University of BRISTOL

Elizabeth Blackwell Institute for Health Research

Bristol Neuroscience Newsletter

July - August 2018

bristol neuroscience

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Inside this issue:

New Director of Neuroscience

We are delighted to announce that, following an open competition, the position of Director of Bristol Neuroscience has been offered to Professor Matt Jones.

The post recognises Bristol Neuroscience's strength and diversity and affords an opportunity to focus and integrate teams across the University to conquer complex and critical challenges.

With a view of introducing himself and gathering feedback on what you, as part of the wider community, expect from him and ***where your vision for BN*** would lead, three open sessions have been organised:

For Postdocs: Monday 17 September 2018, Life Sciences G13/14, 15:00-16:00 followed by drinks reception in the foyer

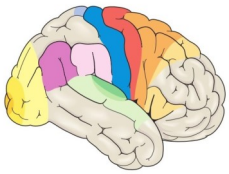
For PIs: Wednesday 19 September 2018, Queen's Building room 1.58, 15:00-16:00 followed by drinks reception on Queen's Building roof terrace.

PhD students: Thursday, 13 September 2018, Life Sciences G13/14, 15:00-16:00 followed by drinks reception in the foyer

No need to book
ALL welcome

Read the press release

EVENTS



Human Brain Anatomy Course
24 - 26 July 2018, King's College London

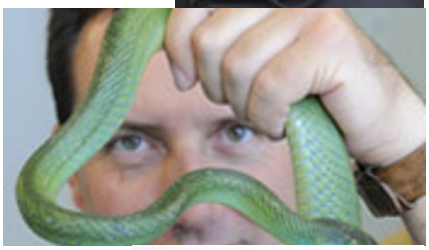
Translation Toolkit seminar series: Why Science Policy Matters
27 July 2018, 14.00 - 15.00, Rhiannon Wilson (PolicyBristol) and Dr Hannah Rose-Vineer (Bristol Veterinary School), G13/14 Life Sciences Building

Discrete Models and Formal Verification in Biology
29 - 31 August 2018, Keynotes: Prof Luca Cardelli (Microsoft Research and University of Oxford), Dr Jasmin Fisher (Microsoft Research and University of Cambridge), Prof Claudine Chaouiya (Instituto Gulbenkian de Ciência), Prof Jane Hillston (University of Edinburgh), Murray Edwards College Cambridge

Visceral Mind 2018 : A hands-on course in the neuroanatomy of cognition
3 - 7 September 2018, Bangor University

Infection and Immunity Early Career Researchers' Symposium
10 September 2018, 9.45 - 14.00, G13/G14 Life Sciences Building

Alcoholism, Stigma and Disability Symposium 2018
13 - 14 September 2018, Keynotes: Prof Havi Carel (University of Bristol), Prof Paul A. Lombardo (Georgia State University), Dr Lauren MacIvor Thompson (Georgia State University), Prof David Turner (Swansea University), Room 4.10, 35 Berkeley Square, Bristol, BS8 1JA



IDEAL International Conference
13 - 14 September 2018, MShed, Princes Wharf, Wapping Rd, Bristol, BS1 4RN

Translation Toolkit seminar series: How to be an Effective Networker
13 September 2018, 14.00 - 17.00, Vox Coaching, venue TBC

CITER Annual Scientific Meeting 2018
17 - 18 September 2018, Keynote: Rhys Jones (Cardiff University), Cardiff University

Meet the new BN Director: Postdocs
17 September 2018, 15.00 - 17.00, Life Sciences G13/14

Meet the new BN Director: PIs
19 September 2018, 15.00 - 17.00, Queen's Building room 1.58

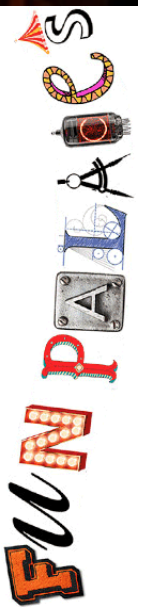
Meet the new BN Director: PhDs
21 September 2018, 15.00 - 17.00, Life Sciences G13/14

From top: Claudine Chaouiya, Havi Carel, Rhys Jones and Matt Jones

Neuroimmunological basis of Alzheimer's disease and related dementia
25 September 2018, 13.00 - 14.00, Mai Mwafy (Year 3, PhD student), Seminar rooms A&B, Level 2, Learning and Research Building, Southmead Hospital

Translation Toolkit seminar series
27 September 2018, 14.00 - 15.00, venue TBC

Come and make a Fun Palace
6 - 7 October 2018, various venues around Bristol



Development and evaluation of interventions for people with subjective cognitive decline
9 October 2018, 13.00 - 14.00, Charikleia Triantafyllou (Year 3, PhD student), Seminar rooms A&B, Level 2, Learning and Research Building, Southmead Hospital

Dysregulation of microRNAs in dementia
23 October 2018, 13.00 - 14.00, Jose Gabino Gerardo-Aviles (Year 3, PhD student), Seminar rooms A&B, Level 2, Learning and Research Building, Southmead Hospital

Translation Toolkit seminar series
25 October 2018, 14.00 - 15.00, venue TBC

L&R Postgraduate Presentations
30 October 2018, 13.00 - 14.00, Charlotte Carpenter (Year 1, PhD student) and Alfie Wearn (Year 2, PhD student), Seminar rooms A&B, Level 2, Learning and Research Building, Southmead Hospital

Clinical Academics in Training Annual Conference 2018
8 November 2018, 9.30 - 17.30, The Royal College of Physicians Edinburgh

2018 BRACE Conference
13 November 2018, 10.00 - 15.00, The Future Inn, Bond Street South

L&R Postgraduate Presentations
22 November 2018, 13.00 - 14.00, Carlos Munoz Neira (Year 2, PhD student) and Tanya Cerajewska (Year 1, PhD student), Seminar rooms A&B, Level 2, Learning and Research Building, Southmead Hospital

Pumps and Pipes UK Conference
19 February 2019, 8.00 - 18.00, SPE Aberdeen

ECNP Workshop for Early Career Scientists in Europe 2019
7 - 10 March 2019, Nice (France)

BNA2019: Festival of Neuroscience
14 - 17 April 2019, Dublin, Ireland

From top: Mai Mwafy, Charikleia Triantafyllou , Jose Gerardo-Aviles, Carlos Muñoz Neira

