UNIVERSITY OF OXFORD

Department of Psychiatry

Annual Report 2017

Contents

Introduction

The Department of Psychiatry at the University of Oxford conducts high-impact research, teaches psychiatry to undergraduates and postgraduates, innovates clinical services and promotes excellence in research, education and clinical practice. Our goal is to deliver major benefits for people with mental and cognitive health problems – including primary prevention. Welcome to all the staff joining the Department this year. Pam Taylor, the Departmental Administrator, retired at the end of the 2015-2016 academic year after providing outstanding service to the Department since 2000. We are delighted to welcome Moira Westwood, an outstandingly experienced University administrator, who took over from Pam during 2016.

We knew that 2016 was going to be a big year for us – with lots of the developments that we had worked together towards so hard over the past 5 years hopefully reaching fruition. In the event, we were outstandingly successful and as 2016 comes to a close, I think we can look back and reflect on our achievements. Together, we have transformed the infrastructure available to the Department's researchers. In combination with the resources available across Oxford, we now have an unrivalled toolkit for defeating mental illness and dementia. Just a few of the many outstanding developments over the last 12 months are:

- In April, the rebuilt Oxford Centre for Human Brain Activity reopened – creating a unique resource which provides state-of-the-art multimodal (MEG and MRI) imaging co-located on the clinical academic campus at the Warneford Hospital. This was the first of the big infrastructure developments of 2016 and I vividly remember standing with colleagues on the stairs in the main building watching the Big Magnet arrive.
- In September, our partnership between Oxford Health NHS Foundation Trust and the University (led by the Department of Psychiatry) was awarded £12.8 million by the National Institute for Health Research for the new NIHR Oxford Health Biomedical Research Centre dedicated to producing new treatments and procedures for patients with mental illness and dementia.
- In November, we heard that the National Institute for Health Research had re-awarded the NIHR Oxford cognitive health Clinical Research Facility.
- In December, we learned that the Wellcome Trust had funded two new Centres in Oxford with key involvement of Departmental researchers: The Wellcome Centre for Integrative Neuroimaging, and the Wellcome Centre for Ethics, Innovation, Globalisation and Medicine.

In the past 5 years, we have successfully built our science, strategic local partnerships and infrastructure. Over the next 5 years we need to build on this platform, forging the national and global collaborations and securing the major international resources that will be vital to conquer mental illness and dementia.

I think we are in a good position but we will need to draw on all our creativity and energy. It's a privilege to have been reappointed as Head of Department for a further 5 years – and to be able to continue working with such inspirational and dedicated colleagues united in our efforts to defeat disease, in a Department filled with intelligence, passion, excitement, lightness and fun.

Professor John Geddes
Head of Department

Honorary Senior Clinical Lecturers
2016-2017

The Honorary Senior Clinical Lecturers are Consultant Psychiatrists in the partner NHS Trusts who play a key leadership role in undergraduate education, postgraduate research supervision or research collaboration with Departmental Principal Investigators.

Oxford Health NHS Foundation Trust

Alastair Reid
Alvaro Barrera
Andrew Molodynski
Anne Stewart
Digby Quested
Gerti Stegen
Peter Sargent
Phil Davison
Philip Wilkinson
Rob Chapman
Rupert McShane
Julie Chalmers
Tony James
Julia Cartwright
Susan Shaw
Rob Bale
Emma Fergusson
Tim Andrews
Nick Hindley
Isabel Paz
Kathleen Kelly
Farshad Shaddell
Kezia Lange

Graduate Studies – Phil Burnet *(Director of Graduate Studies)* and Jennifer Rendell *(Tutor for Graduate Studies)*

Research degrees

The Department of Psychiatry offers two full-time postgraduate research degrees, a DPhil and an MSc(Res). We are currently seeking approval to offer these on a part-time basis to enable students to study in conjunction with other commitments and roles, where a part-time pattern of study is preferable.

The majority of students are psychology or biological science graduates with a small number of psychiatric trainees. Supervising and supporting these students are key activities within the Department of Psychiatry. Students provide valuable contributions to our research and the training they receive here will enable them to become research leaders in the future.

Student Barometer Results

In the 2015 Student Barometer our DPhil students' ratings for overall satisfaction in all aspects of the University experience were higher than those of other medical specialties in Oxford and learning experience and satisfaction with support services were higher than those of the rest of the University.

The Department also scored highly compared to the University as a whole for our induction programme, meeting academic staff, knowing how the course of study would work and getting email/web/system access.

Student numbers

At the start of the 2016-17 academic year we welcomed a record number of students to the department – 12 to study for a DPhil and six for an MSc(Res). This increased intake reflects the expansion in research activity in core areas which was predicted in the 2015 Annual Report and brings the total number of students in the department to 56.

Supervision and support

Each student is assigned a primary supervisor with expertise in their field of study. Students are also assigned a co-supervisor or advisor from within the university. These can be junior researchers who develop their own supervisory skills whilst providing valuable support to the student.

Alongside the academic supervision, the Graduate Studies Team (Director, Professor Phil Burnet; Graduate Tutor, Dr Jennifer Rendell and Administrator, Tracy Lindsey) offer continuous support to ensure students transition smoothly through the stages of a research degree and to address academic or personal problems. They organise regular opportunities for students to meet together to present their work and discuss their experiences of postgraduate study.

Training

In addition to acquiring expertise in one of our extensive range of research fields which range from molecular biology to brain imaging, and from behavioural research to epidemiology, we encourage students to develop a wide range of transferrable skills and to take advantage of the comprehensive, flexible training programme offered by the Medical Sciences Graduate School. Courses cover general and specific research skills and more advanced academic courses.

From the start of the 2016-17 academic year, the university has formalised this by requiring new students to complete a Training Needs Analysis (TNA) in consultation with their supervisors at least once a year. The TNA is based on the Vitae Research Developer Framework which describes the knowledge, behaviour and attributes of successful researchers.

Student representation

The views of students are represented at the termly Departmental Meeting (student representative, Director of Graduate Studies and Graduate Tutor) and at Athena Swan Meetings (student representative and Graduate Tutor). In addition to this, students elect a representative to the Graduate Joint Consultative Committeee.

Funding

The Graduate Medical School offers competitive DPhil awards. In addition to these, the Department offers a number of full DPhil studentships each year (covering university fees, college fees and living costs) and some PIs are able to offer DPhil and MSc(Res) funding from research grants. Students whose funding does not specifically cover research consumables are eligible for an annual Research Training Support Grant (which is currently £1,300).

Future careers

Students in recent years have chosen a variety of career paths including further postdoctoral research, medical and clinical psychology training, employment in the pharmaceutical industry and university teaching posts.

Clinical Medicine Undergraduate Course

Jonathan Price, Director of Medical Studies

The Psychiatry Department is responsible for the management and delivery of an eight week course in psychiatry for 160 medical students (reading for BM BCh) each year.

The BM courses

There are two streams of students:

a) *The conventional BM course (A100) – six years in duration – the majority of the students, typically entering the Medical School straight after A levels or equivalent; and b) The accelerated BM course (A101) – four years in duration – designed for graduates with a science degree, some of whom will also have had periods of employment.*

The final two years of these courses follow an identical path. Therefore, although the undergraduate course in psychiatry is delivered during year 5 of the six year conventional course and year 3 of the four year accelerated course, the conventional and accelerated students are treated identically in psychiatry, and are mixed within each eight week course.

The psychiatry course

At the beginning of the course, students have little experience of the management of mental disorders, and the course represents their main opportunity within six years of undergraduate medical education to learn about them. Each student is expected to pass the end-of-course assessment in order to pass on to year 6.
The course is managed by the University Department, but delivered jointly with two NHS partners: Oxford Health NHS Foundation Trust (OHFT) provides about 22 placements each eight weeks, in a variety of subspecialty areas, and Oxford University Hospitals NHS Foundation Trust provides the remaining five placements, in liaison psychiatry. These NHS partnerships are key to providing high quality undergraduate education.
The course places strong emphasis on small group tutorials, and on the attachment of only one or, at most, two students to each teaching consultant. This provides the potential for focused support and development of individual students.

Course evaluation

The Oxford BM course is widely considered by students to be the best undergraduate medical course in the UK. Evidence to support this includes comprehensive data from the National Student Survey, for the students leaving from 2010 onwards, and available at http://unistats.direct.gov.uk/. In each of those years, student feedback has been better than for any other UK medical school. In 2016, 99% of leaving students were satisfied with the course. Within the BM course, the psychiatry course is highly regarded by students, who in 2015-16 rated psychiatry as first out of the six major year 5 courses on five of the nine domains of the generic Course Evaluation Questionnaire.

Course outcomes

"Almost all of the students I observed were confident, very knowledgeable, and demonstrated a high degree of competency in all of the required areas".
The Psychiatry external examiner 2016

Objective assessment of course outcomes has been helped by the GMC's release of postgraduate exam performance data by UK medical school, indicating that Oxford graduates are more likely than graduates of any other UK medical school to pass postgraduate exams (MRCP, MRCPsych etc). Further analysis suggests that the Oxford BM course 'adds value' to an already capable cohort, rather than simply collecting capable school-leavers (McManus I et al, BMC Medicine 2008).

The course also aims to encourage students to train in psychiatry, and appears successful in doing this. Data from recent UK Foundation Programme leavers indicates that an average of 4.5% of Oxford graduates entered specialty training in psychiatry, well above the UK average of 2.8%, and well ahead of our key academic competitors.

Collaborations with other University Departments

With the University Oxford's Department of Experimental Psychology, we deliver and examine a short course on 'Psychology for Medicine', for year 2 (of 6) students. Members of the Department also contribute to the Final Honours School (year 3 of 6) course in Neurosciences, which is the most popular year 3 option.

Development / initiatives

The recruitment of capable undergraduates into psychiatry and, in particular, into academic psychiatry, remains a challenge. Our aim is to deliver a highly respected training course in psychiatry, in which to showcase the specialty, some of the many very capable doctors and other professionals working in it, and some of the very high quality research taking place in the Department. We continue to encourage students to pursue academic interests alongside their clinical training, and this is starting to bear fruit.

For the last 4 years, we have hosted an Oxford Psychiatry Autumn School (pictured), each being attended from across the UK by 30 of the brightest medical students and foundation doctors interested in academic psychiatry. Lectures, visits and small group discussion showcased the ground-breaking interdisciplinary research taking place in Oxford, and allowed delegates to develop their career plans, with Oxford very much in mind as a destination. Plans are now underway for a 5th Autumn School in September 2017.

Group members

Dr Jonathan Price is the Director of Medical Studies, and is supported by **Suzanne Williams**, Course Administrator, and **Wayne Davies**, Facilities Manager.

Post-graduate of Oxford Medical Training

Kate Saunders, Clinical Training

The Department of Psychiatry offers opportunities for research training in its core areas of neurobiology, psychological treatments, developmental psychiatry and social psychiatry. We host the Oxford Cognitive Health and Neuroscience Clinical Trials Unit, Oxford Mindfulness Centre and the newly expanded Oxford Centre for Human Brain Activity. We are also delighted to have the Wellcome DPhil (PhD) scheme for clinicians in Oxford, dedicated to mental health.

Our research is an important component of the University's strategy for neuroscience and the themes of the neurobiology and psychological treatments programmes have an important translational component. We also encourage applications involving joint supervision with the University's Departments of Experimental Psychology, Clinical Neuroscience and Pharmacology as well as the Centre for Functional Magnetic Resonance Imaging of the Brain (fMRIB).

We provide the Oxford Postgraduate Psychiatry Course. The course provides a stimulating and thorough grounding in the basic and clinical sciences relevant to psychiatry and prepares candidates for the MRCPsych examinations.

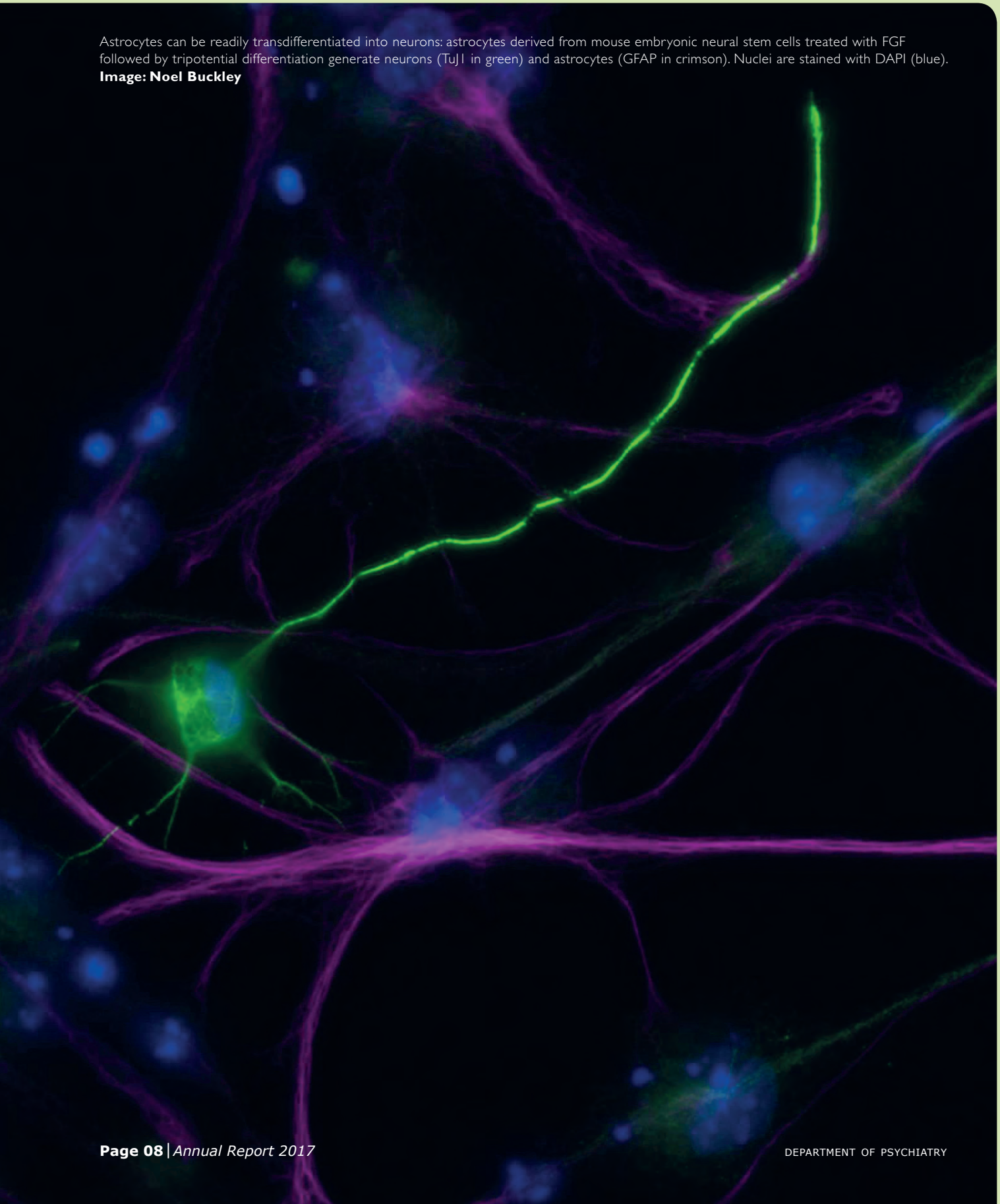
Training in Academic Psychiatry

Projects for Academic Psychiatrists in Training are advertised on our website ***Clinical DPhils, Clinical Training and Continuing Professional Development*** (www.psych.ox.ac.uk/study). There are four levels of involvement:

1. Academic Foundation doctors will apply to the Foundation School and arrange a 4 month academic placement with the Department.
2. Academic Clinical Fellows (ACF) are appointed by the Deanery/Oxford University Clinical Academic Graduate School, who organise transferable skills courses and the Master in Clinical Research Course. Competition is typically against other medical disciplines, although from time to time, NIHR advertises for specific specialty posts. The Academic Clinical Fellowship Programme offers training to new entrants to psychiatry who have outstanding potential for development as a clinical academic in psychiatry. We currently have seven ACF posts (ST1-3) filled by trainees. Training is flexible, with suitable mentoring and supervision to ensure the attainment of both academic and clinical goals. The ACF posts provide the training necessary for an academic career, typically continuing with a Training - (PhD/DPhil) – Fellowship after national and interdisciplinary competition. Locally we host a DPhil (PhD) scheme for clinicians, dedicated to mental health, and funded by the Wellcome Trust.

   Applications require submission of a project under the supervision of an academic researcher of international standing, with high quality scientific input from one of the basic science departments within Oxford University Medical Sciences Division, as well as usually an interview before a multidisciplinary panel.
3. DPhil and MSc by Research at Oxford are not taught courses, but start from the outset with expecting a high degree of independence from its graduate students. Research degrees, including the Master of Science (MSc) by Research, require a background in medicine, psychology or a biological science. To start with, we suggest that you identify a potential supervisor in your area of interest and then contacting them direct. A list of potential projects can be found on our website. We are happy to discuss your research ideas and indicate whether we are likely to be taking on graduate students next year, as well as what, if any, funds are available to support you.
4. Academic Clinical Lecturers (currently two) are required to have completed their core training and have submitted their doctoral thesis at the time of applying for this type of post. The posts are interviewed by the Oxford University Clinical Academic Graduate School and typically half-funded by the deanery and NIHR. Competition is typically against other neuro-disciplines, although from time to time, NIHR advertises for specific specialty post, and we have appointed two such Clinical Academic Lecturers in Old Age Psychiatry.

Adult Disorders



Astrocytes can be readily transdifferentiated into neurons: astrocytes derived from mouse embryonic neural stem cells treated with FGF followed by tripotential differentiation generate neurons (TuJ1 in green) and astrocytes (GFAP in crimson). Nuclei are stained with DAPI (blue).
Image: Noel Buckley

Matthew Broome

Senior Clinical Research Fellow

The group focuses on mechanisms of onset of major mental disorders and early intervention to improve the outcomes of those with such illnesses. More recently, we have become interested in transdiagnostic areas of psychopathology (such as mood instability, suicide and self-harm) and expanding early intervention into non-psychotic disorders.

Current and future research

Current research in the group includes utilising large data sets to examine suicide in those with psychosis, exploring the mechanisms connecting bullying with psychotic experiences and the onset of illness, and examining the relationship between body perception and the risk of developing eating disorders.

An MRC grant held with Stephen Wood (University of Melbourne) funds a study to examine structural brain changes in those at risk of psychosis serially over time. The goal of this work is not only to understand the pathophysiology of psychosis, but also to use imaging to aid the prediction of who may develop the disorder.

