory Encoding and the All-Optical Interrogation of Hippocampal Function
10 November 2017, 13.00 - 14.00. Nicholas Robinson (UCL), Lecture Theatre 1, 43 Woodland Road

Arts and Health Early Career Research Meeting
10 November 2017, 13.00 - 14.00, Arnolfini

Once explorers, always explorers - Europe's role in space exploration
10 November 2017, 18.30 - 20.00, Dr David Parker (ESA), Wills Memorial Building

Putting episodic memory in context: Lateral entorhinal cortex and associative recognition memory
13 November 2017, 13.00 - 14.00. James Ainge (School of Psychology and Neuroscience, University of St Andrews), C42, Biomedical Sciences Building

Careers Beyond Biomedical Sciences - Biotech & Start-Ups

Bristol Brain Research: Showcase and Networking Day 2018

11 April 2018, 8.30 - 20.00, Chemistry Building

Deadline for submission of abstracts: 31 January 2018

Registration fee: £10 ONLY (includes refreshments breaks, buffet lunch, drinks reception)
REGISTER NOW

The Bristol Neuroscience Research Network presents a one-day conference to bring together our research community, organised by a cross-disciplinary organising committee. The Bristol Brain Research: Showcase and Networking Day is specially designed by and for members of the wider community to learn about all the different research facets and resources at UoB.
This one-day event offers the opportunity for researchers across Schools and Units to discuss best practice, share experiences, cross-fertilise, source expertise and engage across the whole spectrum of neuroscience from cellular work to epidemiology to clinical applications, and everything in between.
The day will include talks and poster sessions focusing on a wide range of topics,
with a chance to win prizes.

- ***Hear about current research & technology from across the faculties***
- ***Present and discuss novel findings with colleagues with diverse expertise***
- ***Foster interdisciplinary collaboration and build networks across the University***
- ***Put grant and fellowship ideas to our panel of expert***

For more information and to download the abstract submission form, go to the **event website**

15 November 2017, 13.00 - 14.00. Dr Harry Destecroix (Ziylo/UnitDx) / Dr John Carrigan (RebelBio), Chemistry LT3

Statistics Clinic
15 November 2017, 14.00 - 15.30, SM3 Mathematics Building

Decision Making and Artificial Intelligence reading group
15 November 2017, 15.00 - 16.30, Philosophy Department Library, Cotham House

Thames Valley & Wessex Neonatal Cranial Ultrasound Course
16 - 17 November 2017, Bristol & Bath Science Park, BS16 7FR

Solidarity and Justice in Health and Social Care
16 November 2017, 16.00 - 17.00. Prof Ruud ter Meulen, Canynge Hall LG:08

Neural Dynamics Forum
17 November 2017, 13.00 - 14.00. Stuart Allan

My 'life' in pharmacology
20 November 2017, 13.00 - 14.00. Rod Flower, FMedSci FRS (William Harvey Research Institute, Queen Mary University of London), C42, Biomedical Sciences Building

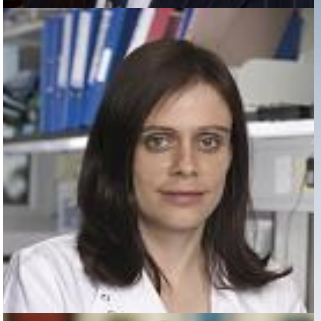
Building Research Partnerships workshop
21 November 2017, 9.30 - 16.30. Dali Sidebottom and Karen Sheehan, Facilitators. The Vassall Centre, Gill Avenue, Fishponds, BS16 2QQ

A phosphorylation switch controlling proliferation and differentiation in development and cancer
21 November 2017, 13.00 - 14.00. Dr Anna Philpott (Cambridge Neuroscience), C42, Biomedical Sciences Building

Targeting stem cell specific repair in glioma
23 November 2017, 12.30 - 13.30. Prof Susan Short (Leeds Institute of Cancer and Pathology), Seminar Room A&B, Learning & Research Building Level 2, Southmead Hospital

Surgical innovation: contexts, concerns and conceptualisation
23 November 2017, 15.30 - 16.30. Dr Giles Birchley, Canynge Hall, G:12

Public Lecture: 'Inflammation as a therapeutic target for depression'
23 November 2017, 16.30 - 18.30. Prof Ed Bullmore (Cambridge Neuroscience), Hadyn Ellis Building, Maindy Road, Cardiff, CF24 4HQ



From top: Rod Flower, Anna Philpott, Susan Short, Giles Birchley, Ed Bullmore

FULL EVENTS LISTINGS ARE AVILABLE ON THE BN WEBSITE

NEWS

The Lightning Process® programme

The first trial to investigate The Lightning Process® (LP) studied the effectiveness of LP in addition to specialist medical care compared to specialist medical care alone in children with mild or moderate chronic fatigue syndrome (also known as myalgic encephalomyelitis (CFS/ME).

CFS or ME affects at least one per cent of secondary school children in the UK and is very disabling. Despite the number of young people affected by this debilitating condition there is limited evidence for how we should treat this condition in children.

The National Institute for Health and Care Excellence (NICE) recommends three treatment approaches: cognitive behavioural therapy (CBT), graded exercise therapy (GET) or activity management, however, even with treatment, only about two thirds of children can be expected to recover at six months.

Around 250 children with CFS/ME use LP each year. The programme, developed from osteopathy, life coaching and neuro-linguistic programming, teaches techniques for using the brain to make changes to the body's level of health. However, there have been no reported studies investigating its effectiveness, cost-effectiveness or possible side effects. The randomized controlled SMILE (Specialist Medical Intervention and Lightning Evaluation) trial investigated the effectiveness and cost-effectiveness of LP in addition to specialist medical care compared with specialist medical care alone.

Statistical and cost analyses showed that participants in the group allocated with LP in addition to specialist medical care had improved physical function at six months which improved further at 12 months.

More info

Apologies are extended to David Morgan (PPN) who was mistakenly linked to, and a photograph included of, David Morgan (CMM) in the last Newsletter. A revised version has been uploaded on the website.

New Social Media curator

Following a call for volunteers, Bristol Neuroscience is delighted to welcome Jamie Thakrar (pictured), PhD student in the Wellcome Trust Neural Dynamics Programme as our new social media curator. She has taken over our Facebook page and Twitter feed. Jamie already manages the Neural Dynamics and Careers Beyond Biomedical Research feeds, and is co-President for the Bristol Pint of Science Society.