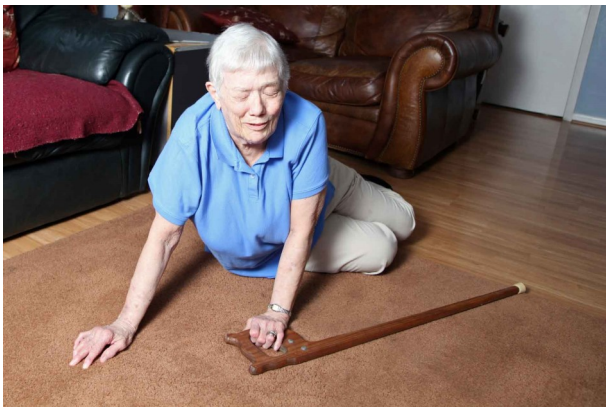
FULL EVENTS LISTINGS ARE AVILABLE ON THE BN WEBSITE

NEWS

£2.1m trial into Parkinson's disease

A UK-wide trial into Parkinson's disease led by Royal United Hospitals Bath NHS Foundation Trust and UoB has been funded by NIHR.

It will test whether a commonly prescribed dementia drug could prevent debilitating falls for people with the disease. Falls are a frequent complication of Parkinson's, which affect around 60% of the 127,000-people diagnosed with the condition each year. With the degeneration of dopamine-producing nerve cells, people with Parkinson's often have issues with unsteadiness when walking. As part of the condition, they also have lower levels of acetylcholine, a chemical which helps us to concentrate – making it extremely difficult to pay attention to walking. The combination of both often leads to patients suffering from injuries, broken bones and hospital admission. The new three-year trial is led by Dr Emily Henderson, a Geriatrician at the Royal United Hospital in Bath and an Honorary Senior Lecturer at the University of Bristol (and winner of the 2017 Grey Walter Prize). It will recruit 600 patients across 26 UK hospitals to determine whether a drug, known as a cholinesterase inhibitor (ChEi) will help people with Parkinson's.



Grey Walter Prize 2018

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.

The **call for submissions** to the 2018 round **is now OPEN.**

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

Deadline: 28 Sept 2018

Full details on the BN website

Download the application form

Funding successes: Part 1

Prof Richard Apps (PPN) from the **BBSRC**, £18,090 for *Functional neuroanatomical mapping following cerebellar stimulation*. Start date 16 Jul 2018 for 5 months.

Dr Anne Roudaut (Computer Science) from the **Royal Society**, £11,870 for *Shape Changing Handheld Devices for Carpal Tunnel Syndrome Rehabilitation*. Start date 1 Dec 2017 for 2 years.

Prof Stafford Lightman (BMS/THS) from the **Rosetrees Trust**, £17,874 for *Editing genes to provide cell line models for the study of glucocorticoid hormone actions in brain cells*. Start date 4 Apr 2018 for 1 year.

Dr Laura Palmer (BMS/THS) an **Alzheimer's Research UK** Equipment Grant, £43,902 for *Excelsior AS Brain Tissue Processor to underpin UK Dementia Research*.

Dr Scott Miners (BMS/THS)an **Alzheimer's Research UK** Network Cooperation Grant, £99,037 for *Exploring the role of inflammation, cerebral hypoperfusion, and pericyte function in dementia*. Start date 1 May 2018 for 19 months.

Dr Scott Miners(BMS/THS) an **Alzheimer's Research UK** PhD Scholarship for *Age-associated changes in the renin-angiotensin system-implications for future clinical trials*.

Mr Joe Webb (Policy Studies) from the **ESRC**, £19,163 for *Dementia training*.

Link between obesity and smoking behaviour

A study by the International Agency for Research on Cancer (IARC) provides new evidence that increased weight and obesity may result in increased smoking. The team found that increased body mass index (BMI), body fat percentage and waist circumference were associated both with a higher risk of being a smoker and with greater smoking intensity, measured by the number of cigarettes smoked per day. These results were consistent in both men and women.

In contrast to previous studies evaluating the relationship between body weight and smoking behaviour, this study was based on genetic markers of obesity using UK Biobank data with genetic information on nearly 450 000 participants.

Based on genetic markers of obesity, the study allows us to better understand the complex relationship between obesity and important smoking habits such as smoking initiation and intensity, as well as the impact of obesity on smoking cessation, says Dr Paul Brennan. The study also suggests that the link between BMI and tobacco exposure may originate in a common biological basis for addictive behaviours, such as nicotine addiction and higher energy intake.

It is well established that smokers have a lower body weight on average than non-smokers, possibly because of a reduced appetite in smokers, but that people tend to gain weight after quitting smoking. However, among smokers, those who smoke more intensively tend to weigh more. This new analysis of genetic variants linked to body mass highlights the complex relationship between obesity and tobacco smoking. Read more

Psychological therapies for treatment-resistant depression

An NIHR-funded review has found that adults with treatment-resistant depression who are given psychotherapy in addition to usual care – taking antidepressants – had fewer depressive symptoms after six months, compared to those continuing with usual care. The researchers also found that patients who had psychotherapy in addition to usual care, were twice as likely to be depression free.

Antidepressants continue to be the first line treatment for patients with moderate or severe depression. However, many people prescribed antidepressants for depression will continue to have significant symptoms (treatment-resistant depression).

This Cochrane review of existing evidence aimed to find out whether psychotherapy works for people with treatment-resistant depression. The team analysed data from six randomised trials which included 698 people in total and studied three types of psychotherapy. They looked at whether adding psychotherapy to existing antidepressant treatment led to improvements in depressive symptoms, and if psychotherapy was acceptable to patients. In addition, to the positive outcomes seen at six months, beneficial effects of psychotherapy were also found in a smaller number of studies that looked at outcomes after 12 months and 46 months. Importantly, the researchers also found that providing psychotherapy in addition to usual care was as acceptable to patients as usual care alone.

Read more

Products with controls you can feel but cannot see

Taking technology from academic theory to commercial reality

Ultrahaptics has created a technology that allows people to feel virtual shapes, objects, and controls in mid-air. No gloves or handheld controllers are needed – the technology, which we call mid-air haptics, uses ultrasound to project tactile sensations directly onto a user's hands. Ultrahaptics has a team of almost 100 people split between offices in California, Germany, South Korea and their headquarters in the Bristol Temple Quarter Enterprise Zone. They have raised over $40 million in funding and are working with blue-chip companies including Nike, Dell, Meta, BARCO, Bosch and HARMAN to put mid-air haptics into commercial products ranging from cars to Virtual Reality (VR).

