

A TASTE OF THINGS TO COME: ADVANCES IN NEUROSCIENCE AND THE CLINICAL FUTURE

Dr Gareth Cuttle



RCPsych Gatsby/Wellcome Neuroscience Project

Integrating modern neuroscience and
psychiatry
for better mental health

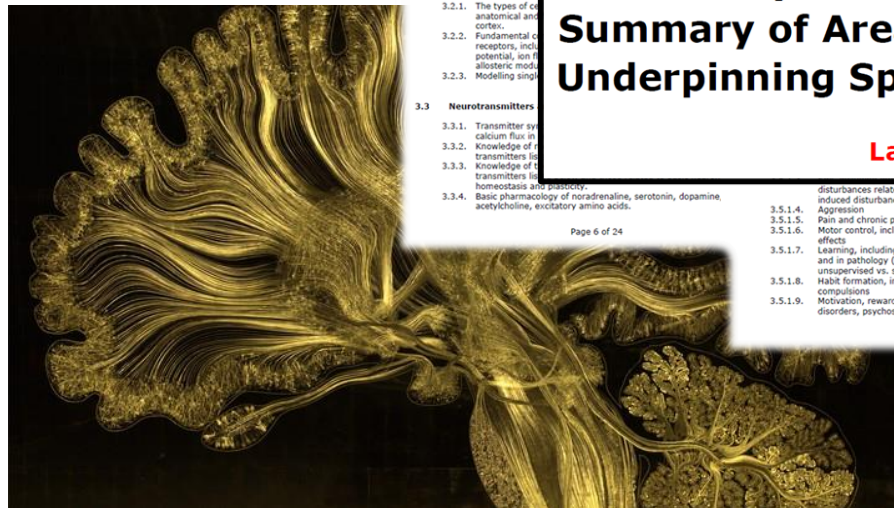
**Generously supported by The Gatsby Foundation
and The Wellcome Trust**

MARCH 2021



Modern neuroscience in the syllabus: Implications

- Knowledge of the neuroscience that underpins the practice of clinical psychiatry



3. Neuroscience

The trainee shall demonstrate knowledge of the neuroscience that underpins the practice of clinical psychiatry. This will include: (1) elementary knowledge of the normal structure and functioning of the nervous system as it relates to psychiatry, i.e., the generation of normal mental states and behaviours, and of the dysfunction that leads to mental disorder; (2) ability to relate the symptoms and signs of mental disorder, and the examination of the nervous system, to underlying neural structures and their activity.

3.1 Basic Techniques in neuroscience:

- 3.1.1 Recording from the brain:
 - 3.1.1.1 Single unit recordings
 - 3.1.1.2 EEG (including frequency bands), normal findings, and response techniques. Applications to investigation of car pathology, seizure disorders, sleep and psychiatric disorder effects of drugs on the EEG.
 - 3.1.1.3 Neuroimaging (including fMRI)
 - 3.1.1.4 Microdialysis
- 3.1.2 Perturbing brain stimulation, optogenetic stimulation, nerve stimulation
- 3.1.3 Animal models
- 3.1.4 Computational models

3.2 Cells

- 3.2.1. The types of cell in the anatomical and functional cortex.
- 3.2.2. Fundamental properties of neurons, including membrane potential, ion flux, synaptic transmission, and plasticity.
- 3.2.3. Modelling single neurons and networks

3.3 Neurotransmitters

- 3.3.1. Transmitter synthesis, release, reuptake, and degradation
- 3.3.2. Knowledge of the receptors and their actions
- 3.3.3. Knowledge of the receptors and their actions
- 3.3.4. Basic pharmacology of noradrenaline, serotonin, dopamine, acetylcholine, excitatory amino acids.