Grateful thanks are extended to Rachel Harris for her help over the past two years in maintaining our social media sites.

Bristol Teaching Awards

The Bristol Teaching Awards are an annual competition which recognise and reward members of staff who have made an outstanding contribution to teaching, the provision of support for students and education more generally.

The 2017 round saw several members of the community being recognised for their efforts:

- **Sandra Berlau Neumann** won the Students' Award for Outstanding Teaching by a Postgraduate Student. Sandra is one of our past Neuroscience BSc students who is now doing a PhD in PPN.
- The **First Year Neuroscience Team** of Andy Doherty and Jo Howarth were nominated for a University Teaching Award.
- Jo Howarth was also nominated for the Students' Award for Outstanding Teaching.
- Phil Langton was nominated for the University Educational Initiative Award
- The University Award for Education (Science) went to Dr Josie Briscoe, School of Experimental Psychology
- The Students' Award for Outstanding Teaching (Health Sciences) went to Dr Veronica Roberts, School of Veterinary Sciences

Clockwise: Sandra Berlau Newmann, Josie Briscoe, Veronica Roberts

Funding successes: Part 1

Targeting the Ubiquitin-Proteasome System in Glioblastoma, joint **MRC** award to the Brain Tumour Research Group and the University of Bath. A PhD project with Julien Licchesi (PI, Bath) and Dr Kathreena Kurian (Bristol).

From the **Simons Foundation**, USD $225,213 for Stability of Sensory Coding in Fragile-X Mice. PI: Cian O'Donnell (Engineering), Co-I: Carlos Portera-Cailliau (University of California Los Angeles).

Zuner Bortolotto (Centre for Synaptic Plasticity) has been awarded a **Wellcome Trust** Biomedical Vacation Scholarship entitled *The effects of a novel GLuK2 receptor antagonist UBP2002 on epileptogenesis*.

Rebecca Pearson (Bristol Medical School, pictured) is one of five Early Career Researchers at Bristol who have been awarded over €7M in **European Research Council** (ERC) Starting Grants in recognition of their 'excellent science' and potentially ground-breaking research. Starting Grants support exceptional researchers, who are between two and seven years from having completed their PhD, in undertaking ambitious research projects. The grants are awarded under the 'excellent science' pillar of Horizon 2020.

Genetic, behavioural and cognitive mechanisms underpinning the association between mother and offspring mental health problems: mental health intergenerational transmission (MHINT) , €1,499,611.

My proposal seeks to shed new light on how mental health problems in a mother are passed on to her child. Improving understanding about this will help break a reinforcing cycle of mental health risk across generations. The role of parenting in the context of mother and child mental health, is poorly understood. In order to harness the potential of modifying parenting for the prevention of child mental health problems, I propose to study parenting using more detailed, ecologically valid and genetically sensitive designs than have been done before, across 4 objectives:

1: To investigate the respective role of genetic and environmental (chiefly parenting) pathways in explaining associations between mother and child mental health. HOW: using a consortium of international cohorts with intergenerational genetic and phenotypic data (n>10,000) and, for the first time, modelling genetic risk which is and is not transmitted from mother to child to test alternative hypotheses.

2: To identify behavioural manifestation of maternal mental health problems, in observed mother-infant interaction, in an ecologically valid way. HOW: recording 300 mother- child dyads at home, using novel wearable cameras, in the next generation of a key cohort (ALSPAC-G2).

3: To identify cognitive underpinnings of maternal behaviour. HOW: including cognitive tasks (with eye tracking) as new measures in ALSPAC-G2, applying computational models to cognitive and (uniquely) real life data (measured in 2).

4: To establish whether modification of maternal parenting (highlighted in 1-3), changes child mental health. HOW: systematic review of parenting intervention trials and new synthesis methods to extract which intervention components reduce child mental health problems.
Through these objectives, my study will provide critical new evidence regarding the nature of parenting interventions that have potential to improve child mental health and break intergenerational transmission of mental health problems.

Chemoreceptor Reflex Antagonism during Lower Body Negative Pressure

We are looking for healthy volunteers aged 18-75 years, with normal blood pressure.

This study is investigating the role of the carotid bodies in the control of blood pressure. To do this we apply negative pressure (suction) to the lower body to challenge blood pressure. We also use low doses of dopamine to reduce the activity of the carotid bodies. This allows us to measure whether the body's response to a blood pressure challenge is altered by the carotid bodies becoming less active.

Participating will involve:
- A screening visit (45 mins) and a study visit (2 hours) both at CRIC Bristol.
- Wearing an at-home blood pressure monitor to measure blood pressure over 24 hours between the visits.
- Lying in a lower body negative pressure chamber which applies suction (via a vacuum device connected to the chamber) from the waist down.
- Receiving a low dose of dopamine through a cannula (tube) in a vein in the arm or hand.
- Brief periods breathing extra nitrogen than normal, though a facemask, to reduce your oxygen levels (hypoxia).

For more information, please contact cardionomics-cb-study@bristol.ac.uk**.**
or 0117 342 1513.

Transforming UK translation

The Academy of Medical Sciences, Royal Academy of Engineering, Royal Society and the Wellcome Trust have outlined a series of commitments to ensure that translation is recognised and celebrated as an integral part of academic research. They will work with universities and research institutes to find practical ways to make changes based on the Transforming UK Translation commitments [PDF 99KB].

Commitments include improving recognition for translation, encouraging and facilitating the movement of people between academia and industry, and investing across the translation system.

Transforming UK Translation covers a broad definition of translation and a range of outputs and activities, including:

- exchange of knowledge and ideas
- creation and exploitation of intellectual property (IP)
- academic-industrial collaborations
- spin-out companies
- development of products and processes
- enabling technologies such as research tools and materials

New guides on clinical academic careers

Two new guides to support healthcare professionals to develop clinical academic careers were launched on 15 September 2017. The guides have been developed with Health Education England (HEE) to provide information on the various awards available through their two organisations, how to apply for awards, and how the awards work in practice should applicants be successful. The guides also include case studies from award holders who talk about their experiences and the impact holding an NIHR or HEE award has had on their career.

There are two guides available:

- The NIHR Integrated Academic Training programme for doctors and dentists
- The HEE/NIHR Integrated Clinical Academic (ICA) programme for non-medical healthcare professionals, including nurses, midwives, allied health professionals and healthcare scientists

Presidents' Award from The British Psychological Society

Prof Marcus Munafò (Experimental Psychology) has been conferred with the 2017 Presidents' Award for Distinguished Contributions to Psychological Knowledge by the British Psychological Society.