All this has been achieved in slightly over four years. It shows just how far and how fast local companies like Ultrahaptics can go with the right tech, the right team and the right support from organisations such as SETsquared. None of it, however, could have happened without the original scientific breakthrough by Drs Tom Carter & Ben Long and Prof Sri Subramanian at UoB.

Ultrahaptics is solidly founded on academic research and the company continues to engage deeply with academia and consider it to be key to the company's success going forwards. Read more

Collaborative research to improve health and care

Scientists are collaborating with NHS and public health staff to ensure that research evidence is used effectively to improve public health and patient outcomes. Collaboration has increasingly become the watchword to guide research and health improvement.

Collaboration is at the heart of what the Collaboration for Leadership in Applied Health Research and Care West (NIHR CLAHRC West) does. They are part of a complex landscape of research and healthcare organisations with an array of inscrutable acronyms, all of which are united in a commitment to improve the health of the population and the delivery of health and social care.

CLAHRC West's particular focus is on encouraging the use of research evidence; they work collaboratively with patients and members of the public, providers of NHS services, NHS commissioners, universities, local authorities, charities and third sector organisations, to make research evidence more accessible so that it can be used to improve health and care.

Examples of the work they do include: Preventing disabilities in babies; Is it safe to drink when pregnant?; Improving online GP consultations; Safer syringes for drug users; Developing skills in research evidence.

Read more

A home medical sensing device?

New research that could transform the future of healthcare will investigate whether it is possible to reuse WiFi radio waves as a medical radar system. The research is part of a new £1.5m grant awarded by the EPSRC, Toshiba and Decawave to the OPERA project, a consortium including the universities of Bristol and Oxford; University College London and Coventry University. The 3-year project, starting in October 2018, will extend the current SPHERE project, which is developing sensors for use in the home to spot health and wellbeing problems, with both projects running until 2021.

Physical activity and behaviour patterns play a significant role in a range of long-term chronic health conditions such as diabetes, dementia, depression, chronic obstructive pulmonary disease (COPD), arthritis and asthma. The UK currently spends 70% of its entire health and social care budget on these types of conditions. OPERA will attempt to build a complementary passive-sensing platform by reusing existing home technologies; a receiver-only radar network that detects the reflections of ambient radio-frequency signals from people.

Read more

Autism is not linked to eating fish in pregnancy

A major study examining the fish-eating habits of pregnant women has found that they are not linked to autism or autistic traits in their children.

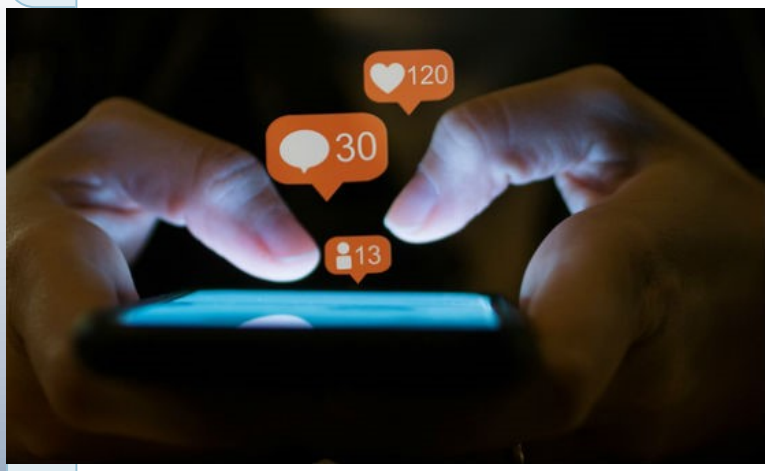
Scientists at UoB looked at the assumption that mercury exposure during pregnancy is a major cause of autism using evidence from nearly 4500 women who took part in the Children of the 90s study.

Using analysis of blood samples, reported fish consumption and information on autism and autistic traits from one of the largest longitudinal studies to date, researchers found no links between levels of mercury in the mothers and autism or autistic traits in their children. The only adverse effect of mercury found was poor social cognition if mothers ate no fish at all, especially for girls. The findings further endorse the safety of eating fish during pregnancy.

Read more

Distinct daily cycles in thinking patterns

Our mode of thinking changes at different times of the day and follows a 24-hour pattern according to researchers able to study our thinking behaviour by analysing seven-billion words used in 800-million tweets.



Researchers in artificial intelligence (AI) and in medicine used AI methods to analyse aggregated and anonymised UK twitter content sampled every hour over the course of four years across 54 of the UK's largest cities to determine if our thinking modes changed collectively.

The team revealed different emotional and cognitive modalities in our thoughts by identifying variations in language through tracking the use of specific words across the twitter sample which are associated with 73 psychometric indicators, and are used to help interpret information about our thinking style.

At 6 am, analytical thinking was shown to peak, the words and language at this time were shown to correlate with a more logical way of thinking. However, in the evenings and nights this thinking style changed to a more emotional and existential one.

Although 73 different psychometric quantities were tracked, the team found there were just two independent underlying factors that explained most of the temporal variations across the data.

Dzogang F *et al*. (2018). Diurnal Variations of Psychometric Indicators in Twitter Content. *PLOS ONE*. Published 20 June 2018.

Read the full press release

Funding successes: Part 2

Dr Anja Teschemacher (PPN) from the **British Heart Foundation**, £117,734 for *Development of a Strategy to Limit Lactate-mediated Sympathoexcitation*. Start date 1 May 2018 for 20 months.

Dr Elena Hoicka (Education) from the **British Academy**, £109,266 for *Mid-Career Fellowship - The effects of touchscreens on social play in 1-3 year olds*. Start date 1 Sept 2018 for 1 year.

To David Murphy from the **BBSRC**, a £1,096,475 Responsive Mode Research Grant for *The role of hypothalamic RNA binding protein Caprin2 in osmoregulatory dysfunction in old age*. Start date 1 June 2018 for 4 years.

Prof James Uney, Dr Oscar Cordero-Llana and Dr Axel Heep from the **Castang Foundation**, **Sparks** and **Great Ormond Street Charity**, £58,925 for *Targeting active brain protection through cell therapy in preterm infants at risk of cerebral palsy: Study of neural stem cells and molecular signalling in the cerebrospinal fluid of preterm infants*.