Appendix 1 Syllabic curriculum content: Summary of Areas of Core Medical Knowledge Underpinning Specialist Training in Psychiatry

Last updated July 2018

3.4 Neuroanatomy

- 3.4.1. The brain and its development
- 3.4.2. The brain and its development
- 3.4.3. The brain and its development
- 3.4.4. The brain and its development
- 3.4.5. The brain and its development
- 3.4.6. The brain and its development
- 3.4.7. The brain and its development
- 3.4.8. The brain and its development
- 3.4.9. The brain and its development
- 3.4.10. The brain and its development

3.5.10. Emotion and its regulation, including relevance to mood disorders.

- 3.5.10.1. Emotion and its regulation, including relevance to mood disorders.
- 3.5.10.2. Emotion and its regulation, including relevance to mood disorders.
- 3.5.10.3. Emotion and its regulation, including relevance to mood disorders.
- 3.5.10.4. Emotion and its regulation, including relevance to mood disorders.
- 3.5.10.5. Emotion and its regulation, including relevance to mood disorders.
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- 3.5.10.8. Emotion and its regulation, including relevance to mood disorders.
- 3.5.10.9. Emotion and its regulation, including relevance to mood disorders.
- 3.5.10.10. Emotion and its regulation, including relevance to mood disorders.

3.6. Genetic influences on brain function

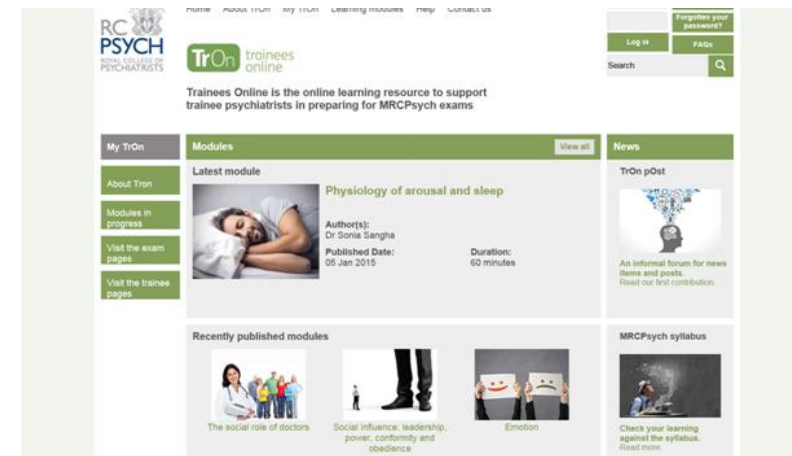
- 3.6.1. Genetic influences on brain function
- 3.6.2. Genetic influences on brain function
- 3.6.3. Genetic influences on brain function
- 3.6.4. Genetic influences on brain function
- 3.6.5. Genetic influences on brain function
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- 3.6.20. Genetic influences on brain function

3.10. Neurodegeneration

- 3.10.1. Neurodegeneration
- 3.10.2. Neurodegeneration
- 3.10.3. Neurodegeneration
- 3.10.4. Neurodegeneration
- 3.10.5. Neurodegeneration
- 3.10.6. Neurodegeneration
- 3.10.7. Neurodegeneration
- 3.10.8. Neurodegeneration
- 3.10.9. Neurodegeneration
- 3.10.10. Neurodegeneration

TrOn (Trainees Online) also updated

- Existing modules revised, new modules commissioned
- 3 Trainee psychiatrists appointed TrOn Neuroscience Editors
- Supported by Neuroscience Project Manager



Training our teachers

- **RCPsych Education Conferences**
Bristol 2016, Belfast 2017, London 2018, Glasgow 2019
- **Workshops ('Brain Camps')** around the UK

Partners:

NNCI  NATIONAL
NEUROSCIENCE
CURRICULUM INITIATIVE

BNA

British
Neuroscience
Association



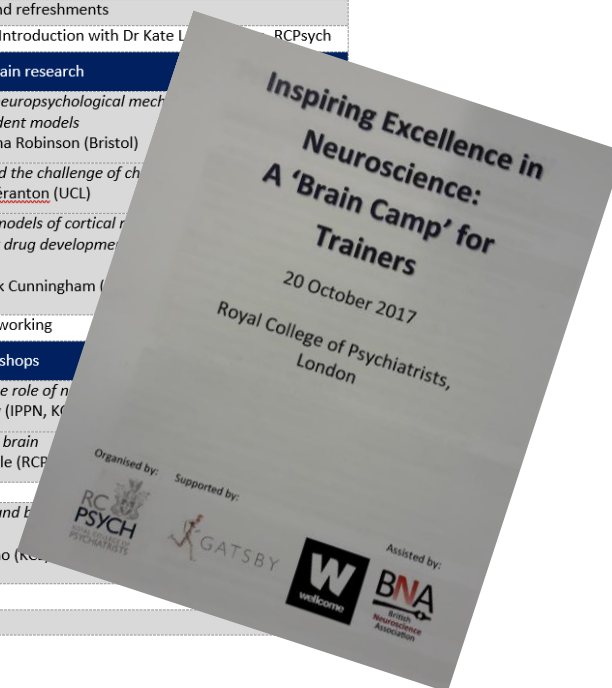
Brain Camp: Format

- One-day immersive event
- Run by researchers & educationalists
- Updates on selected cutting-edge, clinically-relevant brain research topics
- Practical teaching strategies