The award confers life membership of the Society and recipients are invited to deliver the Presidents' Award Lecture at annual conference. Marcus is a programme lead within the MRC Integrative Epidemiology Unit which conducts some of the UK's most advanced population health science research, using genetics, population data and experimental interventions to look for the underlying causes of chronic disease.

He is also director of the Tobacco and Alcohol Research Group; in this role he has provided regular consultancy to the World Health Organisation and the European Commission on issues of tobacco control. His work has been cited in the recent European Tobacco Products Directive and has been used by the Australian Government's defence against legal challenges to recent plain packaging legislation.

As a leading advocate of good scientific practice in psychology he has been involved in a number of national and international debates on the reproducibility crisis, including the Society's Replicability and Reproducibility Debate held at the Royal Society in 2016.

Facial expressions can cause confusion

Photos of the same person can look substantially different; a passport photo, for example, may not resemble a driver's licence photo. A recent study has shown that when photos of an individual's face are judged too dissimilar to go together, people will tend to think they show several different identities.

The research team in the School of Experimental Psychology tested this concept further by exploring what happens when the photos show faces with different expressions. Annabelle Redfern created packs of 40 cards, each card showing a different face. The packs were either of neutral, unexpressive faces, or of highly expressive faces. We asked people to sort the packs into piles, so that there was a pile for each person.

Even though there were only two different faces in the packs, people tended to think there were many more – between five and eight on average. But when the faces were expressive, people also made another type of mistake: they confused the identities, and were more likely to place photos of both faces together, as if they were of the same person.

Thes study shows that expressive faces can cause identity confusions, where photos of different people are thought to be of the same person. It also demonstrates that we don't ignore, or factor out, expressions when we recognise someone from their face.

The next stage is to explore what happens when we increase the familiarity of a face; as we start to learn a face, and how it expresses itself, then we find that expressions stop hindering the recognition process.

Read the full article published in *i-Perception*.

PURE data competition

The Jean Golding Institute launched the PURE data competition in March 2017, inviting teams to use data science to identify and analyse interdisciplinary research at Bristol using PURE data.

The winners, Ben Elsworth (top right) and Tom Gaunt (bottom right, both Bristol Medical School: Population Health Sciences), created a piece of software called AXON which allowed the user to interrogate the PURE database and pull out links between people, organisations and concepts harvested from within the abstracts of the outputs. The panel particularly liked the usability of the system and its ability to suggest links both new and potentially existing. It was also interesting that you could use concepts to link individuals. Ben is currently developing the tool so it can be used using current PURE data.

Proteins in brain connectivity

A research team have found that the delivery of a group of proteins involved in the information flow between the brain's nerve cells to the synapse is much more sophisticated than previously suspected. Each of the brain's 100-billion nerve cells make around 10,000 connections to other cells through synapses that enable them to transmit information to and receive information from these pathways. The team, led by Prof Jeremy Henley (Biochemistry), studied the complex chemical changes that trigger synaptic plasticity, a process which tunes the strength of this information flow across the synapses, and underpins our learning and memory.

Thousands of synapses communicating between different nerve cells form neural circuits and synaptic plasticity determines the connectivity between cells in the circuit and helps to regulate information transfer. However, its dysfunction can lead to neurological and neurodegenerative disorders. The team have revealed how a family of proteins, called kainate receptors, have multiple, and previously unsuspected checkpoints on their journey to synapses. These control points which are triggered within nerve cells act as a 'check and balance' mechanism to ensure kainate receptors are delivered to the right place at the right time to control synaptic function and plasticity. This is an important advance as it helps to explain the flexibility in the way synapses are controlled and nerve cells communicate. This, in turn, raises the possibility of targeting such pathways to develop therapies for conditions such as autism and epilepsy whereby neuronal circuits malfunction.

Evans AJ *et al*. (2017). Assembly, Secretory Pathway Trafficking, and Surface Delivery of Kainate Receptors Is Regulated by Neuronal Activity. *Cell Reports*. 19(12): 2613 –2626.

Staff promotions and appointments

Congratulations are extended to staff in the School of Physiology, Pharmacology and Neuroscience who were recently promoted:

Matt Jones is now a Professorial Research Fellow in Neuroscience. Matt researches neuronal networks in cognition and disease.

Frankie MacMillan has been promoted to Reader in Biomedical Science Education. She is the Admissions Tutor for the BSc and MSci programmes and the Faculty widening participation representative.

Thelma Lovick has been promoted to a Professorial Research Fellow in Integrative Neuroscience.

Tony Pickering has been promoted to Professor of Neuroscience and Anaesthesia. His research focusses on mechanisms of endogenous pain control and autonomic regulation.

Emma Robinson has been promoted to Professor of Psychopharmacology; she is interested in neural and neurochemical mediators of behaviour and their role in psychiatric disorders and is an integral lead of the Bristol Neuroscience Festival.

Congratulations are extended to Prof Neil Scolding who has recently been appointed Visiting Professor at the Faculty of Medicine, University of Gulu in northern Uganda.

World Universities Network

The World Universities Network Global Africa Group held an inaugural Strategic Research Workshop, hosted by the University of Ghana, that brought together over sixty researchers from twelve WUN partner universities and ten other universities from four continents. The workshop brought together faculty, researchers and postgraduate students from a multitude of countries in an effort to facilitate and promote research collaboration on five priority themes the Group felt were particularly pertinent to human development in the 21st Century in Africa: Environmental change and food security; Public health; Governance, inequality and social inclusion; Higher education and research capacity; and Natural resources for inclusive growth and sustainable development. Read the full story.

Prof Rachael Gooberman-Hill, Director of the EBI, is Bristol's new Representative on the Global Africa Group Steering Group (taking over from Leon Tikly), with Celia Gregson.

Andrej Marusic Award for suicide prevention work

Dr Duleeka Knipe (Bristol Medical School) has received the prestigious Andrej Marusic Award in recognition of her outstanding research into suicide prevention. The award was presented at the 29th World Congress of the International Association for Suicide Prevention (IASP) in Sarawak, Malaysia on 21 July 2017.