Dr Rebecca Pearson (BMS/PHS) from the **MRC**, £42,525 for *The role of executive function and decision making for adolescent mental health in the context of adversity in South Africa*. South African adolescents have one of the worst mental health profiles in Africa. New avenues of research suggest that executive functions (EFs), may offer potential as an explanatory variable, and as an innovative intervention target. EFs are linked to self-regulation and control and are needed to delay gratification, control impulses, and modulate emotional expression. Low EFs are linked to violence, injury, suicidality, bullying and substance-use disorders. This seed project aims to support sustainable capacity building amongst South African researchers to utilise existing data and design, measure and analyse mental health and EFs amongst South African adolescents.

Health data review

A new landmark report published by the MRC highlights the University's strengths in digital health research and other areas.

Mapping the Landscape of UK Health Data Research and Innovation is a new landmark report published by the Medical Research Council. The review, commissioned in 2017, encompasses 26 research organisations. The report highlights the complex and flourishing area of health data research in the UK, detailing key activities and ma-jor investments made by UK public funders, government, charities and universities from across the country.

Professor John Macleod, Professor in Clinical Epidemiology and Primary Care and Joint Head of CAPC, Bristol Medical School (PHS) said: "This is an important snapshot of the breadth and depth of UK Health Data Research. The fast-moving nature of this sector means that inevitably the report is already out of date. Bristol's unique strengths are clearly described and we will continue to grow these and realise their potential for impact on health improvement".

Read the full report

Frequent sauna bathing reduces risk of stroke

Frequent sauna bathing is associated with a reduced risk of stroke, according to a new international study. In a 15-year follow-up study, people taking a sauna four to seven times a week were 61% less likely to suffer a stroke than those taking a sauna once a week.

The findings are based on the population-based Kuopio Ischaemic Heart Disease Risk Factor (KIHD) study and involved 1,628 men and women aged 53 to 74 years living in the eastern part of Finland. Based on their frequency of taking traditional Finnish sauna baths (relative humidity 10-20%), the study participants were divided into three groups: those taking a sauna once a week, those taking a sauna two to three times a week, and those taking a sauna four to seven times a week. The more frequently saunas were taken, the lower was the risk of stroke. Compared to people taking one sauna session per week, the risk was decreased by 14% among those with two to three sessions and 61%among those with four to seven sessions. The association persisted even when taking into account conventional stroke risk factors, such as age, sex, diabetes, body mass index, blood lipids, alcohol consumption, physical activity and socio-economic status. The strength of association was similar in men and women.

Kunutsor S et al. (2018). Sauna bathing reduces the risk of stroke in Finnish men and women: A prospective cohort study. *Neurology*. Published 2 May 2018.

Extreme mobility of mantis shrimp eyes

Mantis shrimp vision is extraordinary, both in terms of their colour vision and their ability to see the polarisation of light. Not only this, but they have extremely mobile eyes that never seem to stop moving. While most animals keep eye movements to a minimum to avoid blur, mantis shrimp apparently go out of their way to move their eyes as much as possible.

Each eye is capable of independent rotation in all three degrees of rotational freedom; pitch (up-down), yaw (side-to-side) and roll (twisting about the eye-stalk). The team wanted to test the limits of this incredible mobility to discover at what point mantis shrimp have to steady their gaze. Like other animals, mantis shrimp do make stabilising side-to-side movements that help keep their vision steady as they move through the world, but the team found that even while stabilising in the horizontal direction, they can't resist rolling their eyes. The mantis shrimp visual system seems entirely immune from any negative effects of rolling their eyes. This is unprecedented in the animal kingdom.

Read more

Health Integration Team annual updates: Part 1

Dr Jonathan Evans and Inge Shepherd, Directors of the **Improving Perinatal Mental Health Health Integration Team** (IMPROVE HIT):

The specialist perinatal mental health service has been running for over a year; we are looking at the pathways in place for women experiencing less severe common mental health issues, with a focus on depression and anxiety. We are contributing to the recommissioning process for Improving Access to Psychological Therapies (IAPT) services. We have increased women's engagement with Children's Centres, with a system up and running to register all women during their pregnancy. We will look to assess the impact of this on perinatal mental health.

We have had several funding successes this year: a project on mental health intergeneration transmission (ERC, €1.3m); and £250k from the NIHR to compare psychological treatments for prenatal depression.

Hugh Herzig, Helen Malson and Sanni Norweg, Directors of the **Eating Disorders Health Integration Team (EDHIT)**:

In February our patient and public involvement (PPI) group mounted an exhibition of photography at the Arnolfini, featuring work by people with personal experience of eating disorders.

The EDHIT research work stream's regular half-day conference series took place in November and consisted of presentations describing local and national priorities, research activities and service developments. Research that's going on in collaboration with EDHIT includes:

- Eating disorders prevention *body image projects* (£18,600 and £28,000)
- A new school-based intervention to challenge restrictive gender norms with the aim of preventing eating disorders and improving health and wellbeing in young people (£9,931)
- 'How can we improve primary care for children and young people with eating disorders?' (£17,588)

Dr Nicola Wiles and Dr David Kessler, Directors of the **Psychological Therapies in Primary Care Health Integration Team (InPsyTe HIT)**:

Our main focus has been to continue work on improving patient access and engagement with the local Improving Access to Psychological Therapies (IAPT) service in two ways: an evaluation of an online therapist supported therapy package, SilverCloud, within the IAPT service; and an initiative to reach out to members of the black and minority ethnic community, who are seriously under-represented in psychological services. The UoB-led INTERACT programme grant is progressing, which aims to develop a therapist integrated online CBT intervention for depression, which will be followed by a randomised control trial evaluating the clinical and cost-effectiveness of the intervention.

Psychosis Health Integration Team Directors Dr Sarah Sullivan, Dr Simon Downer, James Robinson and Martha Sneyd:

The highlight was a 'Rewriting Psychosis' event in January, which brought over 130 people together to consider *How can people who experience psychosis, those close to them, health professionals, activists and researchers build a new story about psychosis where thriving and resilience are a potential outcome, rather than hopelessness and stigma?* The event resulted in the HIT being invited to share best practice by the BFI Film Audience Network for their Inclusive Cinema digital resource, and led to a potential research project focussing on improving service users' experience of being in hospital. We completed work to evaluate the im-

Health Integration Team annual updates: Part 2

pact of an algorithm to predict relapse in psychosis and finished collecting qualitative data from service users and crisis team staff to investigate local crisis response; we are working to influence NICE guidance on this subject.