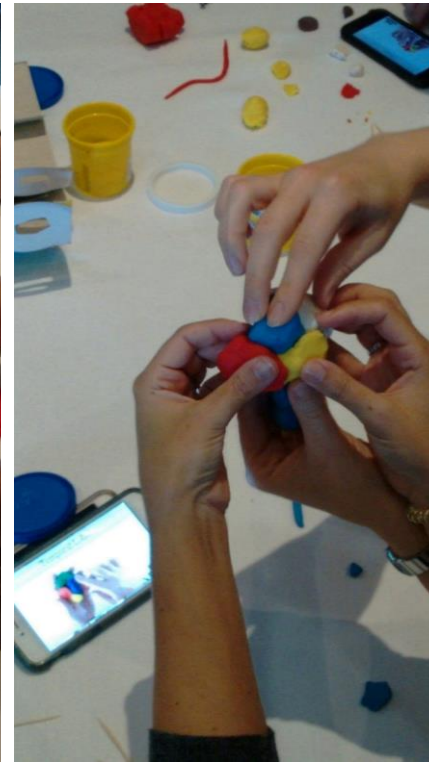
Programme

09:30-10:00	Registration and refreshments
10:00-10:15	Welcome and Introduction with Dr Kate L. ... RCPsych
	Advances in brain research
10:15-10:50	Investigating neuropsychological mechanisms using novel rodent models Professor Emma Robinson (Bristol)
	Epigenetics and the challenge of ch... Dr Sandrine G�eranton (UCL)
	Experimental models of cortical r... biomarkers for drug development in schizophrenia Professor Mark Cunningham (RCPsych)
	Lunch and networking
	Teaching workshops
	Storytelling: the role of n... Dr Derek Tracy (IPPN, K...)
	How to build a brain Dr Gareth Cuttle (RCPsych)
	Tea
	Mental maps and b... and memory Dr Elisa Galliano (RCPsych)
15:45-16:00	Plenary
16:00	Close



Neuroanatomy: A modern approach!

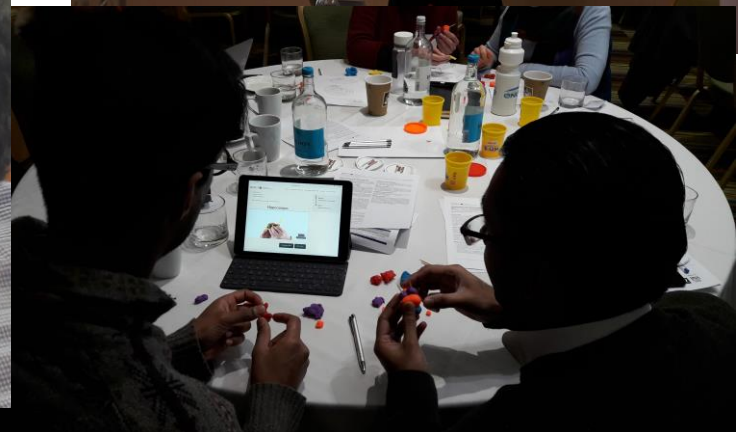
- Active learning
- Team work
- Fun!



Brain Camps: Who for?