Dee completed her Wellcome-funded PhD Studentship on *Suicide and Socioeconomic Position in Sri Lanka and is now* pursuing a post-doctoral research fellowship funded by an ESRC Global Challenges award, *Understanding the association of low socioeconomic position with increased* suicidal behaviour in Sri Lanka. Her research has focussed on low and middle-income countries where 76% of the world's suicide deaths occur. She has led collaborative work on pesticide exposure in Sri Lanka with colleagues in Crete and is collaborating with researchers in Sri Lanka, Bangladesh, and Taiwan. She has also recently been invited to visit a leading mental health research group in Goa, India.

Dee Knipe with Professor Murad Khan, President of the International Association for Suicide Prevention

Funding successes: Part 2

Academy of Medical Sciences grant to Dr Sofia Theodoropoulou, £29,992 for *The role of mast cells in the pathophysiology of age-related macular degeneration*.
Age-related macular degeneration (AMD) is a leading cause of irreversible blindness. Current treatments are available only for the very late stages of the wet form of AMD (caused by the aberrant growth of new vessels-angiogenesis) and only improve vision in 30% of those patients. There is a crucial unmet need to understand processes early in the disease to lead to pathways that can be exploited for new therapies. The aim of this research project is to uncover such pathways, and investigate a protein called interleukin-33 (IL-33) that orchestrates inflammation in tissues and its role in AMD. Early data shows that IL-33 inhibits unwanted effects of the eyes response to inflammation by altering tissue remodeling (such as scarring). Our experiments will deliver insight into how IL-33 exerts a protective effect, and specifically how IL-33 exerts its effect by altering the behaviour of inflammatory cells that are found in the back of the eye (retina and choroid where AMD targets), to maintain tissue health and subvert AMD progression. Our experiments will inform patient care in the future in two ways: 1. By understanding how mast cells regulate angiogenesis and tissue remodelling, to identify molecular targets for drug exploitation. 2. By augmenting and modulating mast cell responses by IL-33 treatment may allow us to reverse tissue damage, benefiting patients with AMD. Our ultimate goal through research programs is to reduce the burden of AMD pathology at earlier stages and thus increase the lifetime of normal visual function in patients with AMD.

GW4 PhD Studentship awarded to Dr Kathreena Kurian (Co-I) Reader in Brain Tumour Research Bristol, Dr Florian Siebzehnrubl (Cardiff, Co-I) and Dr Julien Licchesi (Bath, PI) for *Targeting the Ubiquitin Proteosome system in Glioblastoma Multiforme*.

Antidepressant use in pregnancy and autism

Children exposed to antidepressants during pregnancy seem to be at a slightly higher risk of autism than children of mothers with psychiatric disorders who were not treated with antidepressants during pregnancy. In a bid to better understand the reasons behind this association a team led by Dr Dheeraj Rai applied a range of analytical methods to a large Swedish population.

Of the 3,342 children exposed to antidepressants during pregnancy, 4.1% had a diagnosis of autism compared with 2.9% in 12,325 children not exposed to antidepressants whose mothers had a history of a psychiatric disorder. They estimate that, even if the association between antidepressant use and autism is causal, only 2% of cases would be prevented if no women with psychiatric disorders used antidepressants during pregnancy.

They call for "a balanced discussion in relation to clinical decision making in the light of evolving but yet inconsistent evidence" and say "it is important to continue investigation of possible underlying biological mechanisms that could help us to better understand the aetiology of autism."

Rai D *et al*. (2017). Antidepressants during pregnancy and autism in offspring: population based cohort study. *BMJ*. 358:j2811.

Extension of Psychiatry Service at BRI

Extending the operating hours of the liaison psychiatry service at the BRI's Emergency Department has led to improved care and outcomes for patients who have self-harmed, NIHR-funded research has found. Self-harm is a strong risk indicator for suicide, so getting psychiatric support for these patients has the potential to save lives. The findings also show that, over a three-month period, the initial investment in the extended service may have led to a saving of £36,150 in emergency department and hospital costs, for this specific group of patients, equivalent to £144,600 annually.

In 2014, Bristol Clinical Commissioning Group commissioned UHB NHS Foundation Trust to extend the operating hours of its liaison psychiatry service, as most emergency department patients who have self-harmed present outside office hours. The service change, improving levels of liaison psychiatry team cover from 40 hours over five days to 98 hours over seven days a week, needed an additional investment of around £250,000 per year. The research team focused on the impact of this service change on self-harm patients because they make up a high proportion of the liaison team's workload, are the patient group at highest risk of suicide and have detailed data collected about their care through the local self-harm register. Following the service extension, about 10% more patients received a psychosocial assessment, the waiting time for which decreased by more than three hours. In 2015 with the new hours in place, patients were 20% less likely to re-attend for self-harm within 90 days.

The findings will help commissioners judge whether further investment in liaison psychiatric services represents value for money, though more research is needed.

Image shows BRI's Psychiatric liaison team

Read the full study published in BMJ Open

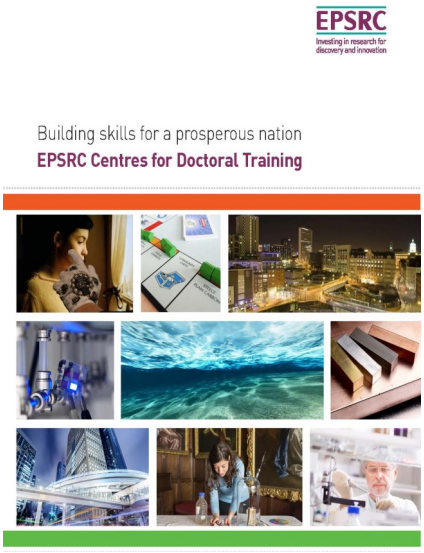
EPSRC Centres for Doctoral Training news

EPSRC has just published a CDT brochure, showcasing a selection of research projects being undertaken across EPSRC-supported Centres, following the mid-term review. This is to highlight the quality and diversity of impact that CDTs are having and the value that students, universities and industry see in them. Centres for Doctoral Training in the brochure include:

One Centre for Doctoral Training included in the brochure is Neurotechnology for Life and Health based at Imperial College, with a focus on *Getting a Grip on Stroke Rehabilitation*.

They have confirmed that there will be a call in 2018 but that the principles are yet to be decided. All applications will need to make a strong case for a national need for investment in a CDT compared with other routes for doctoral funding.

Please contact Jane Khawaja if you have any questions related to CDTs, the next CDT call, and UoB's internal process.