In collaboration with Professor Singh, and as part of the Wellcome Trust-funded BeGOOD project, we have commenced a pilot study looking at the ethical consequences of a young person being part of a clinical service for psychosis.

Together with Professor Freeman, we are part of an NIHR HTA randomised controlled trial of interventions in children and young people with first episode psychosis.

Future research includes applications to the Wellcome Trust to examine the philosophical and ethical consequences of neuroscientific and person-level accounts of psychosis in clinical practice, and to develop multi-modal imaging studies (MRS, MEG, fMRI, TDCS) to examine the role of GABA in brain dynamics and plasticity in symptom formation and the onset of schizophrenia.

Group members

Dr Helen Bould (Wellcome Clinical Doctoral Training Fellow), Dr Stefan Brugger (NIHR Academic Clinical Fellow), Dr Angharad de Cates (Specialist Trainee in Psychiatry), Dr Gennaro Catone (Visiting Psychiatrist, University of Naples), Dr Juliana Lindau Fortes (Visiting Psychiatrist, Sapienza University, Rome).

News and impacts

- Clinical co-lead for the Early Intervention in Psychosis Network of the Oxford AHSN.
- College Tutor for Oxford Health NHS Foundation Trust, supporting the training and pastoral needs of Foundation Doctors, GP trainees, and Core Trainees in Psychiatry.
- Associate and Handling Editor for The British Journal of Psychiatry.

Selected recent publications

- Marwaha S, Thompson A, Upthegrove R, Broome MR. (2016) Fifteen years on - early intervention for a new generation. The British Journal of Psychiatry: 209(3):186-188
- Eyden J, Winsper C, Wolke D, Broome MR, MacCallum F. (2016) A systematic review of the parenting and outcomes experienced by offspring of mothers with borderline personality pathology: Potential mechanisms and clinical implications Clinical Psychology Review 47:85-105
- Read, R., Moberly, N. J., Salter, D., & Broome MR. (2016). Concepts of Mental Disorders in Trainee Clinical Psychologists. Clinical Psychology and Psychotherapy. doi:10.1002/cpp.2013

Key research questions

- How does bullying lead to psychosis and is there a connection between the content of delusions and the actual experiences when bullied?
- Does mood instability act as a causal factor in the onset of psychotic disorders and does it influence outcomes and suicide risk?
- How do clinicians and patients work with person-level and neuroscientific explanations of psychosis in parallel and how does this impact on how patients view themselves?

Andrea Cipriani

Associate Professor

Psychiatrists and psychologists, particularly younger professionals, should be engaged in the challenge of basing their practice on evidence. The aim of our work is to implement research findings into real-world practice to improve the clinical outcome of our patients.

Current and future research

In collaboration with important groups in the UK, Europe, US, Australia, South Africa, China and Japan, we are involved in several research synthesis projects about pharmacological and psychological interventions for depression, bipolar disorder, schizophrenia, PTSD and panic disorder. Practicing within the frame of evidence-based medicine is the most robust approach we have today to improve care and limit risks for our patients, though it's important to note that practicing evidence-based medicine is not a one-size-fits-all approach. Evidence-based medicine is not like following a recipe: it does not guarantee clinical success, and is challenging because it requires medical knowledge, critical appraisal and clinical skills. Moreover, practicing in an evidence-based medicine manner can be harder in mental health because psychiatry and clinical psychology have specific features that are unique from the rest of medicine. We are working on a new project aimed to develop and validate a computer-based clinical decision tool to guide clinicians, patients and carers in the decision process of prescribing the treatment for each individual, improve clinical outcome and ultimately reduce costs for health care systems.

Group members

Researchers: Jennifer Rendell, Janina Jochim, Mary-Jane Attenburrow, Pamela Kaushal.
Trainee psychiatrists: Saik De La Motte, Rebecca McKnight, James Stafaniak, Riccardo De Giorgi.
Nurses and research practitioners: Helen Jones, Elwira Lubos.
Graduate students: Lauren Atkinson, Priyanka Panchal.
Undergraduate students: Amine Awad, Sarah Barber, Ross McLaren, Raphael Rifkin-Zybutz.

News and impacts

- Reappointed Editor in Chief of Evidence-Based Mental Health until 2019 (http://ebmh.bmj.com/).
- Member of the Expert Group on Defined Daily Doses and consumption benchmarking for selected psychotropic substances at the United Nations, Vienna.
- Co-ordinated and delivered 3rd Course on Network Meta-Analysis for clinical researchers: Oxford, 4th–6th July 2016.

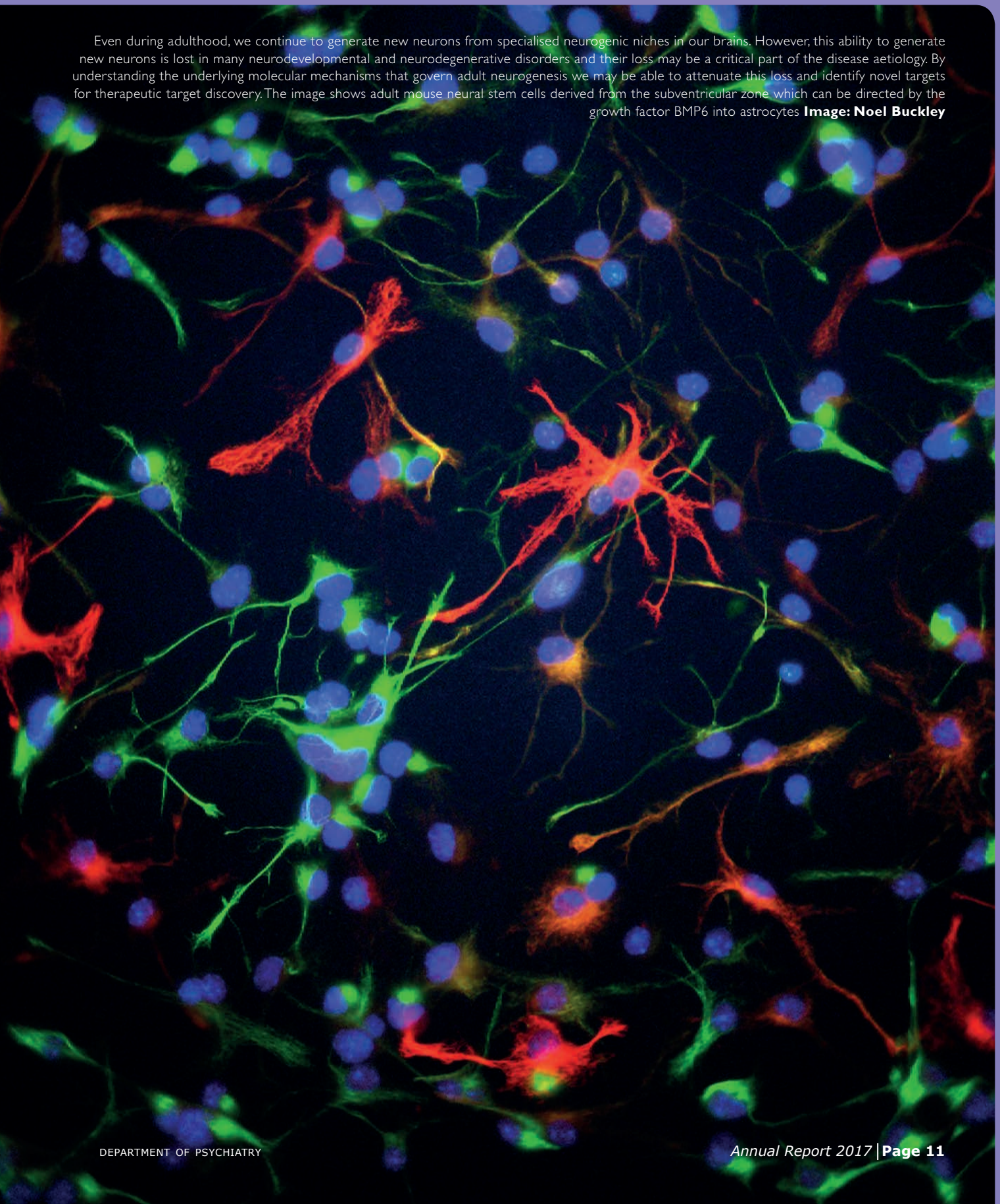
Selected recent publications

- Furukawa TA, Cipriani A, Atkinson LZ, et al. Placebo response rates in antidepressant trials: a systematic review of published and unpublished double-blind randomised controlled studies. Lancet Psychiatry 2016;3:1059-66
- Cipriani A, Saunders K, Attenburrow MJ, et al. A systematic review of calcium channel antagonists in bipolar disorder and some considerations for their future development. Mol Psychiatry 2016;21:1324-32
- Cipriani A, Zhou X, Del Giovane C et al. Comparative efficacy and tolerability of antidepressants for major depressive disorder in children and adolescents: a network meta-analysis. Lancet 2016;388:881-90

Three key research questions

- Can we personalise treatment for depression using individual patient data from studies and machine learning technology?
- Do we still need placebo-controlled trials in psychiatry?
- Can we merge randomised and observational evidence in a network meta-analysis?

Ageing and Dementia



Even during adulthood, we continue to generate new neurons from specialised neurogenic niches in our brains. However, this ability to generate new neurons is lost in many neurodevelopmental and neurodegenerative disorders and their loss may be a critical part of the disease aetiology. By understanding the underlying molecular mechanisms that govern adult neurogenesis we may be able to attenuate this loss and identify novel targets for therapeutic target discovery. The image shows adult mouse neural stem cells derived from the subventricular zone which can be directed by the growth factor BMP6 into astrocytes **Image: Noel Buckley**

Noel Buckley

Professor of Neurobiology

We are interested in the gene networks that determine human neural phenotype. This is a multidisciplinary collaborative effort involving both experimental and computational biologists to identify pathways that underwrite neural induction in human stem cells and that confer susceptibility to neurodegenerative and neurodevelopmental disorders.

Current research

We use human pluripotent stem cells (iPSCs) as cellular models of human neurodevelopment and neurodegeneration. We use a variety of genomic tools to harvest transcriptional and epigenetic data and then work with computational biologists to interrogate these data to infer the interactions among the genes and to define how the network topology changes during neuronal development and neuronal death. Attributing changes in network topology to specific genes or gene interactions is critical and we use a variety of genetic and small molecule manipulations to target specific pathways inferred from the network analyses. Increasingly, we are using CRISPR-mediated gene editing to test the impact of specific human variants on the gene networks. Our hope is to identify candidate pathways and genes that may represent novel therapeutic targets to delay, abrogate or rescue aberrant neuronal development or degeneration.

Our aspiration is that we will use the outcomes of these approaches in collaboration with our partners in the Alzheimer's Research UK Oxford Drug Discovery Institute and Target Development Institute to translate these findings into screens to identify novel compounds that may be used to delay or slow neurodegeneration.

Group members

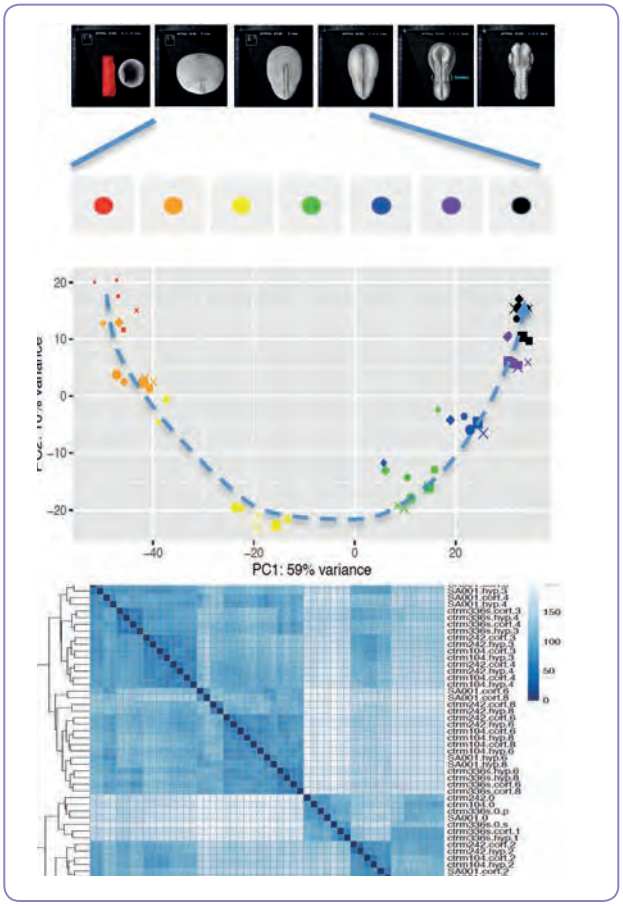
Adria Dangla Valls –DPhil student
Lucia Dutan Polit – PhD student.

Selected recent publications

- Michelucci A, Bithell A, Burney MJ, Johnston CE, Wong KY, Teng SW, Desai J, Gumbleton N, Anderson G, Stanton LW, Williams BP, Buckley NJ. The Neurogenic Potential of Astrocytes Is Regulated by Inflammatory Signals. Mol Neurobiol. 2016 Aug;53(6):3724-39. doi: 10.1007/s12035-015-9296-x
- Aksoy I, Chen J, Ushashree D, Kumar V, John-Sanchez D, Rahmani M, Buckley NJ and Stanton LW. A role for REST in embryonic stem cell cardiac lineage specification. Stem Cells 2016 Apr;34(4):860-72. doi: 10.1002/stem.2304
- Viggiano D., Perrone-Capano, Bellenchi, Gian-Carlo G., Srivastava D, DiPorzio U and Buckley NJ. Quantifying barcodes of dendritic spines using entropy-based metrics. Sci Rep. 2015 Sep 30;5:14622. doi: 10.1038/srep14622

Three key research questions:

- How does variation in the human genome contribute towards differences in neuronal phenotype?
- Can human stem cells model neurodegenerative disorders?
- Is cell potential best represented by the epigenetic state?



Modelling the very first stages of human neurodevelopment with human pluripotent stem cells by measuring changes in global gene expression and mapping them as a trajectory through cell state space.

Klaus Ebmeier

Professor of Old Age Psychiatry

Why do some people suffer from depression and memory loss as they age, whereas others stay well for the whole of their lives? (Funding: ARUK, EU, MRC, Small & Wills Trusts)

Current and future research

We have imaged 800 volunteers, who have been followed up over most of their adult lives and examine them in detail for age-related changes of mood and memory function. We analyse their brain structure, the quality of white matter connections and the networks active in the brain to discover the mechanisms that link experience and life style in mid-life with illness developing in advancing age and compensate for risk and maintain our brain function into high age.

We intend to integrate 11 longitudinal mostly population-based EU cohort studies investigating cognitive and mental health across the life-span (n=18 500). Many subjects (n=6000) underwent MRI examinations (40 000 exams) in addition to clinical cognitive and mental health data and genetic sampling. We plan to link data with national databases (registries), biobanks and data from other large studies.

Group members

Clinical Researchers: Charlotte Allan, Nikitas Arnaoutoglou, Sophie Behrman, Leonidas Chouliaras, Jane Fossey, Rupert McShane, Anya Topiwala, Vyara Valkanova, Phillip Wilkinson. *Post-docs:* Ludovica Griffanti, Verena Heise, Maili Lehto, Claire Sexton, Sana Suri, Enikő Zsoldos. *DPhil students*: Melis Anatürk, Naiara Demnitz, Clare O'Donoghue.

News and impacts

- 800 Whitehall Participants examined
- EU Horizon 2020 Programme: "Healthy Minds from 0-100 years: Optimising the use of European brain imaging cohorts" (€10m 2017-2021)

Selected recent publications

- Allan et al. A MRI study examining sub-threshold depressive symptoms within the Whitehall II cohort. J Affect Dis 204:219-225
- Demnitz et al. A systematic review and meta-analysis of cross-sectional studies examining the relationship between mobility and cognition in healthy older adults. Gait Posture 50:164-174
- Jobst et al. European Psychiatric Association Guidance on psychotherapy in chronic depression. Eur Psychiatry 33:18-36
- Wardlaw et al. METACOHORTS for the study of vascular disease and its contribution to cognitive decline and neurodegeneration. Alzheimers Dement. 12:1235-49

Three key research questions:

- Do stress markers in mid-life predict structural and functional brain connectivity in older age?
- Does social drinking damage your brain?
- Does exercise protect from brain ageing?

"The proposal will make a major shift by its life-span perspective … the innovation potential of the proposal goes beyond the state of the art, by integrating and analysing genetic, brain imaging, behavioural, nutritional and lifestyle data".

Member of H2020 Evaluation Panel

Collaborating Centres:

UCL, Max-Planck-Gesellschaft Berlin, Universities of Amsterdam, Barcelona, Cambridge, Copenhagen, Geneva, Lübeck, Oslo, & Umeå.

Connection with other themes

Neuroimaging, Adult Disorders, Ageing and Dementia

John Gallacher

Professor of Cognitive Health

Few things are more precious than our minds. Through the Dementias Platform we bring together data from over 2 million individuals to investigate how changes in our brains as we get older affect our thinking and feeling. We use this information to accelerate the development of new treatments by enabling a new generation of highly targeted clinical trials.

Current and future research

The Department of Psychiatry hosts the Dementias Platform UK. The Dementias Platform brings together 11 academic partners and six industry partners in the fight against dementia. It has won over £60M of MRC, IMI and ARUK funding which is distributed across the consortium. It has also been instrumental in the success of several NIHR awards.

The Dementias Platform's five-year vision is to provide the UK with an integrated research environment enabling a new generation of highly targeted clinical trials linking cellular and molecular changes to patient response. Within the Department we focus on informatics, data analysis, and trials.

We are enhancing the UK's cohort, imaging and record linkage informatics capability to provide a 'one-stop-shop' for dementia-related data analysis.

We conduct large-scale (broad and deep) data analysis. Our interest is focused on how genetics and lifestyle interacts to affect cognitive and mental health outcomes.

We work with other research groups such as EPAD and the Deep and Frequent Phenotyping Study to facilitate recruitment to highly targeted trials and other clinical studies.

Group members

Sarah Bauermeister: Research Fellow
Patricia Burton: Trials manager
Catherine Calvin: Senior research fellow Harriet Dawson: Ass. Communications Officer
Tanya Finn: PA to Professor Gallacher
Allison Hanbury: Project manager
Suzanne Morse: Events officer
Anna Myers: Senior Communications Officer
Giovanni Piumatti: Research Fellow.

News and impacts

- UK dementia research capacity has been increased through completion of a single-point-of-access data analysis platform, and national networks for molecular and structural imaging, iPSCs (stem cells), and bioinformatics.
- A highly successful Dementias Platform national conference was organised profiling the work of early career researchers as well as international senior scientists.
- Presentations describing the Platform have been made to conferences and workshops in Toronto (AAIC), Budapest (EMIF), Barcelona (ROADS), Milan (UKTi Expo2015), Paris (Melodem), Brussels (EU Parliament), Washington (CAMD, FDA, EMA) and Hong Kong.