Dr Alan Whone, Director of the **Parkinson's and Other Movement Disorders Health Integration Team (MOVE HIT)**:

With our patient and public involvement (PPI) group, we have developed a shared guide to mental health and wellbeing services in the area which professionals are about to use. This will help co-ordinate an approach to common issues of anxiety and depression that patients can face. One of the team's Deep Brain Stimulation Nurses featured in Channel 4's documentary, 'Can You Rebuild My Brain?'. Our programme of education continues to expand as we develop materials for local care homes. We are also looking at how to better support ward staff in their management of Parkinson's and other movement disorders.

Kyla Thomas, Leonie Roberts, Katherine Williams and Tim Williams, Directors of the **Drug and Alcohol Health Integration Team (HIT)**:

We continue to collaborate with NIHR CLAHRC West on joint work on the acceptability of new, safer syringes (with 'low dead space') among injecting drug users; a knowledge mobilisation fellow in the Bristol Drugs Project is taking this forward. Their joint evaluation of the South Gloucestershire pain review pilot project with CLAHRC West will provide vital insight on service changes to enable quick identification of people who are dependent on prescription opioids, so that they can receive appropriate management. The 'understanding substances' element of the Healthy Schools programmed launched in December 2017. Other ongoing projects include alcohol labelling, rapid access to alcohol detox from acute hospitals, reducing drug use in female street sex workers and an intervention to improve recovery outcomes from use of illicit opioids.

Salena Williams and Sue Dursley, Co-Directors of the **Improving Care in Self-Harm Health Integration Team** (STITCH HIT) :

In March 2018 Salena Williams addressed the All Party Parliamentary Group on Suicide and Self-harm Prevention; she also wrote Bristol's citywide suicide prevention strategy, with help from members and partners. The team won the Health Education England South West Star Award for their training with patients and people with lived experience. The extended self-harm outpatient clinic has now been piloted for a year; this specialised psychodynamic clinic was for people who self-harmed and presented to the Emergency Department, and aimed to reduce repeat attendance and suicide risk. The team are now evaluating the clinic.

Drs Phil Clatworthy & Ann Sephton, Prof Mark Pietroni and Emily Dodd of the **Stroke Health Integration Team**:

Our executive is integrated into and supports the Sustainability and Transformation Partnership stroke pathway review, which will lead to the reorganisation of services to improve the care of those who have had or are at risk of having a stroke in the local area. People directly affected by stroke have assisted with drafting the outline business case for the Stroke Pathway Review and their involvement will be further strengthened with the recruitment of a peer director to lead the patient and public involvement workstream. The education and training workstream has drafted an education and skills framework to define the skills required to deliver stroke care in the post-acute stroke pathway, and secured resources.

Social communication difficulties linked to behaviour

Children who have difficulties with social communication, as seen in autism spectrum disorders (ASD), have a higher risk of self-harm with suicidal behaviour by the age of 16 years compared to those without. Research has suggested that suicide could be important in premature deaths in autistic people.

The team analysed data on 5,031 adolescents from the Avon Longitudinal Study of Parents and Children to assess whether there were any associations between ASD -like traits (social communication, pragmatic language, sociability, repetitive behaviour) and the risk of suicidal self-harm and suicidal thoughts and plans by the age of 16 years. Depression in early adolescence at 12 years of age was considered as a possible explanatory mechanism. The researchers found that children with difficulties in social communication had a higher risk of suicidal self-harm, suicidal thoughts and plans by the age of 16 years as compared to those without. The team found that a third of the association between social communication difficulties and suicidal self-harm was explained by depression in early adolescence. Future studies should focus on identifying other changeable mechanisms to develop preventative interventions for people with autism.

Culpin I et al. (2018). Autistic traits and suicidal thoughts, plans and self-harm in late adolescence: population based cohort study. *Journal of the American Academy of Child and Adolescent Psychiatry.* 57(5), pp313-320.

Research Design Service (RDS)

The National Institute for Health Research (NIHR) has awarded the Research Design Service (RDS) a further five years of funding to continue the work of the RDS South West.

Proposals were invited from NHS organisations and Higher Education Institutions in England with proven expertise in research methodology and design. Ten organisations were successful and the combined Research Design Services will form a national network, liaising with each other to develop a consistent service to the research community across England.

The NIHR funding will allow RDS advisers in the South West to continue offering free and confidential advice, drawing on a unique breadth of experience and established track record in improving funding applications.

The RDS have been funded for the ten years prior to this round of funding and the advice offered by us to researchers represents a key contribution to the NIHR's commitment to delivery of high quality health and social care research.

Prof Gordon Taylor, Director of NIHR RDS SW:

We look forward to continuing to support researchers, working in applied health, across the South West of England and to strengthen our engagement with partners in social care.

Find out more about how the RDS could help you by visiting the website or contacting the RDS South West Bristol Office:

The Education & Research Centre - Level 3
University Hospitals Bristol NHS Foundation Trust
Upper Maudlin Street
Bristol, BS2 8AE
Tel: 0117 342 0233
Email: rds@uhbristol.nhs.uk

NHS National Institute for Health Research 70 YEARS OF THE NHS 1948 - 2018

Appointments and awards

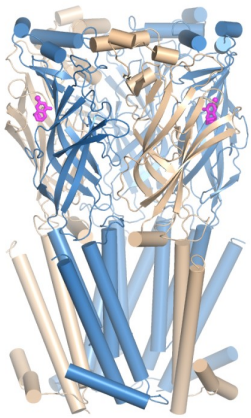
Congratulations to Prof Patrick Kehoe, Gestetner Professor of Translational Dementia Research and joint-head (with Prof Seth Love), of the Dementia Research Group in Bristol Medical School: Translational Health Sciences, on his recent appointment as an International Expert Panel Member to assist the National Medical Research Council (NMRC) in the evaluation of various competitive grants and programmes. The appointment will be from 1 June 2018 to 31 May 2020.

Congratulations also to Dr Francesca Spiga, Research Fellow in BMS: THS, who recently received the two following awards:

- British Neuroendocrinology Society Project support Grant: *Effect of FKBP51 over-expression in the rat PVN on corticosterone ultradian rhythm*. Award of £5,000.
- Society for Endocrinology Practical Skills Grant: *Contribution of GABAergic signalling in the daily electrical excitability of suprachiasmatic nuclei circadian clock neurons*. Award of £1,000 for travel to the University of Exeter.

Therapeutic potential of nicotine receptors

Despite a WHO target to phase out tobacco usage by 2040, smoking remains one of the biggest global public health problems, with low to middle income countries accounting for around 80% of the world's estimated 1.1 billion smokers. To address this, there is a challenge to find smoking cessation therapies that are both low cost and that support smokers effectively to manage and then conquer their addiction.