Funding successes: Part 3

2017 UoB **Strategic Research Fund** award to Dr Raul Santos-Rodriguez, Prof Alan Champneys, Prof Iain Gilchrist and Dr Chris McWilliams for *The Intensive Care Unit as a learning health system;* and to Profs George Davey-Smith, Peter Flach, Caroline Relton, Matt Hickman, Jonathan Sterne and Dr Tom Gaunt for *To stimulate take-up of machine learning (ML) and artificial intelligence (AI) techniques within the IEU and across the wider Population Health Science Institute*.

NIHR post-doctoral fellowship to Dr **Kyla Thomas,** £454,174 for *Prescription opioid analgesics for chronic non-cancer pain: developing a primary care-based intervention to prevent and reduce opioid dependence*. Over the last 20 years, opioid painkillers (for example codeine and tramadol) have been increasingly prescribed for chronic non-cancer pain in many Western countries, despite a lack of evidence for their long-term effectiveness. Increased opioid prescribing has led to a significant increase in opioid-related harms, including substance abuse disorders (opioid addiction and dependence), accidental poisoning, trauma, falls and premature deaths. Although opioids are often prescribed in secondary care settings, primary care is the main source of opioid prescriptions in the UK. The aim of this fellowship is to develop a complex primary-care based intervention to prevent and reduce opioid painkiller dependence in patients with chronic non-cancer pain.

Benjamin Meaker Visiting Professorship offered by the Institute for Advanced Studies to Dr Marilyn Cornelis (Northwestern University, USA) for *Genetic epidemiology of caffeine-smoking interactions and health*, hosted by Prof Marcus Munafò.
The Scheme enables distinguished researchers from across the world to visit Bristol to enhance our research activity.

Public Engagement

The **British Brain Bee** is a non-profit organisation that provides resources to local public outreach neuroscience initiatives in England. Its main purpose is to promote the advancement of neuroscience education from early years. The English Brain Bee is the only neuroscience competition currently running in the UK. Their aims include providing students with neuroscience hands-on experience and providing the opportunity to meet with neuroscientists and students who are studying neurosciences. They have many different roles available, including fundraising, graphic design, public engagement and speaking; ff you would like to volunteer, visit their website.

The **Engaged University** Steering Group bestowed a highly-commended award to Dr Kathreena Kurian, Hannah Williams, Dr Maca Gomez-Gutierrez and Dr Helen Della Nave (At-Bristol) the 2016/17 Engagement Award for their work on the *Interactive Replica Neuroscience Research Lab* in At Bristol. The group members were particularly impressed by how well the activity was designed, conceived and evaluated. Positive comments were also made about the nature of collaboration with At-Bristol. The mock-up received 2,500 visitors over a 5-week period, providing an opportunity for young visitors and their families to talk to researchers about neuroscience research and consider ethical questions around tissue use.

Cooling treatment reduces epilepsy in children

Cooling babies deprived of oxygen at birth (perinatal asphyxia) can reduce the number of children who develop epilepsy later in childhood. The study was led by Prof of Neonatal Neuroscience Marianne Thoresen.

It is known that newborn babies who suffer perinatal asphyxia may develop permanent brain injury resulting in cerebral palsy or other conditions, like epilepsy. Until recently, 20 to 30% of these patients would develop epilepsy and many need regular antiepileptic treatment. The patients' cognitive performance, life quality and life expectancy is also affected by having the condition. The research team has developed and delivered cooling treatment (therapeutic hypothermia) for newborns who suffer lack of oxygen during birth. For up to eight years they followed 165 infants who received cooling therapy. The study examined how many babies were diagnosed with epilepsy and how many are on regular antiepileptic drug treatment at two and four to eight years of age. The research found that babies born after 2007 who received the cooling treatment had much less epilepsy than before cooling treatment was introduced. At two years, 7% of the children had an epilepsy diagnosis, but only 2% were on regular antiepileptic drugs.

The study showed that more children had epilepsy when they reached the age of four to eight years with 7% on regular medication. However, these are very low numbers needing antiepileptic treatment compared to before cooling treatment was introduced as standard of care. Before therapeutic hypothermia was introduced, poor outcome meaning death or moderate or severe disability was around 66% (32% death and 34% surviving with disability).

Liu X *et al*. (2017). Reduced infancy and childhood epilepsy following hypothermia-treated neonatal encephalopathy. *Epilepsia*.

Prevention of brain injuries in children

A project to explore whether brain injuries in children could be prevented through examining and understanding local cases has been awarded £10,000 by the NIHR Brain Injury Healthcare Technology Co-operative. The project is being led by the Child Injury Health Integration Team and will assess whether an approach inspired by child death overview panels could be applied to children who have sustained non-fatal brain injuries. The reporting process required for these panels is necessarily labour intensive. This project will explore whether data and information already being collected on children with non-fatal injuries could inform a similar, but more 'light touch', process. It will focus on children who have experienced a brain injury and received treatment at the Bristol Royal Hospital for Children.

Julie Mytton, who will be leading the project:

With this project, we want to look at whether it's possible to identify what happened leading up to the brain injury event, and whether any features could be changed to prevent such injuries. We will explore what information is already being collected about these injuries, and whether it is possible to use it in this way. We want see if it's feasible to make the most of existing information and groups to help prevent childhood brain injuries in the future, by better understanding the ones that are already happening.

The biology of colour

Colouration is a vitally important biological trait because it is involved in individual survival and with reproduction through camouflage, warning colouration, mate choice, social signalling, thwarting parasitism, as well as thermoregulation.

In a wide-ranging and comprehensive review a group of evolutionary biologists, behavioural ecologists, psychologists, optical physicists, visual physiologists, geneticists and anthropologists turned their attention to this diverse area of science and set out what they believe are the key questions for the future.

In the last 20 years, the field of animal colouration research has been propelled forward very rapidly by technological advances. These include spectrophotometry, digital imaging, innovative laboratory and field studies, and large scale comparative analyses each of which are allowing completely new questions to be asked.

For example, we now recognise that other organisms see the world differently from humans. We understand the mechanisms underlying colour production, and studies of function have advanced through field and lab experiments. Interspecific colour measurements collected at a geographic scale are even shedding light on the dynamics of evolutionary processes. We can now pose questions about the evolution of camouflage based on what a prey's main predator can see. We can start to appreciate that gene changes underlying colour production have occurred in parallel in unrelated species. Knowledge of production and perception and function of colouration is poised to make contributions to medicine, security, clothing and the military.