Selected recent publications

- Davies G et al. Genome-wide association study of cognitive functions and educational attainment in UK Biobank (N=112 151). Mol Psychiatry. 2016 Jun;21(6):758-67. doi: 10.1038/mp.2016.45
- Hagenaars SP et al. Shared genetic aetiology between cognitive functions and physical and mental health in UK Biobank (N=112 151) and 24 GWAS consortia. Mol Psychiatry. 2016 Nov;21(11):1624-1632. doi: 10.1038/mp.2015.225
- North TL et al. A study of common Mendelian disease carriers across ageing British cohorts: meta-analyses reveal heterozygosity for alpha 1-antitrypsin deficiency increases respiratory capacity and height. J Med Genet. 2016 Apr;53(4):280-8. doi: 10.1136/jmedgenet-2015-103342

Three key research questions

- What is the impact of the built environment, genetics and lifestyle on alcohol consumption and health?
- What is the relationship between mental health and cognitive performance?
- How can non-invasive eye measurement be used as a window into the neuropathology of the brain?

Connection with other themes

Ethics and Society, Experimental Medicine, Neuroimaging

Simon Lovestone

Professor of Translational Neuroscience

Our aim is to find therapies for Alzheimer's disease - specifically therapies for secondary prevention. To do this we use a range of approaches for understanding of mechanisms and generation of drug development programmes combined with informatics, biomarker research and clinical trials.

Current research

The Translational Neuroscience & Dementia Research Group has four core teams - Mechanisms, Biomarkers, Informatics and Clinical Studies.

The mechanisms team builds on our findings that pathways regulating GSK3 activity including Wnt and insulin signalling are prime targets for intervention. We have generated a range of preclinical models and are working closely with the ARUK Oxford Drug Discovery Institute to use these to find potential therapies. This work includes funding from the Wellcome Trust Neuroinflammation Strategic award as well as Alzheimer's Society and MRC.

Accompanying the mechanisms work, we are developing biomarkers for use in clinical trials. These include proteomic studies in blood funded by Alzheimer's Research UK and Parkinson's UK and multimodal markers of progression funded by MRC.

These studies use complex informatics including machine learning to derive information from genomic, proteomic and metabolomics data. We also work on real world data from electronic medical records including from the Case Records Information Search (CRIS), now established across the country and enabling carefully regulated access to patient information. This has been funded by NIHR and the EU.

Finally the clinical trials team is working on the EU funded IMI-Prevention of Alzheimer's disease, the Alzheimer's Society funded PREVENT, and the MRC funded Deep and Frequent Phenotyping studies.

Group members

Team leaders: Elena Ribe, Alison Baird, Alejo Nevado, Jennifer Lawson, Ivan Koychev; *Post-doctoral scientists:* Caroline Woffindale, Francesca Nicholls, Laura Thei, Sarah Westwood, Sneha Anand, Chi-Hun Kim, Laura Winchester, Imelda Barber, Danielle Newby; *DPhil students:* Adrià Dangla Valls, Evangeline Foster, Benjamine Liu; *Research worker:* David Ruvolo; *Team co-ordinator:* Corinne Prescott.

News and impacts

- Team participation in Pint of Science - Shakespeare's Lear and dementia.
- Funding making headlines including the Deep and Frequent Phenotyping study, part of Dementias platform UK.
- Jennifer Lawson featured on Naked Scientists podcast talking about clinical trials and biomarkers.

Selected recent publications

- Westwood S, Leoni E, Hye A, Lynham S, Khondoker MR, Ashton NJ, et al. Blood-Based Biomarker Candidates of Cerebral Amyloid Using PiB PET in Non-Demented Elderly. J Alzheimers Dis. 2016;52(2):561-72
- Lovestone S, Boada M, Dubois B, Hull M, Rinne JO, Huppertz HJ, et al. A phase II trial of tideglusib in Alzheimer's disease. J Alzheimers Dis. 2015;45(1):75-88
- Nevado-Holgado A, Lovestone S. Determining the molecular pathways underlying the protective effect of non-steroidal anti-inflammatory drugs for Alzheimer's disease: A bioinformatics approach. Computational and Structural Biotechnology Journal. 2016; in press

Three key research questions

- How does amyloid transmit a disease signal that results in neuronal dysfunction?
- If we combine different modalities ranging from imaging to molecular measures and including devices to track movement and memory, retinal scans and electrophysiology then can we find changes in Alzheimer's disease even before there are symptoms?
- What are the risk and protective factors for dementia – and are they already known to clinical services and therefore in the medical record already?

Child and Adolescent

Children working together to make a tunnel for water to flow through.

Mina Fazel

Associate Professor

The aim of this research programme is to better understand the role that school-based mental health services can play in improving young people's access to mental health care and how this might impact on a range of important developmental outcomes. We focus on secondary schools and refugee populations.

During the school years, young people not only develop their cognitive and analytic skills but learn to regulate their emotions and build social relationships. In addition, a significant proportion of psychiatric problems emerge during these years, yet young people have poor access to mental health services. Schools could potentially help address these issues but little is known about working within this context.

Current research

1. Developing evidence-based school mental health services: We have been working together with Oxford Health NHS Foundation Trust to systematically introduce school-based mental health services across Oxfordshire secondary schools. From 2016, each school has an allocated member of child mental health services visiting weekly. We are studying what methods and approaches can best support the mental health of young people within schools and how this impacts on psychological and educational outcomes. An NIHR application will be submitted to take this work forward.

2. Developing psychotherapeutic interventions for school staff to use with refugee and vulnerable children: This NIHR funded fellowship has developed cognitive-behavioural tools for school staff to use. Refugee children find accessing mental health services difficult so providing psychological support within the school can potentially help them in a sustainable and acceptable manner.

News and impacts

- Local child mental health services have incorporated school-based mental health care as part of their transformation of services; better integrating care with all Oxfordshire state-funded secondary schools.
- Featured as one of '19 Inspirational Women changing the face of mental health' (Rethink Mental Illness 2016).
- Leading a new Oxford Refugee Health Initiative with medical students supporting unaccompanied asylum seeking minors.

Selected recent publications

- M Fazel, J Garcia, A Stein. The right location? Experiences of refugee adolescents seen by school-based mental health services Clinical Child Psychology and Psychiatry 2016; 21:368-380
- M Cortina, A Stein, K Kahn, T Hunglawi, E Holmes, M Fazel. Cognitive styles and psychological functioning in rural South African students: understanding influences for risk and resilience in the face of chronic adversity Journal of Adolescence 49 (2016) 38-46
- G Fellmeth, M Fazel, E Plugge. Migration, pregnancy and mental health: a systematic review and meta-analysis of prevalence, associated factors and interventions for women from low- and middle-income countries BJOG 2016. doi: 10.1111/1471-0528.14184

Three key research questions

- How best to implement school-based mental health services in the UK?
- How to provide scalable mental health interventions to refugees in resource-poor settings?
- What are the ethical complexities of mental health work in school settings?

Morten L Kringelbach

Associate Professor

My research goal is to understand pleasure in the human brain. Apart from being a lot of fun, this is important since it may offer us novel and more effective ways to treat anhedonia, the lack of pleasure, which is a major component of affective disorders.

Current and future research

My research group, *Hedonia*: Research Group, is based both in Oxford and at Aarhus University in the Danish National Research Foundation centre of excellence for Music in Brain (MIB). We use a range of neuropsychological, neuroimaging, neurosurgical and whole-brain computational methods to investigate the many facets of pleasure in health and disease. We are interested in the fundamental pleasures afforded by food, sex and social interactions, which are central to survival, but also in higher order pleasures such as music and art which have strong links to eudaimonia, the meaningful and engaging life.

The European Research Council (ERC) is funding my research to better understand the parent-infant relationship, which is perhaps the key social pleasure. This is a component in the overall goal to understand and model how pleasure systems are fundamental in the dynamic allocation of brain resources. Together with Prof Gustavo Deco we have developed probabilistic causal whole-brain computational models to understand the delicate balance and transitions between brain states, which can potentially be rebalanced through psychological treatments or even deep brain stimulation. E.g. we are investigating the brain changes related to post-traumatic stress-disorder in war veterans in the *Scars of War Foundation at The Queen's College*.

Group members

Post.docs.
Dr Tim Van Hartevelt (ERC)
Dr Henrique Fernandes (ERC)
Dr Joana Cabral (ERC)

Doctoral students
Angus Stevner (sleep, DPhil),
Eloise Stark (infant faces, MRC DPhil),
Louis-David Lord (modelling, DPhil),
Marina Charquero Ballester (PTSD, DPhil),

News and impacts

- Nobel Forum lecture, "Using whole brain computational connectomics for understanding the basis for neuropsychiatric disorders", 22.09.2016, Karolinska.
- Opening Keynote Lecture, "Pleasures of the brain", the European Academy of Neurology, Copenhagen, Denmark (5000 neurologists), 28.05.2016
- New Scientist Instant Expert, lecture on 'Emotion', Royal College GP, 21.05.2016

Selected recent publications

- Kringelbach M.L., Stark E.A., Alexander C., Bornstein M.H. & Stein A. (2016) On cuteness: Unlocking the parental brain and beyond. Trends in Cognitive Sciences, 20(7): 545-58
- Young K.S., Parsons C.E., Stevner A., Woolrich M.W., Jegindø E.-M., Hartevelt T.J., Stein A. & Kringelbach M.L. (2016) Evidence for a caregiving instinct: rapid differentiation of infant from adult vocalisations using magnetoencephalography. Cerebral Cortex, 26(3):1309-21
- Stark E.A., Parsons C.E, Ehlers A., Van Hartevelt T.J., Charquero-Ballester M., McManners H., Stein A. & Kringelbach M.L. (2015) Post-traumatic stress influences the brain even in the absence of symptoms: A systematic, quantitative meta-analysis of neuroimaging studies. Neuroscience and Biobehavioural Reviews, 56: 207-21

Three key research questions

- What makes infants so cute and what does this tell us about human nature?
- How to understand the pleasure system by modelling the pleasure cycle and anhedonia in neuropsychiatric disorders with whole-brain computational modelling of neuroimaging data?
- Can whole-brain computational modelling of music be used to explore the causal links between optimal metastability, hedonia (pleasure) and eudaimonia (the life well-lived)?

Charles Newton

Cheryl & Reece Scott Professor of Psychiatry

The ability of children to fulfil their potential is influenced by exposure to adverse environments, in particular poverty, insults to the brain, and poor health, educational and social systems. These adverse environmental conditions interact with diverse genetic factors for the outcome. We identify the risk factors associated with poor development and mental illness in children in adverse environments, and examine culturally appropriate interventions that are effective and sustainable.

Current research

Our current research focuses on three areas: neurodevelopmental disorders in vulnerable children, particularly those in Africa and Europe; developing tools to detect and diagnose mental health and neurological disorders in low resource areas and developing low cost, scalable interventions for these disorders. We have conducted epidemiological studies to determine mental disorders of children in Kenya, including the first accurate estimate of the prevalence of Autism and Attention Deficit and Hyperactivity Disorders in Africa. We have developed tools to screen and diagnose these disorders in Africa. Further we are exploring the use of neurophysiological methods to screen for these disorders in remote areas. In collaboration with the Broad Institute in the USA, we are examining the genetic basis of autism, epilepsy and schizophrenia in Africa. We are investigating low cost and scalable interventions to improve behaviour and communication in children with neurodevelopmental disorders in low resource areas, particularly with parent skills training. We are examining parental stress and stigma in Lithuanian parents, both those living in Lithuania and those that have immigrated into the United Kingdom. We continue to contribute data to the Global Burden of Disease and improving the outcome of epilepsy and other mental health disorders in Africa.

This work is funded by the Medical Research Council and Wellcome Trust.

Group members

Kenyan psychologist: Dr Amina Abubakar
Post doctoral student: Dr Symon Kariuki
Doctoral students: Kavita Ruparelia, Francis Levira, Ruta Buivydaite
Masters students: Oana Gurau, Mary Bitta.

News and impacts

- Our research has contributed to guidelines developed by World Health Organization through mhGAP guidelines, International League Against Epilepsy and Kenyan Ministry of Health.
- Professor Newton is the editor of an open access journal, the Journal of International Child Neurology Association.
- Professor Newton is on the editorial board of Developmental Medicine and Child Neurology, Lancet Neurology and Lancet Psychiatry.

Selected recent publications

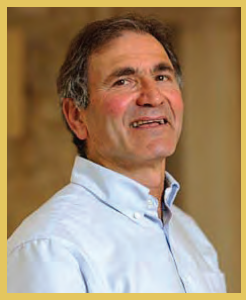
- Abubakar A, Ssewanyana D, de Vries PJ, Newton CR. Autism spectrum disorders in sub-Saharan Africa. Lancet Psychiatry. 2016 Sep;3(9):800-2. doi:10.1016/S2215-0366 (16)30138-9
- Kariuki SM, Abubakar A, Murray E, Stein A, Newton CR. Evaluation of psychometric properties and factorial structure of the pre-school child behaviour checklist at the Kenyan Coast. Child Adolesc Psychiatry Ment Health. 2016 Jan 20;10:1. doi: 10.1186/s13034-015-0089-9
- Kariuki SM, White S, Chengo E, Wagner RG, Ae-Ngibise KA, Kakooza-Mwesige A, Masanja H, Ngugi AK, Sander JW, Neville BG, Newton CR; SEEDS investigators. Electroencephalographic features of convulsive epilepsy in Africa: A multicentre study of prevalence, pattern and associated factors. Clin Neurophysiol. 2016 Feb; 127(2): 1099-107. doi: 10.1016/j.clinph.2015.07.033

Three key research questions

- What are the genetic and environmental risk factors of autism in Kenya, since these are likely to be different from those in Europe, although the prevalence is similar?
- How can we best detect neurodevelopmental disorders in low resource areas?
- How can we develop low cost, scalable interventions to improve the quality of life in families of children with mental health and neurological disorders?

Alan Stein

Professor of Child and Adolescent Psychiatry



We study the emotional, behavioural, cognitive and physical development of children in adversity. Our work focuses on elucidating the mechanisms underlying pathways to both disturbed and healthy development; and in developing and testing interventions for children and their families.

Current and future research

We are conducting RCTs both in the UK and in LMICs for parents and young children at risk. We are currently analysing the results of an RCT which tested a psychological intervention which aimed to both treat postnatal depression and enhance child development (OPT). We are also testing an intervention that aims to enhance parental responsiveness where an infant has a craniofacial abnormality. In collaboration with Imperial College we are conducting an RCT aiming to prevent behaviour problems in children at high risk. We have recently been awarded funding to conduct a cluster RCT testing an intervention aiming to help HIV positive women diagnosed with depression during pregnancy which combines behavioural activation for depression and a parenting/infant stimulation programme.

We are involved in large longitudinal studies testing a range of key questions in relation to children's development across six countries.

We are developing interventions to help healthcare professionals communicate a diagnosis of life threatening illnesses to families.

Funders: Wellcome Trust, MRC, Barclay Foundation, DfID/Wellcome/MRC Joint Global Health Trials Panel, NIHR/HTA, ESRC and ERC.

Group members

Heidi Brummert-Lenning, Postdoctoral Researcher
Louise Dalton, Clinical Psychologist
Hannah DeJong, Wellcome Doctoral Research Fellow
Symon Kariuki, DPhil Student (recently awarded)
Elena Netsi, ESRC Research Fellow
Elizabeth Rapa, Postdoctoral Researcher
Kirsten Rowe, DPhil Student
Tristan Smith, Research Assistant
Kate Stein, Academic Clinical Fellow
Valerie West, Research Coordinator
Sylvia Woolley, Research Heath Visitor

News and impacts

- Recent publication in PLOS Medicine showed that exclusive breastfeeding is associated with better child development especially behaviour, in a low income context. The finding was covered worldwide by over 200 television, radio stations, newspapers and other media.
- Alan Stein serves on the MRC Global Health Advisory Group and on the Wellcome Trust/MRC/DfID Global Health Trials panel as well as advising UNICEF on early child development interventions.
- Elena Netsi has been awarded an ESRC postdoctoral fellowship to understand child development in the context of maternal depression and socio-economic adversity in Brazil and South Africa.

Selected recent publications

- Pearson RM, Bornstein MH, Cordero M, Scerif G, Mahedy L, Evans JMD, Abioye A & Stein A. (2016) Maternal Perinatal Mental Health and Offspring Academic Achievement at Age 16: The Mediating Role of Childhood Executive Function. Journal of Child Psychology and Psychiatry, 57(4):491-501
- Prenoveau, J, Craske, M, West, V, Giannakakis, A, Zioga, M, Lehtonen, A, Davies, B, Netsi, E, Cardy, J, Cooper, P, Murray, L, Stein, A. (2016). Maternal postnatal depression and anxiety and their association with child emotional negativity and behavior problems at two years. Developmental Psychology. 10.1037/dev0000221
- Malmberg L, Lewis S, West A, Murray E, Sylva K, & Stein A. (2016). The influence of mothers' and fathers' sensitivity in the first year of life on children's cognitive outcomes at 18 and 36 months. Child: Care, Health and Development, 42 (1): 1-7

Three key research questions

- What are the mechanisms by which disturbances in parental attentional processes, for example in depression, affect responsiveness to children and children's cognitive development?
- Can lay counsellors deliver treatment for depression and a parenting intervention that impacts child outcomes in a LMIC context?
- What can be done at different developmental stages to mitigate adverse environmental factors on children's mental health?

Epidemiology, Ethics and Society

Children's drawing made as part of ADHD Voices **(Prof Ilina Singh).**

Keith Hawton

Professor of Psychiatry

The aim of our research is to investigate the epidemiology and causes of self-harm and suicide in order to contribute to better treatment and prevention. We also investigate ways of reducing the impact of self-harm and suicide on families and other people affected by these issues.

Current and future research

Multicentre Study of Self-harm in England
We lead the three-centre (Oxford, Manchester, Derby), five-hospital Department of Health-funded collaboration whereby data collected on patients presenting to hospital following self-harm are combined to allow large-scale studies of trends in self-harm, clinical management, evaluation of national prevention initiatives, and outcomes.

NIHR Programme Grant: A multi-centre programme of clinical and public health research to guide health service priorities for preventing suicide in England.