Currently, there are two drugs which offer a related approach to smoking cessation: cytisine (marketed as Tabex) and varenicline (sold as Chantix or Champix). Both drugs work by selective stimulation of the brain's nicotine receptor in such a way that the smoker receives some but not all the reward of smoking, so they can manage withdrawal. However, both drugs activate other receptors in the brain that may be linked to various side effects; identifying more selective drugs that offer smokers an improved therapy would encourage greater end-user compliance and lead to increased quit rates.

Researchers have been examining the chemistry and pharmacology of cytisine, looking at robust ways to target and modify specific parts of its chemical structure. Using computational simulation methods, the team have unpacked how the modified chemical structure determines the biological profiles of new cytisine variants to provide the enhanced differentiation that they have observed. Longer term this work has the potential to produce a new smoking cessation therapy based on cytisine that may lead to higher and more sustained quit rates.

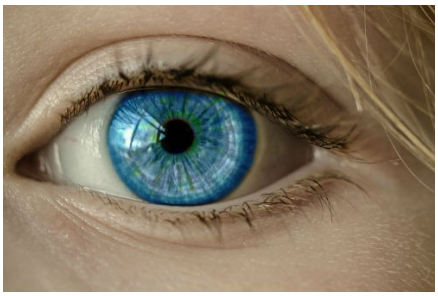
Modified cytisine molecules (fuchsia) bound to the brain's key nicotine receptor. © Dr Sofia Oliveira, UoB

Study finds more time in education causes myopia

For more than a century observational studies have reported links between education and myopia, but whether time spent in education causes myopia, children with myopia are more studious, or socioeconomic position and a higher level of education leads to myopia has not been known with any certainty. To find out whether more time spent in education is a causal risk factor for myopia, a research team used Mendelian randomisation (MR) applied to a large, population cohort, known as the UK Biobank. They showed that for every additional year spent in education, there was an increase in myopic refractive error of -0.27 dioptres/year. This suggests that a UK university graduate with 17 years in education would, on average, be one dioptre more myopic than an individual who left school at 16 with 12 years of education. This difference in myopia severity is enough to blur vision for driving below legal standards.

With the rapid rise in the global prevalence of myopia and its vision-threatening complications, together with the economic burden of visual loss, the findings of this study have important implications for educational practices.

Read more



The Bristol Self-Harm Surveillance Register

Part of the Bristol Firsts blog series, celebrating Bristol-based innovations in the NHS's 70th year

Self-harm is a huge public health issue which accounts for around 200,000 A&E attendances each year. Up to a quarter go on to repeat self-harm in the next 12 months. It's also strongly associated with suicide. A fifth of all suicides attend A&E for self-harm in the year before their death and over a third of all suicides have a history of self-harm. So when people come to A&E after self-harm, we have a golden moment to prevent suicide.

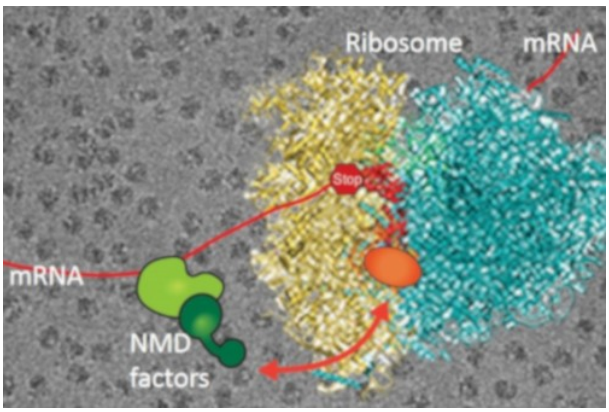
Salena Williams is a Senior Nurse in the Bristol Royal Infirmary (BRI) and a Director of the STITCH Health Integration Team. Since 2008 she has been a member of the Bristol Suicide Prevention Group which monitors suicide in the city. As it's the highest risk factor for suicide above all others, they were compelled to do something to impact self-harm in our local area; but they needed to know the size of the issue.

The Bristol Self-Harm Surveillance Register was their way of understanding what's going on with these patients and seeing patterns that could help save lives. Overcoming financial obstacles, the register was set up in September 2010, and is a database where detailed information on patients who've come to any Bristol hospital having self-harmed is recorded. It allows monitoring of rates and patterns of self-harm, including the risk factors that indicate if someone's going to repeat self-harm or attempt suicide. They can also monitor which medicines people use to take an overdose. The register has expanded to Southmead and Bristol Children's Hospitals and has shed light on so much that has helped inform a local suicide prevention strategy, including the fact that self-harm maps almost perfectly onto Bristol's areas of deprivation. Read more

Quality control cell mechanisms

Prof Christiane Berger-Schaffitzel (Biochemistry) has won a £1.5m Wellcome Trust Investigator Award in Science Application to study an essential quality control mechanism in our cells: nonsense-mediated mRNA decay (NMD).

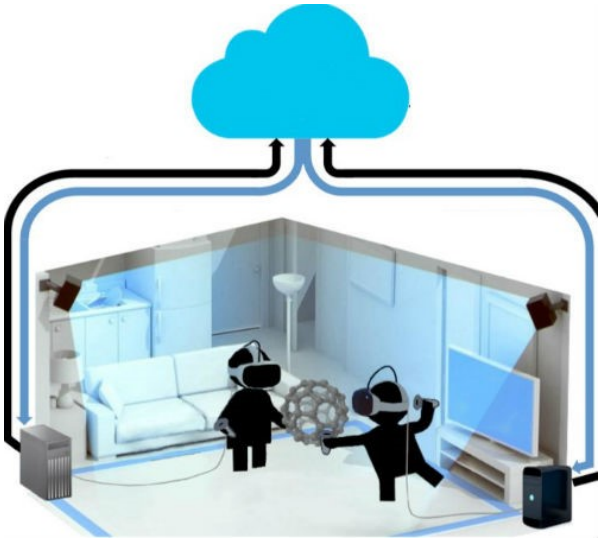
Errors in mRNAs can give rise to shortened proteins which can be toxic to our cells and cause severe disease. Fortunately, cells have devised a vital quality control mechanism called NMD, to recognise and eliminate some faulty mRNAs. Despite the importance of the mechanism we still do not understand how faulty mRNAs are recognised and marked for elimination.