*Colour can conceal or reveal. The giant Australian cuttlefish (*Sepia apama*) alters the relative size of its pigment-bearing chromatophores and warps its muscular skin to switch between camouflage mode (top) and communication mode (bottom) in under a second.*

Cuthill IC *et al*. (2017). The biology of colour. *Science*. 357(6350), eaan0221.

Bristol Vision Institute team wins Grand Challenge

Professor David Bull, Dr Fan Zhang and PhD student Mariana Afonso developed the cutting-edge video compression technology ViSTRA to target the challenge of delivering high-quality video content whilst minimising bit consumption rate, allowing high-speed transfer and consumption of video files.

The result of several years' work, the patented ViSTRA technology is based on perceptually optimised spatio-temporal resampling within the encoder. This is combined with a content-adaptive neural network-based method of reconstructing the output video, which dramatically reduces bit rate and increases visual quality. The codec has attracted considerable attention from industry; the team is currently preparing a contribution to the next generation of MPEG video coding standards, 'Beyond HEVC'.

The team were awarded the prize at the International Conference on Image Processing held in Beijing in September, with PhD student Mariana Afonso receiving the prize for Video Coding based on Spatial Resolution Adaptation from Anne Aaron and Ioannis Katsavounides from Netflix (pictured below).

Kidney failure's effects on the psychosocial health

Kidney failure is associated with lower quality of life in young people and limited employment, independence, and relationships compared with healthy peers, according to recent analysis.

Young adults who need dialysis or a kidney transplant face certain psychosocial challenges not experienced by older patients, and the extent to which kidney failure has affected their social status, mental health, and lifestyle remains unclear. To investigate, Dr Alexander Hamilton and colleagues reviewed all published studies reporting socio-demographic, psychological health, and lifestyle outcomes in young adults (aged 16-30 years) with kidney failure on renal replacement therapy (RRT)- either dialysis or a kidney transplant.

The team's analysis included 60 studies of 15,575 participants. Studies were largely single centre cross-sectional studies of those transplanted in childhood. Compared with healthy peers, young adults on RRT had lower quality of life, worse for dialysis patients compared with transplant patients. They were more likely to be unemployed and to live in the family home, and they were less likely to be married or have a partner.

We know that most young people with end-stage kidney disease have a kidney transplant, but they are high-risk for the transplanted kidney to fail. There has been much focus both on programs to improve the transition between paediatric and adult care for kidney patients, and clinical end-points. It is vital to understand how kidney failure affects social goals, because by defining these we can seek interventions to improve areas of deficit.

Hamilton AJ *et al*. (2017). Socio-demographic, psychological health and lifestyle outcomes in young adults on renal replacement therapy. *Clinical Journal of the American Society of Nephrology*. Published online ahead of print, October 2017.

New HIT focusing on stroke gets go-ahead

A new Health Integration Team (HIT) focused on stroke has been given the go-ahead by the Bristol Health Partners executive group. Stroke HIT aims to advance and improve the prevention of strokes, and care for stroke patients. The team is led by Dr Phil Clatworthy, Consultant Stroke Neurologist, North Bristol NHS Trust, Dr Ann Sephton, Deputy Clinical Chair, South Gloucestershire CCG and Professor Mark Pietroni, Director for Public Health, South Gloucestershire Council.

It brings together all nine Bristol Health Partners organisations, as well as the Stroke Association, Bristol Area Stroke Foundation and other partners. The team works across Bristol, North Somerset and South Gloucestershire, and will be hosted by North Bristol Trust. The Stroke HIT will initially focus on supporting the local Sustainability and Transformation Partnership (STP) stroke pathway review.

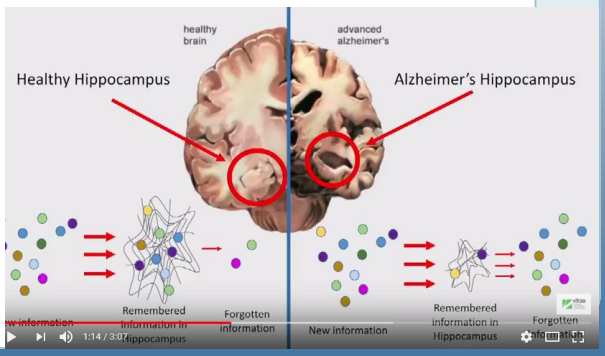
Bristol Health Partners Director David Relph: "Stroke prevention and care is a local and national priority. The panel was very impressed with the strength of the Stroke HIT proposal and we unanimously agreed to endorse the group as a Bristol Health Partners HIT. This new team will be a vital support for our local Sustainability and Transformation Partnership, as well as improving the lives of those affected by stroke."

Awards and funding successes (Part 4)

A **BRACE** grant to Dr Lindsey Sinclair and Prof Seth Love, £15,747 for The relationship between later life depression and dementia: bystander or participant? This is a pilot study grant from BRACE, a local charity which funds research into Alzheimer's disease. In this study they will use tissue from a specialist brain bank in Canada, as well as tissue from the UK, to look at whether there are any biological differences in people who develop depression earlier in life compared to those who develop it in later middle age and older. They will also compare any differences found to those seen in people with early dementia.

Dr David Kessler and Dr Nicola Wiles won the overall **Research Paper of the Year** award at the Royal College of General Practitioners Annual Conference awards for their paper, *Long-term effectiveness and cost-effectiveness of cognitive behavioural therapy as an adjunct to pharmacotherapy for treatment-resistant depression in primary care: follow-up of the CoBalT randomised controlled trial* published in The Lancet Psychiatry, Vol. 3, No. 2, p137–144.

The UK **Three Minute Thesis** (3MT) final was held on Monday 11 September 2017, and Bristol PGR Alfie Wearn was one of only six contestants to take part — and the first ever finalist from the UoB. Alfie may not have walked away with a trophy, but we congratulat him on a truly amazing achievement. Watch his performance from the 3MT final on YouTube. The title of his presentarion was *Helping to treat Alzheimer's disease by detecting "sticky" memories*.



Project to prevent cerebral palsy wins 'scaling up' funding

Developed in maternity units across the West of England, the *PReCePT* (Prevention of Cerebral Palsy in PreTerm Labour) project has been selected by the Health Foundation to be part of an ambitious £3.5m improvement programme. *Scaling Up Improvement* is supporting seven projects in the UK to take their proven health care interventions and approaches and make them work at larger scale to have a positive impact on patient outcomes.