We are involved with colleagues at the universities of Bristol and Manchester in a series of studies to contribute to health service initiatives relating to self-harm and suicide, including:

- Impact of self-harm in young people on parents and carers.
- Relative toxicity of drugs commonly used for fatal and non-fatal self-poisoning.
- Impact of recession on suicide and self-harm, including development of an intervention to reduce such effects.
- Performance of scales to assess risk in patients who self-harm.
- Use of advanced directives in suicidal patients and clinician's response to them.

We are also involved in:

- A Wellcome Trust funded evaluation of safer storage of pesticides to try to reduce suicidal behaviour in Sri Lanka.
- Systematic reviews of the effectiveness of interventions for people who self-harm, the impact of the internet on suicidal behaviour, and ketamine and mood disorder.

Group members

Liz Bale – Research Assistant, Fiona Brand – Research Nurse, Deborah Casey – Research Assistant, Anne Ferrey – Research coordinator, Galit Geulayov – Study coordinator/Statistician, Judy Hodgson – PA to Professor Hawton, John Ryall – Research Assistant.

News and impacts

- Our booklet Coping with Self-harm: A Guide for Parents and Carers was Highly Commended by the BMA Patient Information Awards 2016. We are also developing a guide for school staff on coping with school pupils' self-harm to be disseminated nationally.
- Findings from Cochrane reviews on treatments for self-harm have been incorporated into national guidance.
- BBC World Service presentation on suicide prevention by Professor Hawton.

Selected recent publications

- Hawton, K., Witt, K. G., Salisbury, T. L., Arensman, E., Gunnell, D., Hazell, P., Townsend, E., & van Heeringen, K. (2016). Psychosocial interventions following self-harm in adults: a systematic review and meta-analysis. The Lancet. Psychiatry, 3, 740-750
- Geulayov, G., Kapur, N., Turnbull, P., Clements, C., Waters, K., Ness, J., Townsend, E. & Hawton, K. (2016). Epidemiology and trends in non-fatal self-harm in three centres in England, 2000–2012: findings from the Multicentre Study of Self-harm in England. BMJ Open, 6(4), e010538
- Ferrey, A.E., Hughes, N.D, Simkin, S., Locock, L., Stewart, A., Kapur, N., Gunnell, D. & Hawton, K., (2016) The impact of self-harm by young people on parents and families: a qualitative study. BMJOpen. doi:10.1136/bmjopen-2015-009631

Three key research questions

- What impact does treatment with ketamine have on mood disorder and suicidal behaviour?
- How does BMI relate to risk of self-harm and suicide?
- What are the most effective ways of providing care for people who self-harm?

Connection with other themes

Adult Disorders, Child and Adolescent, Psychological Medicine, Psychological Therapies

Seena Fazel

Professor of Forensic Psychiatry

Funded primarily by a Wellcome Trust Senior Research Fellowship, we have been researching key issues in forensic psychiatry and at the intersection of health and criminal justice.

Current and future research

We have been investigating risk factors for violent crime and repeat offending in individuals with severe mental illness, and developing scalable approaches to violence risk assessment. We have also been studying neglected associations between common neuropsychiatric disorders (depression, head injury, epilepsy) and adverse outcomes (crime, premature mortality and suicide).

In the future, we are building on this work with a series of pharmaco-epidemiological studies investigating associations with commonly prescribed medicines and adverse outcomes, and further developing approaches to violence and suicide risk assessment in high risk groups. This work involves an ongoing collaboration with the Medical Epidemiology and Biostatistics Unit at the Karolinska Institute, and senior statisticians in Oxford and Birmingham. New NIHR-funded work led by Manchester will investigate cognitive impairment and dementia in prisoners.

Group members

Postdocs – Rongqin Yu, Amir Sariaslan, Emma Frans (Karolinska), Yasmina Molero (Karolinska)
Doctoral students – Achim Wolf, Jelle Lansma
MSc students – Katrina Bartellas, Helen Hailes, Taanvi Ramesh
ACFs – Mark Toynbee, Adrian Hayes
Psychiatric trainees – Daniel Whiting, Tomasz Bajorek
Administrative assistant – Monique Ewen.

News and impacts

- Paper on outcomes following childhood head injury attracted an Altmetric score of 618, the 12th highest score in PLOS Medicine's history.
- Paper on the links between medication and reoffending has an Altmetric score of over 500 with around 50 news stories.
- Seena Fazel is a member of a Health and Justice Clinical Reference Group (NHS England) examining how to improve services for prisoners with dementia.

Selected recent publications

- Association between prescription of psychotropic medication and violent reoffending after prison release. JAMA 2016; 316:1-7
- Long-term outcomes associated with traumatic brain injury in childhood and adolescence: A nationwide Swedish cohort study of a wide range of medical and social outcomes. PLOS Medicine 2016; 13 (8), e1002103
- Triggers for violent criminality in patients with psychotic disorders. JAMA Psychiatry 73 (8), 796-803

Three key research questions

- What role could violence and suicide risk assessment have in clinical practice?
- Are there shared determinants of victimisation and violent crime in psychiatric patients?
- Are their shared modifiable risk factors for violence and suicide?

Ilina Singh

Professor of Neuroscience and Society

The Neuroscience, Ethics & Society Team's (NEUROSEC) location within Oxford Psychiatry and Neuroscience is a key strength, allowing us to integrate our work with world-leading, cutting edge research and clinical development in psychiatry and neuroscience. We also work closely with the Oxford Uehiro Centre for Practical Ethics and the Oxford Ethox Centre. These collaborations have been given substantial investment through the Wellcome Trust Centre for Ethics, Innovation, Globalisation and Medicine, awarded in December 2016.

Current research

Becoming Good: Early intervention and moral development in child psychiatry (BeGOOD)

Funder: Wellcome Trust Senior Investigator Award

BeGOOD is comprised of several project areas:
Psychosis: Early Intervention Ethics examines conceptions of 'good practice' in young service users and clinicians participating in NHS England's psychosis early intervention programme.
Mothers: *Early Intervention Ethics* is an ethnographic study of mother-infant care practices among 'high risk' mothers participating in the Preparing for Life project in North Dublin, Ireland.
Citizens: *Early Intervention Ethics* investigates young people's moral attitudes to early intervention strategies into problem behaviour.

Oxford-Stanley Centre Collaboration in the Ethics of Global Psychiatric Genomics

Funder: Broad Institute of Harvard & MIT

We are leading on development of an ethics strategy for the Stanley Centre's scientific programmes in Africa.

ROADMAP: Real-World Outcomes in AD: Multi-modal Data Access Platform

Funder: European Commission

We will contribute to work-packages on ethics and user-engagement.

NIHR Oxford Health Biomedical Research Centre

We are the lead for development of the PPI strategy.

Group members

Lauren Baker, BeGOOD Research Assistant
Michelle Griffin-Doyle, BeGOOD Research Assistant
Gulamabbas Lakhas, DPhil Student
Rodolfo Maggio, BeGOOD Postdoctoral Fellow
Arianna Manzini, Welllcome DPhil Student
Kaelene Mistretta, PPI Coordinator & PA
Rose Mortimer, BeGOOD DPhil Student
Gabriela Pavarini, BeGOOD Postdoctoral Fellow.

News and impacts

- Co-lead of the new Wellcome Centre for Ethics, Innovation, Globalisation and Medicine, awarded December 2016.
- Member of NHS 10 Year Strategy for Mental Health Working Group.
- Joined the Lancet Commission on Global Mental Health, 2017.

Selected recent publications

- Sattler, S & Singh, I (2016). Cognitive Enhancement Will Not Close the Achievement Gap in Education. American J of Bioethics, 16(6): 39–56
- Fitzgerald D, Rose N, Singh I (2016). Revitalizing sociology: urban life and mental illness between history and the present. British J Sociology. 67(1):138-60
- Singh I, Morgan C, Curran V, Nutt D, Schlag A, McShane, R (in press). Ketamine Treatment for Depression: Opportunities for Clinical Innovation and Ethical Foresight. Lancet Psychiatry

Three key research questions

- What are the ethical challenges of providing 'good care' to babies in high risk environments; e.g. prisons?
- Can neuroscience help tackle stigma in global mental health?
- What digital tools could we use to support ethics research with young people?

Connection with other themes

Child and Adolescent

Experimental Medicine

Dr Jessica Scaife and Alexandra Pike (OxBREaD team) piloting an experimental medicine study. In this study, MEG is used to track changes in food reward processing following deep brain stimulation surgery in anorexia nervosa. In this picture, points on the head are being digitally measured, which allows subsequent registration of the MEG data to the individual's headspace.

Mary Jane Attenburrow

Senior Clinical Research Fellow

For patients with bipolar disorder it takes an average of 10 years between the onset of symptoms and diagnosis. Self-monitoring is a crucial component of diagnosis and management. We continue to develop True Colours, (an electronic mood monitoring and self-management system) including the application of TC in primary care and enhancement using 'wearables' e.g. smart watches.

Current research

Accessing services for those with bipolar disorder remains a challenge. Services delivered using a 'collaborative care model' may be a more efficient use of services. Such models aim to streamline the interactions between patients, carers and clinicians. We are investigating the use of True Colours (TC) in primary care with the aim of developing a collaborative care model for bipolar disorder. It is proposed that TC could be used as the platform for information sharing between patients, primary and secondary care clinicians. TC enables patient-rated symptom monitoring and tracking of treatment interventions and other key variables such as physical status. We are also looking at whether TC could be enhanced by a patient-led app-based tracker for frequent daily monitoring to 'build a picture for each day' which allows for flexible interaction and continuous user feedback.

Following feasibility studies the aim is to design a clinical trial in which a collaborative care model is tested. This work is supported by NIHR Collaboration for Leadership in Applied Health Research and Care, (NIHR CLAHRC) Oxford.

We are committed to Public and Patient Involvement and Engagement and are involved in a number of PPI/E initiatives including the James Lind Alliance Priority Setting Partnership for Bipolar, (supported by funding from the NIHR).

Group members

Kate Saunders, Chris Hinds, Hannah McMahon, Jennifer Rendell, Ilina Singh, John Geddes.

News and impacts

- The James Lind Alliance Priority Setting Partnership for Bipolar was a two year project set up to identify unanswered questions about bipolar - its causes, diagnosis, treatment, care and prognosis. The 'top 10' questions for research were derived from a process that started with a national survey to gather questions that mattered most to people with bipolar, their families and health and social care professionals.
- Funding renewed for the NIHR Oxford cognitive health Clinical Research Facility (see quote).

Selected recent publications

- A systematic review of calcium channel antagonists in bipolar disorder and some considerations for their future development. A Cipriani, K Saunders, M-J Attenburrow, J Stefaniak, P Panchal, S Stockton, TA Lane, EM Tunbridge, JR Geddes and PJ Harrison Molecular Psychiatry (2016) 21, 1324–1332; doi:10.1038/mp.2016.86; published online 31 May 2016.
- Comparative evaluation of quetiapine plus lamotrigine combination versus quetiapine monotherapy (and folic acid versus placebo) in bipolar depression (CEQUEL): a 2 × 2 factorial randomised trial. John R Geddes, Alexandra Gardiner, Jennifer Rendell, Merryn Voysey, Elizabeth Tunbridge, Christopher Hinds, Ly-Mee Yu, Jane Hainsworth, Mary-Jane Attenburrow, Judit Simon, Guy M Goodwin, Paul J Harrison, on behalf of the CEQUEL Investigators and Collaborators, Lancet Psychiatry 3(1): 31-39

"The award recognises the ongoing work by the CRF and the close partnership of Oxford Health NHS Foundation Trust, Oxford University Hospitals Trust and Oxford University to bring innovative and better treatments to patients and the NHS."

Stuart Bell CBE, Oxford Health's Chief Executive on the award of £3.7m for the CRF.

Phil Burnet

Associate Professor

Our research explores ways to preserve or improve brain function. In psychiatric disorders, memory and/or positive mood may be impaired, but current medications are not always effective at treating these symptoms. We aim to ultimately offer novel interventions that will complement and improve contemporary treatments of psychiatric illness.

Current and future research

The Neurobiology and Experimental Therapeutics (NET) group explores the therapeutic potential of molecular, pharmacological and nutritional interventions, in healthy volunteers, patient groups and in experimental preclinical models. We are particularly interested in how the gut microbiome influences mood and cognition, and have found that prebiotics (nutritional substances that grow indigenous, beneficial gut bacteria), effects emotional processing, attenuates post-inflammatory anxiety, and improves cognitive performance.

The NET group is currently studying the long-term effects of early life manipulation of gut bacteria on brain development and maturation. We are also investigating how prebiotic intake affects anxiety and cognition in school children, and cognitive deficits and metabolic disturbances in schizophrenia. Finally, as part of our exploration into the mechanisms underlying bacteria-mammalian interactions, we are exploring the role of the microbial amino acid, D-alanine, in the modulation of host cellular responses and behaviour. All our work is funded by the BBSRC and Industry.

Group members

Postdoctoral research assistants: Dr Liliana Capitao (Clinical Psychologist) Dr Sonia Spitzer (Neuroscientist) *Graduate Students:* Shi Yu Chan (A*Star Studentship, Singapore) Jenna Hebert (Rhodes Scholarship) Katerina Johnson (BBSRC DTP) Amy Kao (Medical Sciences Division, Oxford) Kalinda Naidoo (Commonwealth Scholarship)

News and impacts

- I have been invited to disseminate our work through national radio, international news programmes and press releases (eg BBC Radio 4, CNN, The Independent, Daily Mail, and Huffington Post).
- In 2015, our published work in healthy volunteers, resulted in a significant increase in sales of a specific prebiotic in the USA.
- Functional details of the microbiome-gut-brain axis is being taught in a psychiatry-led module in the MSc Neuroscience programme in Oxford.

Selected recent publications

- Sarkar A, Lehto SM, Harty S, Dinan TG, Cryan JF, Burnet PWJ (2016). Psychobiotics and the Manipulation of Bacteria-Gut-Brain Signals. Trends in Neurosciences (In press)
- Kao AC, Harty S, Burnet PWJ (2016). The Influence of Prebiotics on Neurobiology and Behaviour. International Reviews of Neurobiology. 131:21-48
- Savignac HM, Couch Y, Stratford M, Bannerman DM, Tzortzis G, Anthony DC, Burnet PWJ (2016). Prebiotic administration normalizes lipopolysaccharide (LPS)-induced anxiety and cortical 5-HT2A receptor and IL1-ő levels in male mice. Brain Behaviour and Immunity 52: 120-31

Three key research questions

- Does the microbiome influence brain development?
- Can early-life manipulation of the gut microbiota affect cognitive performance in later life?
- What is the influence of prebiotics on cognitive deficits in schizophrenia, and antipsychotic side effects?

The Department in the Media

14 March 2016

"A new study published in Nature Neuroscience shows that rare mutations in the SETD1A gene dramatically increase the risk of developing schizophrenia. This implicates a specific biological pathway in schizophrenia, which may also be of significance beyond the condition."

Elizabeth Tunbridge, The Conversation: 'Rare single gene mutation increases risk of schizophrenia 35-fold, new study suggests'.

21 April 2016

"These results suggest that female students at fee-paying or selective schools are more likely to have a diagnosed eating disorder, particularly if the schools are single-sex."

Helen Bould, The Telegraph: 'Anorexia is 'contagious' in top all-girls schools'.

27 April 2016

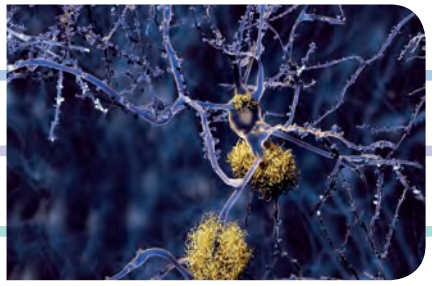
"This new evidence for mindfulness-based cognitive therapy is very heartening. While MBCT is not a panacea, it does clearly offer those with a substantial history of depression a new approach to learning skills to stay well in the long-term."

Willem Kuyken, The Independent: 'Mindfulness therapy works as well as anti-depressant drugs, major study finds'.

29 July 2016

"Dr Andrea Reinecke, is pioneering a new, and some might say tough, form of cognitive behavioural therapy (CBT). In the first experimental study, all 30 patients showed improvement and one-third reported being completely free of symptoms a month later."

The Guardian: 'From ketamine to cupboard therapy: the future of mental health treatment'.



22 August 2016

"Previous studies have shown changes to the brain as early as ten to 20 years before symptoms arise. If we can identify the biomarkers present in this very early stage, we have the chance of treating the disease earlier, which is vital if we are to prevent damage to people's memory and thinking."

Simon Lovestone, Today programme, BBC Radio 4.

27 August 2016

"We have been seeing improvements in patients with psychosis getting better with immunotherapy who have not got better with anti-psychotic drugs. We're optimistic that if we can treat these patients, we can really help."

Belinda Lennox, BBC Radio 4: 'The Inflamed Mind'.

5 May 2016

"With Virtual Reality, we can help patients relearn safety, and in this way the paranoia begins to fade away. It's a very exciting time to be working in VR."

Daniel Freeman, Wired UK: 'Paranoia 'reduced' by virtual reality therapy'.

8 June 2016

"Almost before you're consciously aware that you're looking at anything at all, you cannot help but feel compelled by that baby. There's something privileged about the way babies get into the brain. Like a Trojan horse, cuteness opens doors that might otherwise remain shut."

Morten Kringelbach, The Washington Post: 'The sneaky way babies get inside our heads'.

8 June 2016

"We carried out a systematic review, we looked at all the data sets. Looking at the overall evidence the benefits outweigh the risks and tolerability only for fluoxetine. Psychological intervention should be the first line treatment."

Andrea Cipriani, The Daily Telegraph: 'Antidepressants in young people may do more harm than good, warn scientists".

12 September 2016

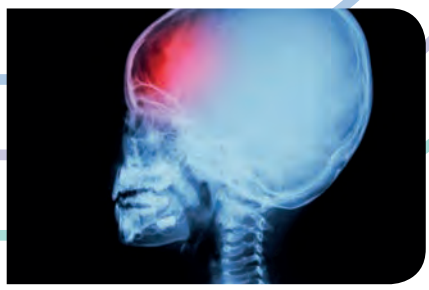
"We need to be aware that refugee children arriving in host countries are an incredibly resourceful and resilient group of children, but the post-migration environment in which they arrive can become a negative influence. I'm very interested in that whole area of these strong individuals arriving into settings that then make them far more vulnerable than they should be."

Mina Fazel, BBC World Service: The Forum – Turmoil.

14 September 2016

"As part of the new investment, Oxford Health FT and Oxford University's joint bid to become a National Institute for Health Research biomedical research centre was accepted. The partnership will receive £12.8m over five years from the national pot, and makes it only the second mental health and dementia research centre after South London and Maudsley FT."

Health Service Journal: 'Trust to receive millions as mental health research centre'.