The new award will be used to validate a recent discovery by Christiane's lab, showing the role of a key protein in the recognition of faulty mRNAs. By using electron cryo-microscopy (cryo-EM), the team will be able to visualise (at near-atomic resolution) how this protein, and others, interact with faulty mRNA and to discover their impact on health and disease. Failure of cells to degrade faulty mRNAs are implicated to be the starting point for many genetic diseases, including non-syndromic intellectual disability, autism and schizophrenia. Understanding the molecular events triggering NMD will be instrumental for the development of future therapies to treat such diseases.

New drug and material discoveries to be untangled in VR

A joint team of computer science and chemistry researchers, in collaboration with developers at Bristol based start-up Interactive Scientific and Oracle Corporation, have used Oracle's public cloud infrastructure to combine real-time molecular simulations with the latest virtual reality technology. This collaboration has made it possible for researchers to reach out and 'touch' molecules as they move - folding them, knotting them, plucking them and changing their shape to test how they interact. Using cloud computing, several people can interact with the molecules in the same virtual space at the same time.



Industry is already showing interest in using VR in this breakthrough way to change how drugs are designed, and to transform the teaching of chemical structures and dynamics. Anybody wishing to try out the tasks described in the paper can download the software at https://isci.itch.io/nsb-imd, and launch their own cloud-hosted session.

O'Conor M *et al*. (2018). Sampling molecular conformations and dynamics in a multi-user virtual reality framework. *Science Advances*. 4(6), eaat2731 .

NIHR Biomedical Research Centre (BRC)

Extract from the BRC Researcher Profiles webpages:

Dr Becky Mars is a Research Fellow in Epidemiology at the department of Population Health Sciences and one of our BRC Mental Health theme researchers. Here she discusses her research exploring transitions between self-harm and suicide. Follow @Becky_mars for updates.

What is your area of research and why is it important?

My research focuses on self-harm and suicidal behaviour in young people. Suicidal thoughts are common in adolescence, but we know that only about one in three people who think about suicide will actually make an attempt on their life. As part of my work with the BRC, I'm exploring which factors predict the transition from suicidal thoughts to suicide attempts over time. To carry out the research, I'm using newly collected data from the Avon Longitudinal Study of Parents and Children (ALSPAC) birth cohort, which has tracked the health and development of over 14,000 families since the 90s.

By identifying modifiable risk factors, I'm hoping this research will pave the way to creating more effective suicide prevention and treatment programmes.

Helping to shape the NHS and save lives

Since it was established in 1948, the National Health Service has become one of the nation's most-loved institutions, playing a vital role in our lives.

UoB is shining a spotlight on how our research and teaching has helped to shape the NHS and improve people's health. Some examples are:

Cooling babies to save lives

Prof Marianne Thoresen's research showed that cooling newborns who had been starved of oxygen during birth could reduce their risk of suffering brain damage. It led to a revolutionary treatment which has been provided by neonatal intensive care units across the UK since 2010 and saves 1,500 babies from death and disability each year.

Studying Bristol families to improve the health of future generations

For over 25 years the Children of the 90s study has been charting the lives of 14,5000 people born in the early 1990s in the greater Bristol area. Data from the most detailed study of its kind in the world has been used by more than 600 academics, leading to important discoveries that are helping treat and prevent ill health, e.g. mothers who consume less fish during pregnancy have children with lower IQs.

Engineering better health

Researchers are creating soft robotic clothing with artificial 'muscles' in its fabric to help disabled and older people move around easily and unaided. They're also combining biology, robotics and bioengineering to create human skin which will one day have potential applications for burns patients needing skin grafts. The technique involves engineering human skin on artificial robotic muscles that can stretch and bend the tissue just like in the real world.

Read more

ELIZABETH BLACKWELL FUNDING

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**.

Research Professional

Wings for Life
Project research grants

Closing date: 02-Sep-18 Award amount: €300,000

These support full basic or clinical research projects related to spinal cord injury. Projects may address:

- all aspects of spinal cord lesions
- nerve regeneration
- trophic support of injured neurons
- functional changes induced by lesions
- preferentially in mammalian models

Proposals should have a view to translation from laboratory to clinical setting and have the potential to provide real benefits to human patients.

Action Medical Research for Children
Sands joint research training fellowship

Closing date: 05-Sep-18 Award amount: £250,000

This supports medical and bioengineering graduates in training research techniques and methodology related to child health. This scheme aims to train the research leaders of the future in the UK and applicants are expected to demonstrate a significant training element to their project. Applicants are strongly encouraged to independently register for a higher degree such as a PhD. In addition to up to three regular research training fellowships, the following two joint research training fellowships are available in this call:

- fellowship in the field of childhood neurological diseases, including muscle disease, offered jointly by AMRC and the British Paediatric Neurology Association
- fellowship in the field of children with brain damage or other mental or physical disability at birth and their effective physiotherapy treatments, offered jointly by AMRC and the Chartered Society of Physiotherapy Charitable Trust

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.

Medical Research Council
Research grants – neurosciences and mental health

Closing date: 03-Oct-18 Award amount: £1m

These are suitable for focused research projects that may be short- or long-term in nature. In addition, they may be used to support method development and continuation of research facilities and may involve more than one research group or institution.

Medical Research Council
Programme grants – neurosciences and mental health

Closing date: 03-Oct-18 Award amount: unspecified

These provide large, long-term and renewable programme funding to help the medical science community think bigger. Programmes must include a co-ordinated and coherent group of related projects, which may be developed to address an interrelated set of questions across a broad scientific area.

National Institute of Neurological Disorders and Stroke, USA
BRAIN initiative – biology and biophysics of neural stimulation (R01 clinical trial optional)

Closing date: 04-Oct-18 Award amount: unspecified but total budget is USD15m

This supports projects to systematically characterise, model and validate the membrane, cellular, circuit and adaptive-biological responses of neuronal and non-neuronal cells to various types of stimulation. Development of new technologies and therapies, as well as of disease models are outside the scope of this FOA. However, activities related to combining multiple recording modalities are allowed.