PReCePT has been designed to help reduce cerebral palsy in babies by administering magnesium sulphate to mothers during preterm labour, at a cost of around £1 per individual dose. Preterm birth is the leading cause of brain injury and cerebral palsy, which has a lifelong impact on children and families. NICE recommends administration of $MgSO_4$ in preterm deliveries to substantially reduce the risk of cerebral palsy by 30%, based on evidence in support of its brain protective potential. However, the uptake of $MgSO_4$ in the UK remains relatively low, compared with the leading countries in the developed world. It is estimated that this first phase of PReCePT has so far prevented five to ten cases of cerebral palsy across the region, representing potential lifetime healthcare savings in the region of £5 million and substantially more when including loss of productivity and social care costs over a lifetime.

More info

Brain imaging offers novel insights into appetite control

It's one of the biggest public health problems facing society today: one in three adults and three in ten children worldwide are overweight or obese. Why do some people seem to ignore their body's internal satiety (fullness) signals and continue eating high-calorie foods in the face of weight gain? Brain imaging could shed new light on what goes wrong.

Complex neural systems signal to us when we are full after eating and play an important part in the control of appetite. How sensitive or responsive we are to these signals could affect our risk of becoming overweight or obese. Individual differences in responsiveness have been observed at a genetic, physiological and behavioural level and may be important to consider in strategies to prevent or treat obesity.

Dr Elanor Hinton proposed using functional MRI to seek novel insights into the brain's control of satiety and how it relates to obesity. An EBI Early Career Fellowship award enabled her to forge ahead with her research and use the pilot data as a basis for external funding applications. She also benefited from the support of two scientific mentors: Professor Andy Ness at BRU and the School of Oral and Dental Sciences; and Dr Jade Thai at CRICBristol.

Dr Hinton's research objectives included examining responsiveness to satiety using neural, hormonal and behavioural measures, and determining whether people's responsiveness could be enhanced through specific weight interventions and training.

Findings showed that consuming certain proteins before a meal could increase feelings of fullness and reduce the amount of food people ate. An fMRI study in adolescents with obesity showed that the brain's response to food can alter over time, which may be associated with changes in weight or slowing eating behaviour.

Full story

New GW4 Alliance video

Released earlier in September, the GW4 Alliance's new video highlights some of the benefits of this multi-university partnership, and includes some personal reflections from Bristol PGRs.

All doctoral researchers at the University of Bristol are automatically a member of the GW4 Alliance. GW4 is comprised of four of the most research-intensive and ambitious universities in the UK: Bath, Bristol, Cardiff and Exeter. The GW4 Alliance offers a variety of advantages to postgraduate research students registered at any of its four institutions, including access to a collaborative network, expert training opportunities and shared resources.

GW4 training and support includes:

- Doctoral Student Training Scheme
- Annual Doctoral Skills Training Event
- Communication for Collaboration Online Resource
- Research and Professional Skills Training
- GW4 Equipment Database
- GW4 Treasures (archives and special collections)

Watch the video to find out more about the 'world-leading scholarship, infrastructure and research excellence' offered by the alliance.

Can opioids make pain worse by disturbing sleep?

One in four of us will suffer chronic pain in our lifetime; opioids such as morphine can sometimes help. However, deaths relating to opioid use have trebled in the last 20 years. Greater understanding of the risks and benefits of opioids could result in better and safer management of chronic pain.

Around 3% of adults in the UK today take opioids for non-cancer-related chronic pain. One of the unwanted side effects of opiates is sleep disturbance, and this is thought to be an important risk factor in opioid-related deaths. Sleep disturbance is also associated with increased sensitivity to pain. But can opioids make pain worse by disturbing sleep?

Bristol researchers are investigating the brain processes underlying opioid therapy and sleep disturbance in chronic pain patients, to help identify patients at risk of opioid-related side effects and guide safe prescription of these drugs in treating pain. Many of the brain areas known to control breathing and pain are rich in opioid receptors; this makes it difficult to disentangle the effects of opioid medication on breathing and pain, both of which may affect the quality of sleep experienced by patients.
Dr Jonathan Brooks with colleagues Dr Claire Durant, Ms Lee Harrison and Dr Sue Wilson, set out to measure sleep patterns in patients with chronic low back pain to see whether opioid-related sleep disturbance influenced the amount of pain reported. Funding for an initial feasibility study was provided by the Elizabeth Blackwell Catalyst Fund, which supports novel interdisciplinary research.

The research included monitoring patients' electrical brain activity and breathing during sleep, with or without the use of opoids, to determine whether the quality of patients' sleep affected their ability to detect and suppress pain, and whether opioids could actually make patients' pain worse by disturbing their sleep.

Full story

ELIZABETH BLACKWELL FUNDING

EBI Clinical Primer Scheme

This scheme is aimed at exceptionally motivated clinically qualified medical, veterinary and dental trainees who are at an early stage of their career and is designed to give them the chance to experience a world-class research environment for the first time.

Closing date: 8 January 2018

EBI Early Career Fellowships

The Elizabeth Blackwell Institute is delighted to be supporting one of the University of Bristol Vice-Chancellor's Fellowships in 2017. In addition to this they will be launching their own competitive EBI Early Career Fellowship scheme in early 2018.

Find a Sponsor deadline: Friday 15th December 2017

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 Schools are asked to nominate members of staff who can be eligible for this scheme by emailing ebi-health@bristol.ac.uk

EBI Workshops Funding

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 Senior 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

Set up via Research Professional (RP), a full calendar of funding opportunities for neuroscience research is available online. Subscribing to a calendar will place the entries in your own calendar, which will automatically update according to pre-specified search criteria. Staff and students have FREE access to Research Professional online from all computers on the University network. You can create your own personalised funding opportunity e-mail alerts by registering with RP. Find out all about it on the RED website.

The listing below represents 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**. Note that some calls may be subject to a major bids process; all details are on the website.

Alzheimer's Research UK
Global clinical trials fund

Closing date: 15-Nov-17 Award amount: £1 million

This supports clinical trials in the UK or worldwide that have the potential to be of benefit to dementia patients. Grants are worth up to £1 million per project.

Action Medical Research for Children
Chartered Society of Physiotherapy joint awards

Closing date: 21-Nov-17 Award amount: £250,000

These support research to help children with brain damage or other mental or physical disability at birth, in particular through research into effective physiotherapy treatments and the dissemination of the results to the public.

Action for A-T
Research grants

Closing date: 21-Nov-17 Award amount: £200,000

These support scientific research that speed up the process of identifying a cure for ataxia telangiectasia or treatments that delay or prevent the disabling effects of the condition.