5 October 2016

"A single concussion experienced by a child or teenager may have lasting repercussions on mental health and intellectual and physical functioning throughout adulthood, and multiple head injuries increase the risks of later problems, according to one of the largest, most elaborate studies to date of the impacts of head trauma on the young."

Seena Fazel, The New York Times: 'A Single Concussion May Have Lasting Impact'.

Phil Cowen

Professor of Psychopharmacology

Our research focuses on the psychopharmacology of depression. We're interested in the biochemical changes that are associated with depression and how drugs work to alleviate the symptoms that depressed patients experience. Our goal is to find new, more effective drug treatments, particularly for the patients who aren't helped enough by current therapies.

Current research

The Psychopharmacology Group receives programme grant funding from the Medical Research Council which supports our work investigating a neurochemical called glutamate in patients with mood disorders. This work is carried using the 7 Tesla camera at the Oxford Centre for Functional Imaging of the Brain. The 7T camera (one of only two in the UK) allows us to measure glutamate with great sensitivity and accuracy. We also have received funding from the Stanley Medical Research Institute for a trial of a potential lithium replacement drug called, ebselen, in patients with bipolar disorder.

We have a strong interest in a neurotransmitter called serotonin which is involved in many aspects of mood and cognition. We are currently collaborating with industrial partners in translational work to identify the therapeutic potential of selective agents acting at various subtypes of serotonin receptors.

We are also involved in a collaborative project funded by the Wellcome Trust which involves other academic centres and industrial partners to study the role of inflammation in depression. We hope that this work will lead to new forms of treatment for patients with depressive conditions that are not helped with conventional treatments.

Group members

Dr Chi Chen MSc student
Dr Beata Godlewska, Research Psychiatrist
Dr Charles Masaki DPhil Student
Miss Alexandra Pike DPhil student
Dr Ann Sharpley Sleep Scientist
Mrs Clare Williams Research Nurse

News and impacts

- Collaboration with Sound Pharmaceuticals and Stanley Medical Foundation on development of ebselen as a treatment for bipolar disorder.
- BAP Prize to Dr Charles Masaki for his study of the effect of ebselen on brain neurochemistry.

Selected recent publications

- Masaki C, Sharpley AL, Godlewska BR, Berrington A, Hashimoto T, Singh N, Vasudevan SR, Emir UE, Churchill GC, Cowen PJ. Effects of the potential lithium-mimetic, ebselen, on brain neurochemistry: a magnetic resonance spectroscopy study at 7 Tesla. Psychopharmacology. 2016 Mar 1;233(6):1097-104
- Masaki C, Sharpley AL, Cooper CM, Godlewska BR, Singh N, Vasudevan SR, Harmer CJ, Churchill GC, Sharp T, Rogers RD, Cowen PJ. Effects of the potential lithium-mimetic, ebselen, on impulsivity and emotional processing. Psychopharmacology. 2016 Jun 2:1-7
- Godlewska BR, Pike A, Sharpley AL, Ayton A, Park RJ, Cowen PJ, Emir U. Brian glutamate in anorexia nervosa: a magnetic resonance spectroscopy case-control study at 7Tesla. 2016, Psychopharmacology (in press).

Three key research questions

- Can ebselen substitute for lithium in bipolar disorder?
- Are 5-HT$_4$ receptor agonists effective antidepressants?
- Does detection of inflammation in depression lead to effective treatment targeting?

Connection with other themes

Neuroimaging

John Geddes

Professor of Epidemiological Psychiatry

Our research focuses on bipolar disorder, particularly on the development and evaluation of treatments for people with bipolar and other mental disorders.

Current research

Our current research focuses on bipolar disorder, particularly on the refinement of our understanding of the nature of the disorder, identifying the mechanisms of the disorder and the development and evaluation of treatments for people with bipolar and other mental disorders. By involving patients in research, our team has been able to establish large cohorts of patients and we have developed new approaches to remote measurement of mood, behaviour and physiology using connected devices and smartphones. These techniques help to facilitate self-management and monitoring, and also by digital phenotyping, to characterise the nature of mood disorder more accurately. We have conducted a number of clinical trials testing existing and new treatments and key research syntheses. Our research is funded by the Medical Research Council, CONBRIO Wellcome Trust strategic award and the National Institute for Health Research.

Group members

Dr Mary-Jane Attenburrow
Prof Andrea Cipriani
Dr Chris Hinds
Dr Andrey Kormilitzin
Prof Simon Lovestone
Prof Terry Lyons
Keltie McDonald
Dr Jennifer Rendell
Dr Kate Saunders
Vanashree Wadekar

News and impacts

- Reappointed Head, Department of Psychiatry 2016-2021 (second term).
- Awarded the 2016 European College of Neuropsychopharmacology Award in recognition of outstanding research leadership.
- Research has had a major impact on NICE guidelines, international clinical practice and research.

Selected recent publications

- Geddes, J. R., Gardiner, A., Rendell, J., Voysey, M., Tunbridge, E., Hinds, C., Yu L-M, Hainsworth J, Attenburrow M-J, Simon J, Goodwin GM, Harrison, P. J. (2016). Comparative evaluation of quetiapine plus lamotrigine combination versus quetiapine monotherapy (and folic acid versus placebo) in bipolar depression (CEQUEL): a 2 × 2 factorial randomised trial. The Lancet. Psychiatry, 3(1), 31-39. doi:10.1016/s2215-0366(15)00450-2
- Saunders, K. E., Cipriani, A., Rendell, J., Attenburrow, M. J., Nelissen, N., Bilderbeck, A. C., Vasudevan SR, Churchill G, Goodwin GM, Nobre AC, Harmer CJ, Harrison PJ, Geddes, J. R. (2016). Oxford Lithium Trial (OxLith) of the early affective, cognitive, neural and biochemical effects of lithium carbonate in bipolar disorder: study protocol for a randomised controlled trial. Trials, 17(1), 116. Harrison, P.J., Cader, M.Z. & Geddes, J.R. 2016. Reprogramming psychiatry: stem cells and bipolar disorder. The Lancet (in press) doi:10.1186/s13063-016-1230-7

Three key research questions

- Can we use large scale, temporally intensive digital phenotyping to characterise mood instability more usefully?
- What effects do existing treatments such as lithium have on mood instability and other cognitive, behavioural and physiological processes?
- Can we proceed from 1 and 2 to develop biomarkers for use in experimental medicine and early phase trials?

"John Geddes has been an outstanding leader in both the science and treatment of bipolar disorder. The large cohorts he has built by involving patients in his research have not only produced important new insights into the neurobiology of the disorder, but have resulted in new guidance for clinical practice. We consider him an excellent recipient of this award"

ECNP Award Committee chair Andreas Meyer-Lindenberg, Germany on awarding John Geddes the ECNP Neuropsychopharmacology Award

Guy Goodwin

Professor of Psychiatry

I have long argued that the future of psychiatry lies in the application of neuroscience to its core problems. Bipolar disorder defines the challenge for understanding aetiology, co-morbidity and treatment. It is the paradigm functional disorder of the brain.

Current and future research

We continue to develop a simple to use web-based self-monitoring system, True Colours. True Colours helps a person with bipolar disorder to live their life by helping them monitor their mood. Someone using True Colours will regularly record their mood states and their treatment. Any major events or features of lifestyle are logged as well. By carefully tracking changes of mood, patterns begin to emerge. Relating even quite subtle shifts to external factors enables people to learn more about their condition. In this way, self-monitoring gives people more control over their lives. It is a way of turning better self-knowledge into better self-management.

We are extending this approach to automatic measures of movement and physiology in the AMOSS project. We use devices linked to a mobile phone, effectively an extension of the True Colours concept. This approach forms the basis for work that informs work of the BRC and the Sleep and Circadian Neuroscience Institute. This virtual institute exemplifies the principle that cutting edge neuroscience can be applied to clinical problems.

Supported by:

NIHR Senior Investigator award

A Sleep and Circadian neuroscience institute. Wellcome Trust Strategic award (With Foster, Davies)

Group members

Jonathan Price
Kate Saunders
Daniel Freeman
Bryony Sheaves
Kate Porcheret

Collaborations

Russell Foster
Kay Davies
Emily Holmes
Maarten de Vos
PIvital

News and impacts

- First author, BAP Guideline on management and treatment of bipolar disorder.
- Thomson-Reuters 'Highly cited researcher' 2016.
- Completed 3 years as President of ECNP.

Selected recent publications

- Goodwin, G. M., Haddad, P. M., Ferrier, I. N., Aronson, J. K., Barnes, T. R. H., Cipriani, A., & Holmes, E. A. (2016). Evidence-based guidelines for treating bipolar disorder: Revised third edition recommendations from the British Association for Psychopharmacology. Journal of Psychopharmacology, 30(6), 495-553
- Geddes, J. R., Gardiner, A., Rendell, J., Voysey, M., Tunbridge, E., Hinds, C., & Goodwin, G. M. (2016). Comparative evaluation of quetiapine plus lamotrigine combination versus quetiapine monotherapy (and folic acid versus placebo) in bipolar depression (CEQUEL): a 2×2 factorial randomised trial. The Lancet Psychiatry, 3(1), 31-39
- Bilderbeck, A. C., Atkinson, L. Z., McMahon, H. C., Voysey, M., Simon, J., Price, J., Goodwin, G. M. & Miklowitz, D. J. (2016). Psychoeducation and online mood tracking for patients with bipolar disorder: A randomised controlled trial. Journal of Affective Disorders, 205, 245-251

Three key research questions

- What devices will bipolar patients really wear and find useful in objectifying their mood and activity?
- Can a sleep intervention be shown to reduce the symptoms associated with psychosis in young people?
- Can we generalise the True Colours system for other disorders and in other healthcare systems?

Connection with other themes

Adult Disorders

Catherine Harmer

Professor of Cognitive Neuroscience

The PERL group explores the neuropsychological mechanisms underpinning treatment effects in depression and anxiety. This relies on an interdisciplinary approach spanning contemporary cognitive psychology, neuroscience and psychopharmacology. Our work is used to characterise novel treatments in development for both drug and psychological interventions.

Current and future research

- We are funded by a Wellcome Trust strategic grant, CONBRIO, to develop an experimental medicine model of mood stabilising medication in bipolar disorder.
- We lead the experimental medicine theme of the NIHR BRC.
- We have support from pharmaceutical industry, including alliance programmes with UCB, Brussels and Janssen Research & Development, LLC.

Group members

Susannah Murphy: Senior Research Fellow
Corinna Klinge: postdoctoral researcher
Alexander Kaltenboeck: DPhil student
Helen Bould: Clinical DPhil student
Priyanka Panchal: DPhil student

News and impacts

- Public engagement activities: 'Getting to know your brain' stand at Oxfordshire Science Festival June 2016 (pictured).
- Informed treatment development of a novel Selective Nociceptin Receptor Antagonist for depression using an experimental medicine model (Post et al., 2016, Neuropsychopharmacology).
- Elected to membership of the Executive Committee, ECNP.

Selected recent publications

- Ironside M, O'Shea J, Cowen PJ, Harmer CJ. (2016) Frontal Cortex Stimulation Reduces Vigilance to Threat: Implications for the Treatment of Depression and Anxiety. Biol Psychiatry 15;79(10):823-30
- Bilderbeck AC, Reed ZE, McMahon HC, Atkinson LZ, Price J, Geddes JR, Goodwin GM, Harmer CJ(2016) Associations between mood instability and emotional processing in a large cohort of bipolar patients. Psychol Med 30:1-10
- Godlewska G, Browning M, Norbury R, Cowen PJ, Harmer CJ (2016) Early changes in emotional processing as a marker of clinical response to SSRI treatment in depression. Translational Psychiatry, in press.

Three key research questions

- How do drugs like lithium work to stabilise mood?
- Can we use experimental medicine models to screen novel treatments for cognition in healthy people?
- Can we parse out effects of antidepressants on negative bias and affect from effects on reward processing and anhedonia?

Connection with other themes

Adult Disorders, Neuroimaging

Paul Harrison

Professor of Psychiatry

The Translational Neurobiology Group investigates bipolar disorder and related conditions to understand better their biological basis and to identify new treatment targets.

Current and future research

The goal of the group is to understand better the biological foundations of bipolar disorder and related conditions. This in turn should permit not only a more informed way to characterise the disorder, but also help identify novel treatment targets. Underpinning our work is the notion that mood instability itself, rather than 'textbook' episodes of mania and depression, is critical to understanding the disorder, and we have a major role in a multidisciplinary investigation of mood instability being funded by a Wellcome Trust Strategic Award.

Since progress in this area may come from a range of sources and techniques, the group's approaches are similarly diverse.

For example, with Liz Tunbridge, we are studying the molecular and functional consequences of variation in the calcium channel gene CACNA1C which is associated with risk for bipolar disorder; to do this we are using a combination of brain tissue, bioinformatics, and cellular experiments. In complementary clinical studies, we are testing the effects of calcium channel drugs, already used for cardiovascular disorders, to see their impact on mood and brain function – using both cognitive and emotional tests, and multimodal brain imaging. At the same time, the molecular studies have highlighted the need for more sophisticated and sensitive methods to investigate gene sequences in human brain, and hence another aspect of our work, led by Mike Clark, is pioneering new approaches of this kind.

We are also involved in several other projects with other research groups, including circadian rhythms and their role in psychiatric disorders; the use of stem cells to study bipolar disorder; and an experimental medicine study investigating how genetic background and stress affect response to a drug which enhances dopamine signalling in the brain.

The work is supported primarily by Strategic Awards from the Wellcome Trust, and by the Medical Research Council.

In December Oxford was awarded funds for a new Wellcome Trust Centre for Integrative Neuroimaging, which Prof Paul Harrison will co-lead.

Group members

Tracy Lane – research associate
Aintzane Garcia-Bea – research fellow
Mike Clark – research fellow
Marieke Martens – research assistant
Li Chen – technician
Lucy Potter – DPhil student

News and impacts

- Paul is a member of the Department of Health working group developing a national 10-year strategy for mental health research.
- Paul is a theme leader on the newly awarded NIHR Oxford Health Biomedical Research Centre.
- Mike Clark received a Seed Award from the Wellcome Trust to develop his novel gene analysis technology.

Selected recent publications

- Harrison PJ (2016) Molecular neurobiological clues to the pathogenesis of bipolar disorder. Current Opinion in Neurobiology 36 1-6. PMID: 26210959
- Geddes JR, Gardiner A, Rendell J, Voysey M, Tunbridge EM, Hinds C, Yu L-M, Hainsworth J, Attenburrow M-J, Simon J, Goodwin GM, Harrison PJ (2016) Comparative evaluation of quetiapine plus lamotrigine versus quetiapine monotherapy (and folic acid versus placebo) in people with bipolar depression: a randomised, double-blind, placebo-controlled trial (CEQUEL). Lancet Psychiatry 3 31-39. PMID: 26687300
- Cipriani A, Saunders K, Attenburrow M-J, Stefaniak J, Panchal P, Stockton S, Lane TA, Tunbridge EM, Geddes JR, Harrison PJ (2016) A systematic review of calcium channel antagonists in bipolar disorder, and some considerations regarding their future development. Molecular Psychiatry 21 1324-1332. PMID: 27240535

Three key research questions

- Are brain-enriched voltage-gated calcium channels good treatment targets for bipolar disorder?
- How do stress, genes, and drugs interact to affect emotional processing and brain function?
- How may variants of the mGlu3 gene affect functioning of this glutamate receptor?

Connection with other themes

Adult Disorders, Neuroimaging

Belinda Lennox

Associate Professor

The early psychosis research group research the causes and improved treatments for those with early psychosis, collaborating with a wide range of researchers. We undertake experimental medicine studies, treatment trials and health services research.

Current research

We are working clinically in the NHS Early Intervention in Psychosis service in Oxford Health NHS FT, which ensures the relevance of our research and enables the direct translation of research findings into practice.

We have a particular focus is on the neuro-immunological basis of early psychosis, following the discovery of anti-neuronal cell surface antibodies in people with psychosis. We are now exploring the implications of this finding.

2016-2019 MRC DPFS Randomised placebo controlled trial of immunotherapy in patients with psychosis and anti-neuronal membrane antibodies.

2016-2019 NIHR CLAHRC Oxford Young peoples' experience of first episode psychosis – Healthtalk module on early psychosis.

2016-2018 Effects of prebiotics on cognition and immune function (PhD – Amy Kao).

2017-2019 Mechanism of action of NMDAR antibodies in psychosis (PhD-Adam Al-Diwani).

2017-2019 NIHR CLAHRC Evaluating impact of continuity of care after discharge from Early Intervention in Psychosis services.

Group members

Ksenija Yeeles – SINAPPS-2 trial coordinator
Stephen Puntis – Postdoctoral researcher
Jane Hainsworth – Administrator
Adam Al-Diwani – Wellcome clinician PhD student
Amy Kao – PhD student

News and impacts

- Analysis of the economic impact of early intervention in psychosis services has had a wide impact. It was featured in the NIHR CLAHRC 10@10, a document which highlighted the top 10 impacts from CLAHRC research from across England over the last 10 years. It was featured in BBC Radio Oxford and Oxford Mail. Within a week of publication the paper had an Altmetric score of 115.
- Senior Responsible Officer for NHS Early Intervention in Psychosis services across the South of England. The NHS Access and Waiting Time standard for Early Intervention in Psychosis services was launched April 2016.
- Clinical Director for NIHR Clinical Research Network: Thames Valley & South Midlands. 100% of NHS Trusts in our region showed an increase in clinical research activity in 2015/2016.

Selected recent publications

- Tsiachristas A, Thomas T, Leal J, Lennox BR (2016) Economic impact of Early Intervention in Psychosis services: results from a longitudinal retrospective controlled study in England. BMJ Open;6:10 e012611
- Lennox BR, Palmer-Cooper EC, Pollak T, et al 2016 Prevalence and clinical associations of neuronal cell surface antibodies in first episode psychosis: a case-control comparison study. The Lancet Psychiatry in press.
- Pruss H, Lennox B 2016 Emerging psychiatric syndromes associated with antivoltage-gated potassium channel complex antibodies. Journal Neuro Neurosurg Psychiatry doi: 10.1136/jnnp-2015-313000

Three key research questions

- Do some people with psychosis have an autoimmune basis to their illness?
- Do people with psychosis and antibodies against neuronal cell surface targets respond to treatment with immunotherapy rather than antipsychotics?
- How can Early Intervention in Psychosis Services best meet the needs of patients and carers?

Connection with other themes

Adult Disorders, Ethics and Society, Psychological Therapies

Rebecca J Park

Associate Professor

OxBread focuses on defining key psychological, neural and chemical processes underpinning severe eating disorders, and then targeting these processes to develop novel forms of treatment. Our translational research involves transdisciplinary collaborations between expert clinicians, behavioural neuroscientists and neurorethicists.