BNA Local Group funding
https://www.bna.org.uk/members/lg-funding/

Annual deadlines: 31-May-18 and 31-Oct-18 Award amount: £500 pa per individual

The aims of the funding scheme are to enable Local Groups (LGs) to benefit current members of the BNA and recruit new members of the Association. Creative ideas for activities that fulfil the Objects of the BNA and engage with as many people as possible are looked on favourably. Such activities can include but are not restricted to:

- training or career opportunities in the field of neuroscience for BNA members
- opportunities to foster translational neuroscience
- public engagement projects
- an individual or a series of seminars*
- initiatives that support neuroscientists relating to wider issues of neuroscience e.g. using animals in research, neuroethics, working with the media
  initiatives to recruit new members to the BNA

Association of British Neurologists
Clinical research training fellowship

Closing date: 19-Nov-18 (forecast) Award amount: unspecified

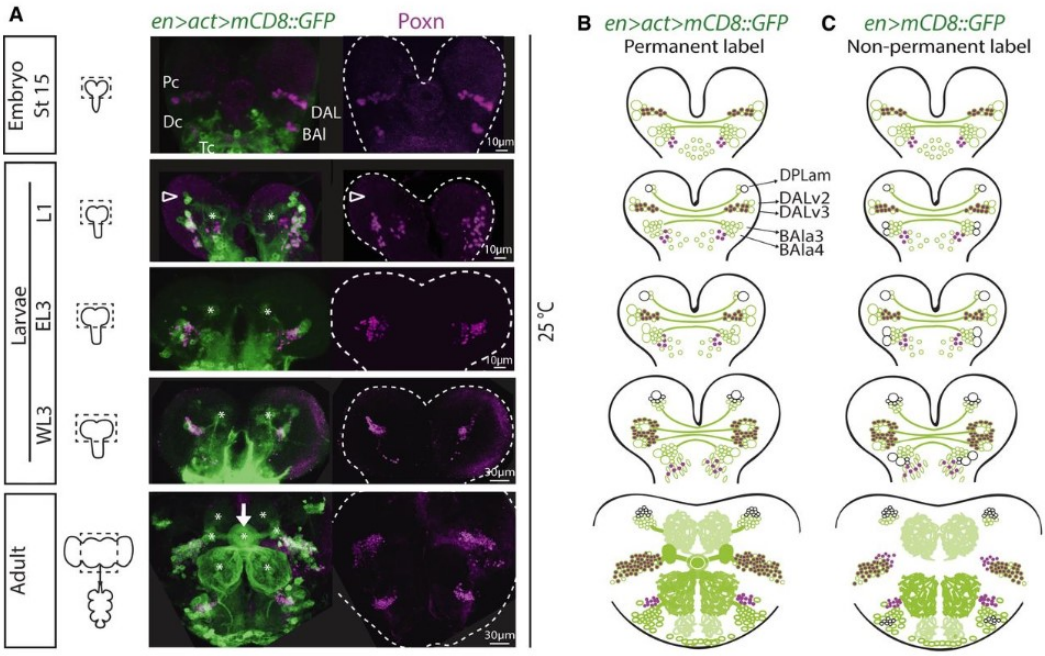
This supports trainees who wish to study an aspect of clinical neuroscience or stroke in depth leading to an MD or PhD degree. Applicants should hold a UK or Irish specialist training post in neurology or other appropriate medical speciality, or be planning to enter specialist training after completion of a PhD. In addition to salary, reasonable travel costs, equipment and consumables can be awarded up to maximum £10,000 per year over maximum three years.

SHOWCASED ARTICLE

In vivo expansion of functionally integrated GABAergic interneurons by targeted increase in neural progenitors

Shaw RE, Kottler B, Ludlow ZN, Buhl E, Kim D, da Silva SM, Miedzik A, Coum A, Hodge JJL, Hirth F and Sousa-Nunes R

A central hypothesis for brain evolution is that it might occur via expansion of progenitor cells and subsequent lineage-dependent formation of neural circuits. Here, we report *in vivo* amplification and functional integration of lineage-specific circuitry in *Drosophila*. Levels of the cell fate determinant Prospero were attenuated in specific brain lineages within a range that expanded not only progenitors but also neuronal progeny, without tumour formation. Resulting supernumerary neural stem cells underwent normal functional transitions, progressed through the temporal patterning cascade, and generated progeny with molecular signatures matching source lineages. Fully differentiated supernumerary gamma-amino butyric acid (GABA)-ergic interneurons formed functional connections in the central complex of the adult brain, as revealed by *in vivo* calcium imaging and open-field behavioural analysis. Our results show that quantitative control of a single transcription factor is sufficient to tune neuron numbers and clonal circuitry, and provide molecular insight into a likely mechanism of brain evolution.



A. Left: Schematics of CNSs of various stages with dotted outlines indicating central brain regions indicated in (B). Right: Time course pictures of brains containing permanently labeled cells in the En expression domain co-stained for Poxn (maximum intensity projections; split magenta channel). At embryonic stage 15, clusters of en cells in the protocerebrum (Pc), deutocerebrum (Dc), and tritocerebrum (Tc) can be detected, which have been named in antero-posterior order: (i) P/PC/b1/DALv (for dorso-antero-lateral)/MC (for medial cluster—because of later emergence of a cluster anterior to this one—see below); (ii) D/DC/b2/BAla (for baso-antero-lateral)/PC (for posterior cluster, a nomenclature which could be confused with that for the protocerebral cluster); and (iii) T/TC/b. In first-instar larvae (L1), an additional protocerebral cell cluster is visible antero-dorsal to the DALv (arrowhead), which starts expressing en after embryonic stage 15, and that has been named DPLam (for dorso-postero-lateral)/AC (for anterior cluster). Asterisks, neuropil structures; arrow, ellipsoid body of the central complex (adult structure).

B. Schematics of pictures shown in (A) in which larger circles represent NSCs (green if labeled with GFP reporter, black if not) and smaller circles represent neurons (magenta if Poxn+). Only protocerebral and deutocerebral lineages schematized.

C. Schematic representation of expression time course of en>mCD8::GFP(therefore, non-permanently labeled lineages) with same coding as described in (B). Only protocerebral and deutocerebral lineages schematized.

D. Picture of DALv2/v3 NSCs (large cells) showing Ase expression, characteristic of type I NSCs.

CONTACTS

Bristol Neuroscience is run by a Steering Group:

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- Richard Apps, Professor of Neuroscience
- Zaf Bashir, Professor of Cellular Neuroscience
- Yoav Ben-Shlomo, Professor of Clinical Epidemiology
- Catherine Brown, Network Administrator
- Liz Coulthard, Consultant Senior Lecturer
- Jonathan Evans, Consultant Senior Lecturer
- Sophia Geddes, NeuroSoc President
- Iain Gilchrist, Professor of Neuropsychology
- Matt Jones, Physiology & Pharmacology
- Kevin Kemp, Research Collaborator; Research Associate
- Mike Mendl, Professor of Animal Behaviour and Welfare
- Jacqui Oakley, Network Facilitator
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bristol neuroscience