Federation of European Neuroscience Societies
Brain conferences stipends

Closing date: 20-Jan-18 Award amount: €1,000

These assist international students or early-career scientists to attend the Federation of European Neuroscience Societies biannual conference.

A-T Children's Project
Grants

Closing date: 01-Feb-18 Award amount: USD 75,000
This supports translational and clinical research projects, particularly those projects focused on the neurological problems faced by all patients with ataxia-telangiectasia.

A-T Children's Project
Postdoctoral fellowship

Closing date: 01-Feb-18 Award amount: USD 80,000

This supports a postdoctoral investigator in the field of ataxia-telangiectasia research.

National Institute on Aging
Clarifying the relationship between delirium and Alzheimer's disease and related dementias (R01: clinical trial optional)

Closing date: 05-Feb-18 Award amount: USD not specified

This aims to clarify the relationship between delirium and Alzheimer's disease and related dementias. Application budgets are not limited but need to reflect the actual needs of the proposed project. The maximum project period is five years.

National Institute on Aging
Improving quality of care and quality of life for persons with Alzheimer's disease and related dementias at the end of life (R01: clinical trial optional)

Closing date: 05-Feb-18 Award amount: USD not specified

This aims to address clinical and translational research gaps in the study of end-of-life care needs in order to improve quality of life at the end of life of people with Alzheimer's disease and related dementias and their families. Application budgets are not limited but need to reflect the actual needs of the proposed project. The maximum project period is five years.

Wellcome Trust
Genomics of brain disorders conference bursaries

Closing date: 13-Feb-18 Award amount: 50% of registration fee

These enable PhD students to attend the genomics of brain disorders conference, to be held between 23 and 25 April 2018 in Cambridge.

SHOWCASED ARTICLE

The Kölliker-Fuse orchestrates the timing of expiratory abdominal nerve bursting

Barnett WH, Jenkin SEM, Milsom WK, Paton JFR, Abdala APL, Molkov YI and Zoccal DB (2017). *Journal of Neurophysiology*. Published online 25 October 2017

Co-ordination of respiratory pump and valve muscle activity is essential for normal breathing. A hallmark respiratory response to hypercapnia and hypoxia is the emergence of active exhalation, characterised by abdominal muscle pumping during the late one-third of expiration (late-E phase). Late-E abdominal activity during hypercapnia has been attributed to the activation of expiratory neurons located within the parafacial respiratory group (pFRG). However, the mechanisms that control emergence of active exhalation, and its silencing in restful breathing, are not completely understood. We hypothesised that inputs from the Kölliker-Fuse nucleus (KF) control the emergence of late-E activity during hypercapnia. Previously, we reported that reversible inhibition of the KF reduced post-inspiratory (post-I) motor output to laryngeal adductor muscles and brought forward the onset of hypercapnia-induced late-E abdominal activity. Herein, we explored the contribution of the KF for late-E abdominal recruitment during hypercapnia by pharmacologically disinhibiting the KF in *in situ* decerebrate arterially-perfused rat preparations. These data were combined with previous results and incorporated into a computational model of the respiratory central pattern generator. Disinhibition of the KF through local parenchymal microinjections of gabazine (GABAA receptor antagonist) prolonged vagal post-I activity and inhibited late-E abdominal output during hypercapnia. *In silico*, we reproduced this behaviour and predicted a mechanism where the KF provides excitatory drive to post-I inhibitory neurons, which, in turn, inhibit late-E neurons of the pFRG. Although the exact mechanism proposed by the model requires testing, our data confirm that the KF modulates the formation of late-E abdominal activity during hypercapnia.

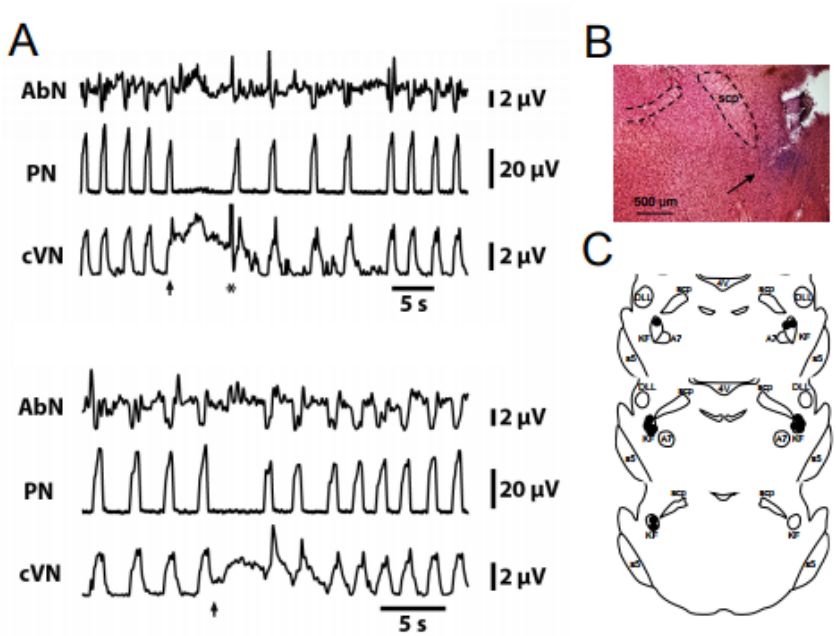


*Image caption: Functional and histological identification of the Kölliker-Fuse. A: Integrated recordings of abdominal (AbN), phrenic (PN) and cervical vagus (cVN) nerve activities from an in situ rat preparation, representative of the group, illustrating the respiratory responses to microinjections of glutamate (arrow) in the left (top) and right sides (bottom) of Kölliker-Fuse (KF). * represents an artefact generated during the removal of the injection micropipette. B: Photomicrography of coronal section from the brainstem of a representative in situ rat preparation, illustrating the site of microinjection in the KF (arrow). C: Schematic representations of all microinjection sites (black circles) into the KF (n = 6 each side). Abbreviation: DLL – dorsal nucleus of the lateral lemniscus; scp: superior cerebellar peduncle; s5 – sensory root of trigeminal nerve; 4V – fourth ventricle*

CONTACTS

Bristol Neuroscience is run by a Steering Group:

Director: Neil Scolding, Burden Professor of Clinical Neurosciences

- Richard Apps, Professor of Neuroscience
- 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
- Mike Mendl, Professor of Animal Behaviour and Welfare
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