Current and future research

We've recently completed novel multimodal imaging studies of neural processing and reward in Anorexia Nervosa (AN) using MEG and fMRI – funded by an MRC Confidence in concept award. We've just published the first MEG study of AN worldwide and the first report of differential activation of the frontal pole to energy dense food in those with Anorexia Nervosa – perhaps a clue to explain the extreme and automatic avoidance of high calorie foods in acute Anorexia.

Ongoing projects, funded by MRC DPhil studentships, a Wellcome Doctoral Training Fellowship, and the Charles Wolfson Charitable trust, include:

Deep Brain Stimulation as an experimental treatment for severe enduring Anorexia Nervosa, targeted neural reward centres in collaboration with Professor Tipu Aziz, (NDS, Neurosurgery). This is the first registered trial of DBS for AN in the UK, and the second only in Europe.

Neuroethical study of DBS and neuroethical framework into the ethical aspects of neuromodulation in collaboration with Prof Ilina Singh and Dr Jacinta Tan (Swansea).

Neurochemistry of Anorexia Nervosa: a project using experimental psychology and neuroimaging to explore neurochemistry and compulsivity in AN in collaboration with Prof Phil Cowen.

How do women perceive their bodies and what might help improve this? Dr Helen Bould is investigating body image perception in women and developing novel implicit interventions with potential public health impacts.

Group members

Dr Jessica Scaife - Postdoctoral research assistant
Alexandra Pike – Dphil student
Dr Helen Bould - Wellcome Doctoral Training Fellow

News and impacts

- Professor Rebecca Park made a significant contribution to 'Rethinking Anorexia Nervosa' on BBC Radio 4.
- Dr Helen Bould led a study with a joint UK-Swedish team, which hit the headlines in finding that the school a girl attends can affect her chances of being diagnosed with an eating disorder. See media highlights for more details.

Selected recent publications

- Differential activation of the frontal pole to high vs low calorie foods: The neural basis of food preference in Anorexia Nervosa? Scaife, JC, Godier, LR, Harmer, C. Park, R.J. Psychiatry Research: Neuroimaging (2016) in press
- Enhanced Early Neuronal Processing of Food Pictures in Anorexia Nervosa: A Magnetoencephalography Study. Godier LR, Scaife JC, Braeutigam S, Park, R.J. Psychiatry J. 2016;2016:1795901. doi: 10.1155/2016/1795901
- An investigation of habit learning in Anorexia Nervosa. Godier LR, de Wit S, Pinto A, Steinglass JE, Greene AL, Scaife J, Gillan CM, Walsh BT, Simpson HB, Park, R.J. Psychiatry Res. 2016 Oct 30;244:214-22. doi: 10.1016/j.psychres.2016.07.051

Three key research questions

- In AN, could differential activation of the frontal pole to high calorie foods contribute to food avoidance, and serve as a potential treatment target?
- Could extreme compulsivity and parallels with addictive disorders seen in AN have transdiagnostic significance for treatment development?
- Can body image be implicitly manipulated for health benefits in those vulnerable or suffering from eating disorders and obesity?

"This donation is in memory of my sister who sadly passed away from anorexia this year… she heard about the work of OxBread into brain stimulation for severe enduring anorexia and it gave her hope for a new treatment"

Jill Bruce, sister of Emma

Connection with other themes

Adult Disorders, Child and Adolescent, Ethics and Society

Elizabeth Tunbridge

Associate Professor

We investigate the brain mechanisms that underlie associations between individual genes and psychiatric disorders. We aim to clarify the biological basis of these illnesses and identify novel therapeutic targets for their treatment.

Current and future research

Our research is multidisciplinary and collaborative, spanning molecular biology, in vivo neurochemistry and behaviour, and experimental medicine and neuroimaging.

A major focus of our work is the dopamine-related genes. We have extensively studied the catechol-O-methyltransferase (COMT) gene, which we have shown regulates prefrontal dopamine transmission and related cognitive functions. Our on-going work expands on these findings in a number of ways. We are conducting experimental medicine and neuroimaging studies to investigate how COMT genotype and pharmacological inhibition affect emotional and reward processing, and how this is altered by stress. In addition, we use rodent models to investigate the relationship between COMT, subcortical dopamine release and reward processing, and how COMT's effects are affected by altered dopamine transporter activity.

More recently, we have begun to use similar approaches to investigate genes emerging from large-scale genomics studies of psychiatric illnesses, most notably the voltage-gated calcium channel (VGCC) genes. We are investigating the isoform profile of VGCCs expressed in human brain, and whether particular isoforms are associated with disease risk, since these might represent novel therapeutic targets.

Our research is funded by the Royal Society, the BBSRC and the MRC.

Group members

Dr Anna Huber – postdoctoral researcher
Clio Korn – DPhil student
Marieke Martens – DPhil student
Katharina Stumpenhorst – DPhil student
Nina Dalton – MSc student
Kristian Jensen – DPhil student

News and impacts

- Liz was awarded the Senior Psychopharmacology Prize by the British Association for Psychopharmacology.
- The group's research was presented at Cheltenham Science Festival, and was featured on local radio and television.
- Liz received one of the inaugural Vice Chancellor's Awards for Public Engagement in Research.

Selected recent publications

- Barkus C, Korn C, Stumpenhorst K, Laatikainen LM, Ballard D, Lee S, Sharp T, Harrison PJ, Bannerman DM, Weinberger DR, Chen J, Tunbridge EM. (In press) Genotype-Dependent Effects of COMT Inhibition on Cognitive Function in a Highly Specific, Novel Mouse Model of Altered COMT Activity. Neuropsychopharmacology. doi: 10.1038/npp.2016.119
- Cipriani A, Saunders K, Attenburrow MJ, Stefaniak J, Panchal P, Stockton S, Lane TA, Tunbridge EM, Geddes JR, Harrison PJ. (2016). A systematic review of calcium channel antagonists in bipolar disorder and some considerations for their future development. Mol Psychiatry. 21(10):1324-32
- Tunbridge EM, Dunn G, Murray RM, Evans N, Lister R, Stumpenhorst K, Harrison PJ, Morrison PD, Freeman D. (2015). Genetic moderation of the effects of cannabis: catechol-O-methyltransferase (COMT) affects the impact of 9-tetrahydrocannabinol (THC) on working memory performance but not on the occurrence of psychotic experiences. J Psychopharmacol. 29(11):1146-51

Three key research questions

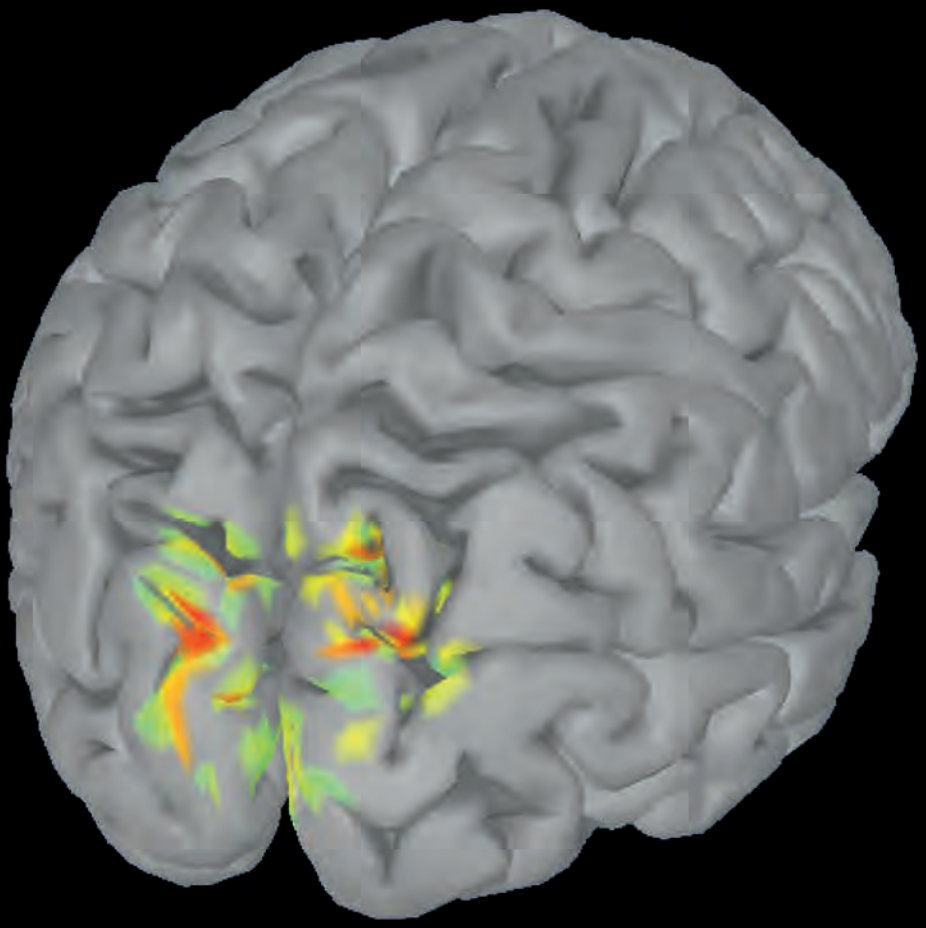
- Might brain-enriched voltage-gated calcium channel isoforms provide sensitive new targets for psychiatric disorders?
- Is COMT of significance for domains beyond 'cold' cognition?
- How does COMT influence how we select which stimuli to learn about in a complex environment?

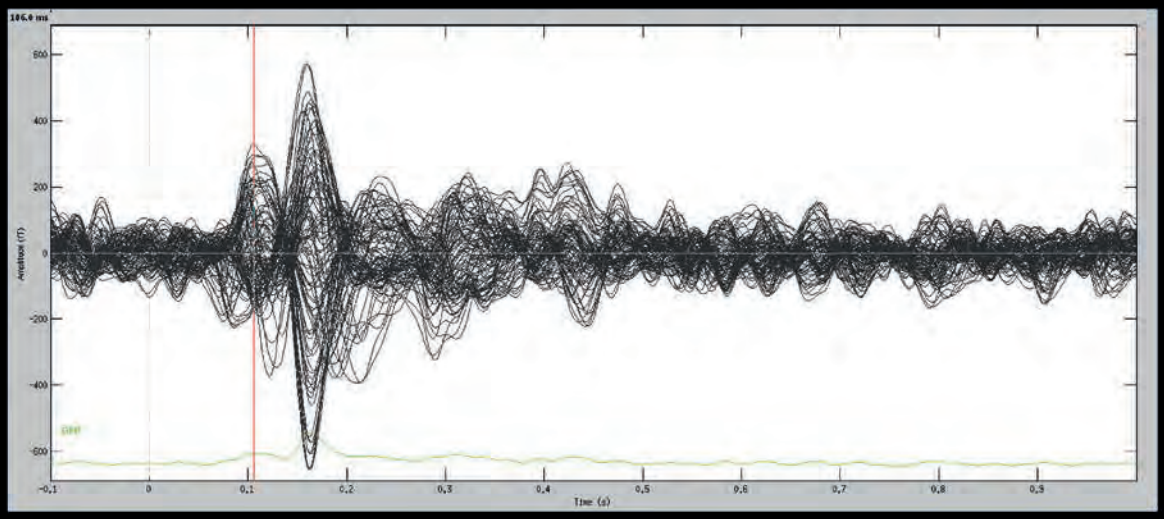
Connection with other themes

Neuroimaging

Neuroimaging

The MEG traces (lower panel) show the neuronal response in a female patient. The cortical activation corresponding to an early peak of neuronal activity at about 100ms after picture onset (read line) is shown in the upper panel. The anatomical images (brain, head shape) are based on a standard, openly available template brain for reasons of data confidentiality.





Michael Browning

MRC Clinician Scientist

We use computational models of behaviour to better understand the causes of anxiety and depression and to guide the development of novel treatments for these illnesses.

Current and future research

We are a new group and are setting up our initial studies. We are currently investigating how depressed patients fine tune their learning in response to positive and negative outcomes. This will be followed by a study which measures the effect of altering learning habits on depressive symptoms in currently and previously depressed patients. Future studies will use functional magnetic resonance imaging to describe the neural circuits involved in these processes and will attempt to modify the processes using simple drug treatments.

We are also involved in a multinational study which is investigating whether using cognitive tests to guide treatment improves outcomes in depression (PReDicT study).

Our research is funded by a Clinician Scientist Fellowship from the MRC awarded to Michael Browning.

Group members

Dr Erdem Pulcu, postdoctoral researcher
Mr Sungwon Han, Msc student.

News and impacts

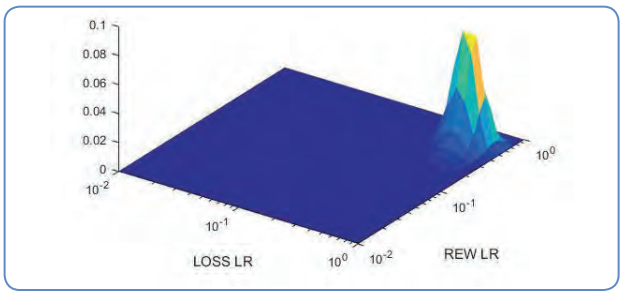
- Funding awarded by the MRC in April 2016.
- Transcontinental computational psychiatry workgroup established (https://www.cmod4mh.com/).
- Michael Browning awarded senior clinical psychopharmacology prize from the British Association of Psychopharmacology.

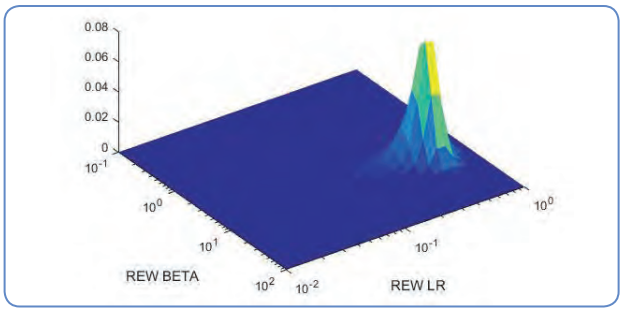
Selected recent publications

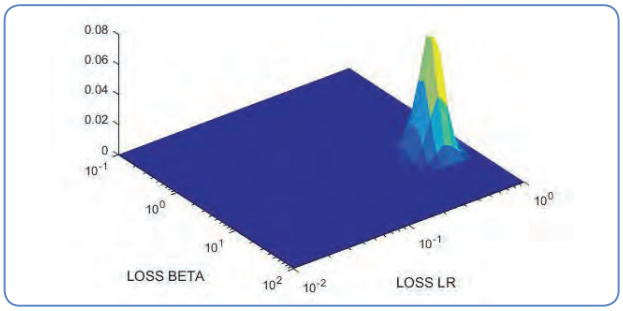
- Browning, M., Behrens, T. E., Jocham, G., O'Reilly, J. X., & Bishop, S. J. (2015). Anxious individuals have difficulty learning the causal statistics of aversive environments. Nature Neuroscience.
- Cowen, P. J., & Browning, M. (2015). What has serotonin to do with depression? *World Psychiatry*.
- Post, A., Smart, T. S., Krikke-Workel, J., Dawson, G. R., Harmer, C. J., Browning, M., Witkin, J. M. (2016). A Selective Nociceptin Receptor Antagonist to Treat Depression Neuropsychopharmacology.

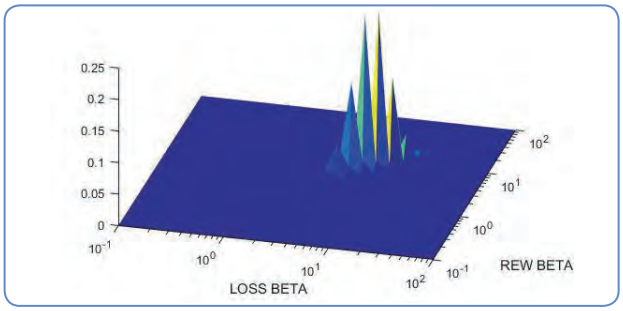
Three key research questions

- Can you treat depression by altering how people learn from positive and negative outcomes?
- What brain systems control how people learn from positive and negative outcomes?
- Can cognitive tests be used to improve the treatment of depression?









Emily A. Holmes

Visiting Professor in Clinical Psychology

The Experimental Psychopathology and Cognitive Therapies (EPaCT) group aims to use experimental techniques to increase our understanding of the mechanisms underlying psychiatric disorders and improve treatment. We are particularly curious about the role of mental imagery and emotion. We take an interdisciplinary approach including psychology (basic and clinical), psychiatry, and cognitive (neuro) science.

Current and future research

Psychological trauma and involuntary mental images

Grant Support Lupina Foundation; the Wellcome Trust Strategic Award.

We seek to better understand intrusive memories of trauma and develop computerised interventions after a traumatic event.

We are building upon earlier experimental work investigating the role of sleep on intrusive memories at the Emergency Department at the John Radcliffe Hospital [Wellcome Trust: Russell Foster PI including Guy Goodwin, Lalitha Iyadurai and Kate Porcheret].

We are also interested in translation to aid refugees who have experienced trauma [Lupina Foundation, Emily Holmes PI].

Group members

Lalitha Iyadurai –Research Clinical Psychologist and Emily Holmes [PI]
PhD Student with Nobre: Nora Rouast
Oxford Collaborators: Goodwin, Geddes, Nobre, Porcheret, Wulff, Foster, Bonsall

News and impacts

- Member of the British Association for Psychopharmacology (BAP) consensus meeting to update the evidence-based guidelines for the pharmacological management of bipolar affective disorder.
- Chair and Board of Trustees of the Fellows committee for the international mental health research charity MQ: transforming mental health through research.
- Associate Editor for Behaviour Research and Therapy (lead journal for CBT, USA).

Selected recent publications

- Holmes, E. A., Bonsall, M. B., Hales, S. A., Mitchell, H., Renner, F., Blackwell, S. E., Watson, P., Goodwin, G. M., Di Simplicio, M. (2016). Applications of time-series analysis to mood fluctuations in bipolar disorder to promote treatment innovation: a case series. Translational Psychiatry, 6, e720. doi: 10.1038/tp.2015.207
- Clark, I. A., Holmes, E. A., Woolrich, M. W., & Mackay, C. E. (2016) Intrusive memories to traumatic footage: The neural basis of their encoding and involuntary recall. Psychological Medicine, 46(3), 505-518 doi: 10.1017/S0033291715002007
- Holmes, E. A., Blackwell, S. E., Burnett Heyes, S., Renner, F., & Raes, F. (2016) Mental imagery in depression: Phenomenology, potential mechanisms, and treatment implications. Annual Review of Clinical Psychology, 12, 249-280. doi: 10.1146/annurev-clinpsy-021815-092925

Three key research questions

- What is the relationship between mental imagery and emotion?
- How can we stop involuntary memories of trauma intruding into the mind?
- How can we develop our understanding of the mechanisms underpinning intrusive memories and use this to develop new treatment approaches?

Clare Mackay

Professor of Imaging Neuroscience

Neuroimaging provides a window into the living brain, and is an increasingly vital experimental medicine tool for neuro-psychiatric disease. With a particular focus on early and pre-clinical disease, the Translational Neuroimaging Group explore how the brain changes before symptoms take hold.

Current and future research

We use neuroimaging to investigate and ultimately predict risk for neurodegenerative disease. We study individuals at genetic risk for Alzheimer's disease to investigate the effect of risk and resilience factors on brain structure and function through the lifespan. The core Oxford Parkinson's Disease Centre (Parkinson's UK and the Monument Trust), grant was recently renewed for a further 5 years. We are forward-translating our imaging methods to the clinic and back-translating to incorporate imaging for OPDC animal models. The Deep & Frequent Phenotyping (NIHR/MRC) will compare and combine a large number of potential biomarkers for Alzheimer's disease. The Whitehall II imaging study (MRC) has almost completed data collection for 800 participants, providing rich data to explore the effects of lifestyle on brain health in ageing.

We are leading imaging informatics for the MRC Dementia Platform UK (DPUK), which will facilitate open science for neuroimaging.

In April we moved into the newly expanded OHBA, which is now a multimodal translational imaging centre, complete with our new 3T MRI system. Via the new NIHR Oxford Health BRC we will develop plans to create a 'brain health centre', including a comprehensive brain health assessment, as well as high quality MRI alongside cognitive and clinical assessments for memory clinic patients.

In December Oxford was awarded funds for a new Wellcome Trust Centre for Integrative Neuroimaging, which Prof Clare Mackay will co-lead.

Group members

Postdoctoral Researchers: Dr Verena Heise, Dr Ludavica Griffanti, Dr Robert Westphal, Dr Sebastian Rieger:
DPhil Students: Michal Rolinski, Sana Suri, Eniko Zsoldos, Clare O'Donaghue, Anya Topiwala, Zobair Arya.
OxDARE Assistant: Aimie Gornall,
Technical team: Lars Engstrom, Matt South

News and impacts

- NIHR Oxford BRC Principal Fellow award (Jan 2016).
- Older Adults & Dementia Theme leader in the newly awarded NIHR Oxford Health BRC (Sept 2016).
- Full Professorship (July 2016).

Selected recent publications

- Rolinski, L Griffanti, P Piccini, AA Roussakis, K Szewczyk-Krolikowski, RA Menke, T Quinnell, Z Zaiwalla, JC Klein, CE Mackay, MTM Hu. Basal ganglia dysfunction in idiopathic REM sleep behaviour disorder parallels that in early Parkinson's disease. Brain. 2016 139:2224-34
- Griffanti L. Rolinski M, Szewczyk-Krolikowski K, Menke RA, Filippini N, Zamboni G, Jenkinson M, Hu MTM, Mackay CE. Challenges in the reproducibility of clinical studies with resting state fMRI: an example in early Parkinson's disease. Neuroimage. 2016; 124:704-13
- Geddes JR, Mackay CE, Lee WH, Cipriani A. Open Science in Neuropsychiatry: Mental Health and Dementia. Open Science EU, 2016, June, 46-49

Three key research questions

- Can neuroimaging be used to understand mechanisms of risk and resilience for neurodegenerative disease?
- Can we develop robust imaging biomarkers for experimental medicine?
- Can we encourage open science for neuroimaging by facilitating data sharing?

Connection with other themes

Ageing and Dementia

Kia Nobre

Professor of Translational Cognitive Neuroscience

The ability of the human brain to anticipate and select the relevant information to guide perception and memory is an essential building block of adaptive, mental health. We study the neural systems and mechanisms of dynamic and proactive attention control across the lifespan, as well as their contribution to mental health.

Current and future research

We contribute to multiple research programmes in collaboration with several research groups locally and around the world. Our translational research provides high-precision quantitative measures of cognitive processes (attention, working memory, reward processing, decision making) and associated neural activity in the context of ageing and dementia (NIHR programme grant and BRC) and psychiatric disorders (Wellcome Trust Strategic Award). My Wellcome Trust Senior Investigator Award and competitive fellowships by group members fund our discovery science to understand how memories, goals, and expectations regulate human cognition. We lead an international collaboration funded by the McDonnell Foundation to investigate whether and how brain oscillations shape human cognition.

Group members

The Brain & Cognition lab contains about 20 researchers straddling the Departments of Psychiatry and Experimental Psychology.

Independently funded postdoctoral fellows: André Cravo (FAPESP), Nick Myers (Wellcome), Frederick van Ede (Marie Curie), and Nahid Zokaei (British Acedemy).

Postdoctoral fellows on lab grants:
Ryszard Auksztulewicz, Andrew Quinn, Ana Todorovic.

Graduate students: Lauren Atkinson, Sage Boettcher, Simone Heideman, Alex Luettich, Kate Nussenbaum, Priyanka Panchal, Sophie Raeder, Nora Rouast, Nir Shalev.

Research Assistants: Giedre Cepukaityte, Sammi Chekroud, Alex Irvine.

Lab manager: Rocio Silva Zunino

News and impacts

- This year Kia Nobre became Head of Department of Experimental Psychology and Chair of the Oxford Neuroscience Strategy Committee.
- Our group contributed to the successful establishment of a new NIHR Biomedical Research Centre focusing on mental health.
- Prof Kia Nobre will co-lead the new Wellcome Trust Centre for Integrative Neuroimaging.

Selected recent publications

- Mok et al (2016) Behavioral and Neural Markers of Flexible Attention over Working Memory in Aging. Cerebral Cortex 26: 1831-42
- Myers et al (2016) Testing sensory evidence against mnemonic templates. eLife 4:1–25
- Salvato et al (2016) Preserved memory-based orienting of attention with impaired explicit memory in healthy ageing. Cortex. 74: 67-78

Three key research questions

- How to protect primacy of cognition in the study of mental and cognitive disorders?
- What is the role of neural oscillations in cognition?
- What is the role of neural instability in mental disorders, and how can we measure this?

"Establishing the Wellcome Trust Centre for Integrative Neuroimaging is exactly the catalyst we needed to set in motion the vital translational chain from laboratory neuroscience to human brain health. This is when the whole surpasses the sum of the parts."

Prof Kia Nobre on the announcement of the WT Award, December 2016

Mark Woolrich

Professor of Computational Neuroscience

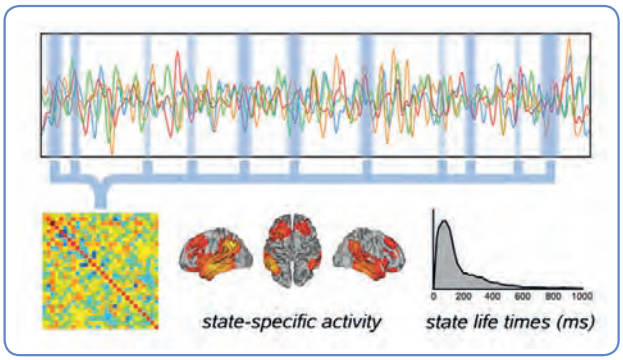
The OHBA Analysis group develops novel computational methods for analyzing neuroimaging data. This incorporates a wide range of data, including functional MRI, M/EEG and LFP recordings. We use an array of techniques from computational neuroscience, machine learning and image processing to ask novel questions about the function and dysfunction of the human brain.

Current and future research

We work on understanding the nature of, and the relationship between, spontaneous and task related large-scale brain networks. Spontaneous brain activity provides the substrate from which all cognition arises, and may also play a central role in maintaining the health of the brain networks recruited in tasks.

We use computational methods that leverage the temporal information available from fMRI, M/EEG and LFP recordings, in order to capture fast dynamics changes in these large-scale brain networks. Most recently, we have used dynamic models to show that large-scale networks fluctuate spontaneously at very fast time scales (~100ms), which is at time scales hundreds of times faster than has been shown previously. We are now investigating the extent to which these large-scale networks are modulated in tasks.

These methods are being used to gain new insights not only in basic neuroscience, but also in clinical research of psychiatric disorders. We are applying these new methods to data collected as part of the Collaborative Oxford Network for Bipolar Research to Improve Outcomes (CONBRIO), and the Human Connectome Project.



Resting state networks in spontaneous human brain activity revealed to be fluctuating on sub-second time-scales [Baker et al. Elife (2014)].

Group members

Post-docs: Sam Harrison, Diego Vidaurre, Romesh Abeysuriya, Robert Becker, Andrew Quinn.

DPhil students: Cameron Higgins, Alex Skates, Angus Stevner, Jonathan Hadida.

News and impacts

- Educational talks at workshops at MEG-UK and the OHBM conference.
- Handling Editor for both Human Brain Mapping and Neuroimage journals.

Selected recent publications

- Spectrally resolved fast transient brain states in electrophysiological data. Vidaurre et al. Neuroimage. 2016.
- A symmetric multivariate leakage correction for MEG connectomes. Colclough et al. Neuroimage. 2015.
- Large-scale probabilistic functional modes from resting state fMRI. Harrison at al. Neuroimage. 2015.

Three key research questions

- How can we best identify and characterise large-scale networks at fast time scales?
- What is the relationship between large-scale networks in ongoing brain activity and in cognition?
- What is the role of homeostasis and the balance of excitation and inhibition in the healthy and diseased brain?

Psychological Medicine

'Psychiatrists and psychologists have been directly recruited to specialist acute teams at the Oxford University Hospitals NHS Foundation Trust as part of an integrated psychological medical service.' **NHS England case study - Oxford trust delivers culture-change integrated psychological medicine.**

Michael Sharpe

Professor of Psychological Medicine

PMR studies clinical problems at the interface between psychiatry and the rest of medicine. Our current focus is on developing interventions for psychiatric illness in the medically ill (medical-psychiatric multi-morbidity) and evaluating these in rigorous clinical trials.

Current research

The Psychological Medicine Research group is running the following projects, which are funded by NIHR and Sobell House Charity:

- Improving treatment conversations between oncologists and patients.
- The effectiveness and cost-effectiveness of proactive liaison psychiatry.
- Implementing integrated symptom monitoring and depression care systems into a cancer centre.
- Understanding the relationship between depression and outcomes in a large cohort of people with cancer.

Group members

Dr Jane Walker, Senior Clinical Researcher and Consultant Psychiatrist
Dr Marta Wanat, Postdoctoral Researcher
Dr Katy Burke, Clinical Researcher
Ms Ariane Petit, Research Administrator
Dr Bart Sheehan, Dr Zehanah Izmeth,
Dr Luke Solomons, Dr Michael Yousif, Dr Iain Jordan,
Dr David Okai, Prof Mina Fazel and Dr Isabel Paz
are Consultant Psychiatrists in the Oxford University Hospitals NHS Foundation Trust Psychological Medicine service and contribute to the teaching and research activities of our group.

News and impacts

- The Oxford University Hospitals NHS Foundation Trust Psychological Medicine service, which is the clinical arm of Psychological Medicine Research and provides teaching for medical students, was featured as an example of clinical innovation by: NHS England, Macmillan Cancer Support, the King's Fund and the Care Quality Commission.
- Michael Sharpe was made an NIHR Senior Investigator. He was also presented with the Alison Creed Award by the European Association of Psychosomatic Medicine and the Don Lipsett award by the American Academy of Psychosomatic Medicine.
- Jane Walker was shortlisted by the Royal College of Psychiatrists for the award of Academic Psychiatrist of the Year 2016.

Selected recent publications

1. Duarte A, Walker J, Walker S, Richardson G, Holm Hansen C, Martin P, Murray G, Sculpher M, Sharpe M. 2015. Cost-effectiveness of integrated collaborative care for comorbid major depression in patients with cancer. Journal of Psychosomatic Research 79(6): 465-470
2. Sharpe M, Naylor C. 2016. Integration of mental and physical health care: from aspiration to practice. Lancet Psychiatry 3(4): 312-313
3. Sharpe M, Goldsmith KA, Johnson, AL, Chalder T, Walker J and White PD. 2015. Rehabilitative treatments for chronic fatigue syndrome: long-term follow-up from the PACE trial. Lancet Psychiatry 2(12): 1067-1074

Three key research questions

- How best to integrate evidence-based depression care into cancer centres?
- Does proactive psychiatric care for elderly medical inpatients reduce time spent in hospital?
- What are the difficulties in conversations between patients and oncologists about prognosis and treatment and how can these be overcome?

"Oxford's experience demonstrates that it is not just patients and families who can benefit through integrated care which considers the mind and body as a whole. A change of focus, such as that which led to the creation of Oxford's psychological medicine service, can also transform working relationships and attitudes to deliver a culture-change in care which puts people first."

Tim Kendall, NHS England's national clinical director for mental health

Psychological Therapies

A still taken from virtual reality animations developed by Professor Freeman's team to treat severe paranoia

Christopher Fairburn

Professor of Psychiatry

The mission of CREDO is to conduct and foster interdisciplinary research designed to enhance the global dissemination and implementation of evidence-based psychological treatments for mental disorders.

Current and future research

CREDO is engaged in two main programmes of research:

- The development and evaluation of scalable ways of delivering psychological treatments. Our primary interest is in direct-to-user digital treatments.
- The development and testing of scalable and cost-effective methods for training therapists to deliver evidence-based psychological treatments. Our primary interest is in direct-to-trainee online training.

CREDO is also completing a long-term programme of research on the treatment of eating disorders.

CREDO is closely involved with others engaged in complementary lines of research, especially the dissemination work of Professor Vikram Patel in India.

CREDO is funded by a strategic award from the Wellcome Trust.

Group members

Christopher Fairburn – Director
Rebecca Murphy – Deputy Director and Senior Research Clinician
Zafra Cooper – Emeritus Director
Marianne O'Connor – Senior Research Coordinator
Suzanne Bailley-Straebler – Senior Research Clinician
Katy Sivyer – Senior Research Assistant
Emily Rothwell – Doctoral student.

News and impacts

- Enhanced cognitive behaviour therapy for eating disorders (CBT-E), a transdiagnostic treatment for eating disorders developed by CREDO, has been strongly endorsed by NHS England and the Chief Medical Officer. It is to be disseminated across the entire NHS. A country-wide training programme is being developed.
- A proof-of-concept study (conducted across Ireland) of "web-centred training" in CBT-E showed that the method can successfully train large numbers of geographically dispersed therapists. This finding has been replicated in a training RCT which recruited therapists from across North America.
- Professor Fairburn is a member of the NICE Guideline Development Group on Eating Disorders and the NHS Access and Waiting Times Initiative, and he is a Trustee of MQ.

Selected recent publications

- Fairburn CG, Patel V. The impact of digital technology on psychological treatments and their dissemination. Behaviour Research and Therapy, 2016 (in press).
- Patel V, Fairburn CG. A controlled evaluation of a lay counsellor-delivered psychological treatment for severe depression in primary care in India. Lancet, 2016 (in press).

Key research questions

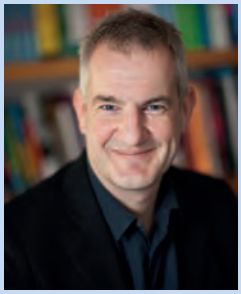
- Can we develop effective direct-to-user digital versions of leading psychological treatments?
- Does this mode of treatment delivery minimise or circumvent many of the barriers to receiving help?

Connection with other themes

Adult Disorders, Ethics and Society

Daniel Freeman

Professor of Clinical Psychology



We work to understand why psychotic experiences such as delusions happen and how they can be much more successfully treated.

Current and future research

- National Institute of Health Research (NIHR). Research Professorship. Nov 2015-Nov 2020. Award: £1.8 million. 'Overcoming Persecutory Delusions.' Grantholder: Daniel Freeman.

- MRC/NIHR Efficacy and Mechanism Evaluation Programme 2017-2020. Award: £1.3million. 'A randomised controlled trial to evaluate the outcomes and mechanisms of a novel digital reasoning intervention for persecutory delusions.' Grandholders: Garety (PI), Freeman, Fowler, Kuipers, Dunn, Emsley, Bebbington, Greenwood, Hardy, Harding.

- Wellcome Trust Strategic Award. 2012-2017. Award: £4.1 million. 'Sleep and Circadian Neurosciences Institute'. Grantholders: Foster (PI), Bannerman, Clifford, Davies, Freeman, Goodwin, Harrison, Holmes, Peirson, Wulff.

Group members

Clinical Psychologists: Prof Daniel Freeman, Dr Jessica Bird, Dr Jonathan Bradley, Dr Nicola Collett, Dr Rowan Diamond, Dr Louise Isham, Dr Bryony Sheaves, Dr Felicity Waite.
Research Assistants: Eleanor Chadwick, Stephanie Rek.
Doctoral students: Dimitri Gavroloff, Georgina Geddes, Sarah Reeve.

News and impacts

- Our report of the first use of virtual reality to treat persecutory delusions received media coverage worldwide.
- We have a new multi-centre grant award from the EME to test a novel digital intervention for delusions.
- Dr Jessica Bird completed her doctorate in clinical psychology; Josie McInerney was awarded a place on clinical psychology training.

Selected recent publications

- Freeman, D. (2016). Persecutory delusions: a cognitive perspective on understanding and treatment. Lancet Psychiatry, 3, 685-692
- Freeman, D., Bradley, J., Antley, A., Bourke, E., DeWeever, N., Evans, N., ernis, E., Sheaves, B., Waite, F., Dunn, G., Slater, M., & Clark, D. (2016). Virtual reality in the treatment of persecutory delusions. British Journal of Psychiatry, 209, 62-67
- Freeman, D., Bradley, J., Waite, F., Sheaves, B., DeWeever, N., Bourke, E., McInerney, J., Evans, N., ernis, E., Lister, R., Garety, P. & Dunn, G. (2016). Targeting recovery in persistent persecutory delusions: a proof of principle study of a new translational psychological treatment. Behavioural and Cognitive Psychotherapy, 44, 539-552

"It's exciting to see cutting-edge technology used innovatively to treat what can be an extremely frightening and disruptive symptom for some people experiencing mental illness."
Brian Dow, Rethink Mental Illness, BBC News

Three key research questions

- Can recovery rates for persistent persecutory delusions be substantially improved?
- Can immersive virtual reality be used to both understand and treat delusions?
- What are the causes of delusions that are amenable to treatment interventions?

Connection with other themes

Adult Disorders, Experimental Medicine

Willem Kuyken

Professor of Clinical Psychology

Our research focuses on depression and evidence-based psychological approaches to preventing depression. The emphasis is on mindfulness-based approaches and the role of compassion. We use the translational framework from basic through to implementation science. We explore the boundaries of its efficacy, its mechanisms of action and theoretically informed modifications for different groups (children and adolescence, parents, people with long-term conditions).

Current and future research

Our main project is the MYRIAD project, a 7 year programme of work investigating the underlying cognitive mechanisms, teacher training routes, school-based implementation, effectiveness and cost-effectiveness of mindfulness training in 11-16 year olds. We are also exploring suicidal behaviour (MINDLOCK project).

Funding as PI:

Wellcome Trust Strategic Award, Reference WT107496/Z/15/Z. (£4.5 million). Promoting mental health and building resilience in adolescence: Investigating mindfulness and attentional control. (Principal Investigators J.M.G. Williams, W. Kuyken, Sarah-Jayne Blakemore and Tim Dalgleish). 2015-2022.

Wellcome Trust Strategic Award, Reference WT104908MA. (£1.9 million). Promoting mental health and building resilience in adolescence: Investigating mindfulness and attentional control. (Principal Investigators J.M.G. Williams, W. Kuyken, Sarah-Jayne Blakemore and Tim Dalgleish). 2015-2018.

NIHR, Health Services and Delivery Research Programme, Reference 12/64/ 0412. (£440,000) Accessibility and implementation in UK services of an effective depression relapse prevention programme: mindfulness based cognitive therapy. (Chief Investigators W. Kuyken and J. Rycroft Malone. Co-PIs R.Crane, A Gibson, S.Mercer). 2013-2016.

Group members

Mark Williams, Emeritus Professor; Catherine Crane, *Research Lead;* Elizabeth Nuthall, Trial Manager; Bergljot Gjelsvik, Stephanie Wilde, & Laura Taylor, postdocs; Liz Lord, Schools Liaison Officer, Daniel Brett, Triona Casey, Lucy Palmer, Anam Raja & Anna Sonley researchers; and Lucy Palmer, Trial Coordinator. *Training team includes:* Chris Cullen, Maret Dymond, Marie Johansson, John Peacock, Esther Riggs and Christina Surawy. Centre's *Operational Manager* is Annette Bland.

News and impacts

- Communicate the science of mindfulness through media, social media, our blog and public seminars. This has included BBC documentaries, BBC News, Sky News, Daily Mail, BBC R4 Today, CBS, Maccleans, New Statesman, Le Monde and der Zeit.
- Teach mindfulness in the UK Parliament and supported the APPG Mindful Nation UK report.
- Advised both government and think tanks, argued successfully at NHS England for the inclusion of MBCT within IAPT services and our work is being included in the NICE Depression Guideline.

Selected recent publications

- Kuyken, W. et al. (2016). Efficacy and moderators of mindfulness-based cognitive therapy (MBCT) in prevention of depressive relapse: An individual patient data meta-analysis from randomised trials. Journal of the American Medical Association: Psychiatry. doi: 10.1001/jamapsychiatry.2016.0076
- Kuyken, W. et al. (2015). Effectiveness and cost-effectiveness of mindfulness-based cognitive therapy compared with maintenance anti-depressant treatment in the prevention of depressive relapse/recurrence: results of the PREVENT randomised controlled trial. Lancet. DOI: http://dx.doi.org/10.1016/S0140-6736(14)62222-4
- Beshai, S., McAlpine, L., Weare, K., & Kuyken, W. (2016). A Non-Randomised Feasibility Trial Assessing the Efficacy of a Mindfulness-Based Intervention for Teachers to Reduce Stress and Improve Well-Being. Mindfulness, 7(1), 198-208. doi: 10.1007/s12671-015-0436-1

Three key research questions

- Has mindfulness training (MT) in adolescence the potential to shift the secondary school-age population away from psychopathology and towards improved mental health?
- How can we adapt MBCT to promote mental health in different populations (e.g., those who are suicidal, women in the peri-natal period) and contexts (e.g., NHS, workplace, schools)?
- What is the role of compassion in depression?

Connection with other themes

Child and Adolescent, Ethics and Society, Adult Disorders

NIHR Oxford Health Biomedical Research Centre

Aerial view of the main NIHR Oxford Health Biomedical Research Centre campus. The Warneford Hospital and Department of Psychiatry buildings (foreground); OHBA (bottom right). Key collaborators - Oxford Brookes University and Oxford University Hospitals Trust (far and distant left); the Old Road campus with the Target Discovery Institute, Big Data Institute and Structural Genomics Consortium (far right).

In September 2016, a partnership between Oxford Heath NHS Foundation Trust and the University of Oxford was awarded £12.8M to support a new NIHR Biomedical Research Centre (BRC) focused on mental health and dementia. The new NIHR Oxford Health BRC will be directed by John Geddes and provides the infrastructure required to translate cutting-edge scientific developments into real benefit for patients. The NIHR Oxford Health BRC will be launched in April 2017 and will run for five years. It will work closely with its established sister BRC, a partnership between the University and Oxford University Hospitals NHS Foundation Trust.

The NIHR Oxford Health BRC is structured into themes that build on the University and Trust's existing strengths. There are three research themes: Adult Mental Health (led by Paul Harrison), Older Adults and Dementia (led by Clare Mackay), and Precision Psychological Treatments (led by Anker Ehlers). These research themes are supported by three cross-cutting themes, which reflect common research approaches. These are Neuroimaging and Cognitive Neuroscience (led by Kia Nobre), Informatics and Digital Health (led by Simon Lovestone), and Experimental Medicine (led by Catherine Harmer). The BRC funding will allow us to strengthen and expand these existing links and to ensure that they are well-integrated with the Trust's clinical services. Ultimately, the goal is to align and co-locate research and clinical services on the Warneford site within a Brain Health Centre. By doing this, we can ensure that patients and their families are maximally engaged with research, and that basic science findings are translated into patient benefit as quickly and efficiently as possible.

In addition to the main research and cross-cutting themes, the BRC funding also provides substantial support to allow us to enhance our training (led by Liz Tunbridge) and public-patient involvement - PPI (led by Ilina Singh). In terms of training, as well as helping us to grow and better disseminate our existing programmes, the BRC funds will also allow us to create the Oxford Certificate in Experimental Medicine for Mental Health (OxCEMM). OxCEMM will be a bespoke training programme that provides researchers, clinicians and support staff with all the information they need to design and complete successful experimental medicine studies. We will also create an Experimental Medicine Network, to allow those interested in experimental medicine to better engage with one another and to share relevant information. BRC funds will allow us to develop an ethical framework for PPI in mental health. This will ensure that PPI has explicit and sturdy ethical foundations, and will provide guidance to researchers, funders, industry and policy-makers on the moral challenges of PPI, and how to resolve them.

The NIHR Oxford Health BRC provides us with a fantastic opportunity to speed the translation of our excellent basic science into meaningful benefits for patients and the wider public, and to ensure that research is fully embedded within the Trust's clinical services. We look forward to turning these plans into reality.

NIHR Oxford cognitive health Clinical Research Facility

The NIHR Oxford cognitive health Clinical Research Facility (CH-CRF) was set up in 2011 with core funding awarded from the National Institute for Health Research (NIHR).

The CH-CRF is a single managed entity hosted by Oxford University Hospitals NHS Foundation Trust (OUH) in partnership with Oxford Health NHS Foundation Trust (OH). The CH-CRF includes two integrated sites at the John Radcliffe Hospital and the Warneford Hospital. The CH-CRF is completely aligned with the research and cross cutting themes of both the NIHR Oxford University Hospital Biomedical Research Centre (OUH BRC) and the newly awarded NIHR Oxford Health Biomedical Research Centre (OH BRC). The CH-CRF is integrated with shared research and clinical governance structures, coordinated across the two NHS Trusts and two Universities via the Oxford Academic Health Sciences Centre (AHSC). The CH-CRF sits at the centre of this partnership, creating synergies, overcoming barriers and delivering a streamlined service. Via its component units, the CH-CRF has the capability to conduct high-intensity experimental medicine in mental, cognitive and neurological disorders and thereby serves both the needs of the two NIHR Oxford BRCs and our extensive programmes of externally-funded early phase research.

Facilities

- The eight-bed facility at the Warneford Hospital has capability for intensive experimental medicine and phase Ib-III clinical trials. Each room is equipped for computer-based tasks as well as for close physical monitoring.
- The Acute Vascular Imaging Centre (AVIC) is a purpose-designed facility embedded in a hospital environment and strategically located between the Emergency Department of the John Radcliffe Hospital and the Intensive Care Unit of the adjacent Heart Centre. AVIC supports clinical investigation in the first minutes and hours of presentation of medically acute syndromes and, as part of the CH-CRF, will be expanded to include four support beds. This will allow early phase, high intensity studies in neurological illness including stroke and subarachnoid haemorrhage.

There are also two affiliated facilities: the Oxford Centre for Anxiety Disorders and Trauma (OxCADAT), and the Oxford Cognitive Neuropsychology Centre in the University Department of Experimental Psychology which provide facilities for testing psychological treatment paradigms, and experimentally-based mechanistic or rehabilitation studies including brain stimulation.

Supporting neuroimaging infrastructure

Supporting infrastructure includes state-of-the-art neuroimaging at Oxford Centre for Human Brain Activity (OHBA) and Oxford Centre for Functional MRI of the Brain (FMRIB). Together FMRIB and OHBA are now part of the Wellcome Centre for Integrative Neuroimaging.

Staff

The core staff of the CH-CRF are funded by the CH-CRF and OH BRC, with additional specific resources provided by industry and Wellcome-funded studies.

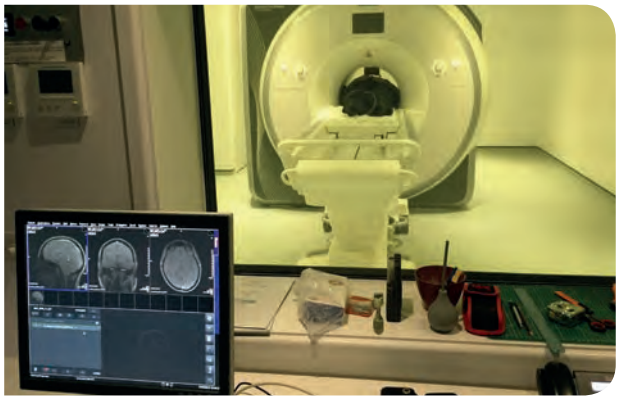
John Geddes, Director; Bill Wells, Financial Manager; Mary Jane Attenburrow, Clinical Lead; Catherine Henshall, Senior Research Nurse.

Oxford Centre for Human Brain Activity

On 8 March, 2016, onlookers from the Department of Psychiatry watched with baited breath as its new MRI Scanner was winched out of a lorry and lowered into position by crane, to take up residence in the new Oxford Centre for Human Brain Activity (OHBA). The scanner is a 3T Siemens MRI Scanner, and will do an average of 1,800 scans every year, complementing the existing MEG scanner. It will help our understanding of mental health across the lifespan, including dementia, bipolar disorder and developmental disorders.

The Oxford Centre for Human Brain Activity (OHBA) is a state of the art multi-modality translational research facility that reopened in Spring 2016 following a major upgrade. OHBA houses a cutting-edge research-optimised 3T MRI scanner for investigating brain structure, function, and connectivity, and advanced MEG and other methods for investigating neural dynamics.

OHBA supports scientists interested in investigating the structure, function, and dynamics of the human brain with high spatial and temporal resolution and hosts translational and clinical research studies aimed at identifying the neural bases of psychiatric and neurological conditions and developing biomarkers. OHBA works in close collaboration with FMRIB, and is part of a UK-wide collaboration of MEG centres.



OHBA houses an advanced MEG scanner, as well as other methods with which to measure and stimulate human brain activity with high temporal resolution. These methods tap directly into brain activity with millisecond resolution, and therefore enable investigation of the dynamics of neural activity within networks of the brain. It becomes possible to characterise the complex proactive orchestration of physiological signals during healthy human cognition, as well as to chart how synaptic function and communication is degraded in psychiatric and neurological conditions.

OHBA has undergone a substantial upgrade to expand its size, facilities and methods. A top-end research-purpose 3T magnetic resonance imaging (MRI) scanner has been installed (pictured) to increase Oxford's capacity for translational and clinical research on ageing, dementia, and psychiatric conditions. The upgraded multi-modal facility will link-up world-class discovery science and clinical care, by making state-of-the-art multi-modal brain-imaging technology available for experimental medicine studies, clinical trials, and innovative clinical care. The University of Oxford and the Department of Psychiatry have committed significant investments to support the developments.

Leadership and Groups

Kia Nobre is the scientific director of OHBA and leads the Cognitive Neuroscience group. Clare Mackay and Mark Woolrich are associate directors, and are heads of Translation and Analysis respectively. Charlie Stagg leads the brain-stimulation labs. Sebastian Rieger and Sven Braeutigam provide core physics support for MRI and MEG respectively, and Juliet Semple is the Senior Research Radiographer. Aimie Gornall is the Research Facility Operations and Pru Hockley is the Facilities Assistant.

Research

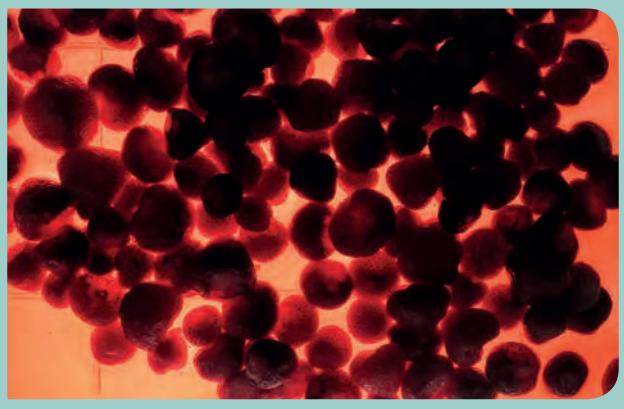
OHBA hosts research by its core groups as well as by other groups across several departments at Oxford and collaborating institutions. Current translational projects include investigations into: cognitive and neural instability contributing to mood instability in bipolar disorder; cognition and plasticity in ageing; genetic factors in Alzheimers' disease, fronto-temporal dementia, and schizophrenia; motor and cognitive deficits in Parkinson's disease and in motor neurone disease; the role of inhibitory plasticity in motor plasticity after stroke; memory functions and seizure focus in epilepsy; neural excitability in autism; analysis of resting-state functional networks with basic and clinical applications; methods for assessing mechanisms of deep brain stimulation; and cross-modal integration of neuroimaging data for clinical applications.

Public Engagement - Selected Highlights

Neurococktail Bar

Professor Elizabeth Tunbridge's group ran "The Neurococktail Bar" that discussed how genetic factors influence the effects of drugs of abuse and was attended by over 600 people via events at the Science Museum Lates, Royal Society Twilights and Oxfordshire Science Festivals, and attracted significant media coverage (including BBC Radio and Time Out).

Liz Tunbridge starts mixing at the Neurococktail Bar at the Oxfordshire Science Festival, June 2016



A tray of strawberries as part of the cocktail bar; their DNA will be extracted using extra-strong rum.

Can you read faces?

PERL (Psychopharmacology and Emotion Research Laboratory) spent the weekend at Oxfordshire Science Festival talking to people about their research and how the recognition of facial expressions can be used as a marker of antidepressant effects. Visitors could guess the expression of faces flashed up on a computer screen using handheld button boxes in an activity that mirrored tasks used in the group's research.

Children in research: an ethical issue

Professor Ilina Singh hosted a discussion event for children (Key stages 3 & 4) exploring the ethics of involving children in medical research. A panel including Singh, Dr Mark Sheehan (Oxford NIHR Biomedical Research Centre Ethics Fellow) and Kate Harvey (Senior Research Officer, Nuffield Council on Bioethics) posed a series of cases that encouraged young people to consider a set of ethical issues; 'Should children be involved in clinical trials?' 'Can children understand consent?' 'Can children make accurate assessments about future harms and benefits?'

Your Mental Health: Nature or Nurture?

Psychiatrist Paul Harrison and neuroscientist Liz Tunbridge from the University of Oxford Department of Psychiatry appeared at the Cheltenham Science Festival, June 2016, to discuss why genes and the environment impact on our brains and how new research is informing future treatment.

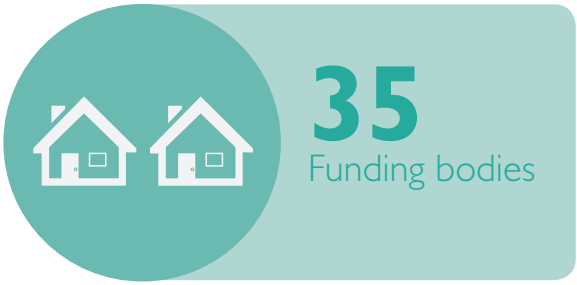
Award

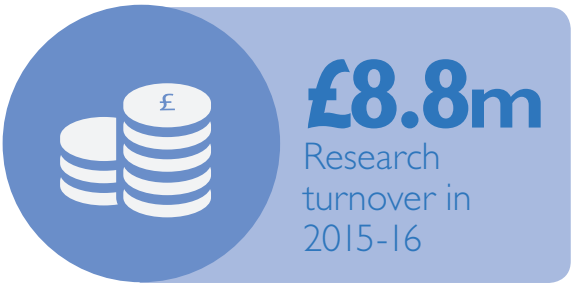
Professor Liz Tunbridge won an award in the Early Career Researcher Category of the inaugural Public Engagement with Research Awards. She was presented with the award by the University of Oxford's Vice-Chancellor, Professor Louise Richardson, on 1 July 2016.

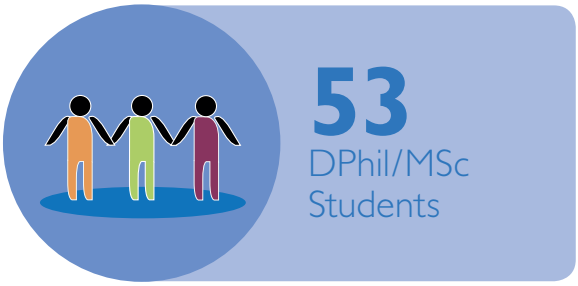
"I am honoured to receive one of the inaugural Vice Chancellor's Public Engagement in Research Awards. Given that most of our research is publicly funded, scientists must be able to explain how this money is used and make a compelling case for the benefits of science to society. In a political climate in which expertise is distrusted it is particularly essential for researchers to reach out and engage with meaningful dialogue with as wide a cross-section of the public as possible."

Prof Elizabeth Tunbridge

The Department in Numbers







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Glass artwork - 'Petri dish installation' by Klari Reis in the reception to the Oxford Centre for Human Brain Activity.