50-60 participants at each event

- Teachers with no background in neuroscience
- Course coordinators
- Training Programme Directors



Brain Camps: Momentum

- Over 300 trained so far
- Long waiting list
- Participants from Tewkesbury to Toronto, Ipswich to Hong Kong



London, Oct 2017

Birmingham, June 2018

Manchester, Jan 2019

Leeds, Sept 2019

Luton, Nov 2019





Belfast, Nov 2019







Brain Camp Belfast, Nov 2019

‘Connecting the island of Ireland’

Inspiring Excellence in Neuroscience: A 'Brain Camp' for Trainers
13 November 2019
Wellington Park Hotel, Belfast

Organised by:    

Supported by:  

Assisted by:  

Programme

09:00-09:30	REGISTRATION and REFRESHMENTS
09:30-09:45	Welcome and Introduction: 'Why psychiatric training needs modern neuroscience' Professor Wendy Burn President, Royal College of Psychiatrists; co-Chair, Gatsby/Wellcome Neuroscience Project, RCPsych
09:45-10:00	'One idea, one year on: What do you want trainees to remember?' Dr Gareth Cuttle Gatsby/Wellcome Neuroscience Project, RCPsych
10:00-10:45	'Teaching of imaging techniques' Dr David Cousins MRC Clinician Scientist, Newcastle University
COFFEE	
10:45-11:15	'Fit for Purpose: Exercise and the Brain' Dr Áine Kelly Associate Professor of Physiology and Associate Dean for Undergraduate Science Education, Trinity Institute of Neurosciences, Trinity College Dublin
11:15-11:45	'AS: Implications for psychiatry of developments in understanding the biological basis of behaviour' David Cousins and Dr Áine Kelly with Dr Gareth Cuttle
and NETWORKING	
11:45-12:15	'The biology of lithium in the brain' David Cousins MRC Clinician Scientist, Newcastle University
12:15-12:45	'Neuroscience careers: Discussing neuroscience with your trainees' Dr Gareth Cuttle (Facilitator) Gatsby/Wellcome Neuroscience Project, RCPsych
12:45-13:15	'Anatomy: building the Play Doh brain' Dr Gareth Cuttle (Facilitator) Gatsby/Wellcome Neuroscience Project, RCPsych
13:15-13:45	'Improving good practice in teaching & learning of neuroscience' Dr Gareth Cuttle (Facilitator) Gatsby/Wellcome Neuroscience Project, RCPsych
16:00	CLOSE



Dr Áine Kelly
Assoc Prof of Physiology,
Institute of Neurosciences,
Trinity College Dublin;

President,
Neuroscience Ireland

Regional networks: 'NeuroNets'

- Regional **excellence** in neuroscience and teaching
- Brain researcher—psychiatrist **collaboration**
- **Support** for trainers

In place:


- Scotland
- SW England
- Pan-Midlands
- Yorks & Humber


Coming soon:

- SE England
- Eastern England
- NW England + N. Ireland
- Wales



Local programmes by Neuro Nets

The Neuroscience in Psychiatry Course 2019 



Redwood Education Centre




To all Medical Colleagues:
We would like to invite you to NIP, a new and exciting course that has been designed to inspire collaborative learning of neuroscience concepts and shape our understanding of mental illness.

Explore The Role Of Neuroscience In Psychiatry
The course is inspired by the RCPsych Neuroscience Project, which aims to focus psychiatry training on "advances in basic and clinical neuroscience" so that psychiatrists "are better equipped to provide care in the future".

An Interactive And Innovative Teaching Programme
This is a peer-led course packed with clinically relevant teaching resources, interactive learning upon expertise from leading figures in the field. The programme includes material from the high level Neuroscience Curriculum Initiative but is highly tailored to 2gether doctors.

Not Just "Biological Psychiatry"
We'll be thinking about how neuroscience can complement our thinking about all aspects of psychiatry and clinically focussed, with skills to take to the clinic.

Three-week course by SWNeuroNet

<p>Monday 4th March, 2-5pm</p> <p>Neuroscience Refresher</p> <p>Exploring the Role of Neuroscience in Psychiatry</p> <p>Neuroanatomy Refresher</p>  <p>A Quick Guide To Research Techniques In Neuroscience</p>	<p>Monday 11th March, 2-5pm</p> <p>Applications in Clinical Psychiatry</p> <p>New Insights Into Schizophrenia And Depression</p> <p>Integrating Neuroscience Into Conversations With Patients</p> <p>Developing New Treatments</p> 	<p>Monday 18th March, 2-5pm</p> <p>The Bio-Psychosocial Interface</p> <p>Visualising Psychotherapy Through Neuroimaging</p>  <p>Epigenetics: Trauma and the Brain</p> <p>A Neuroscience Model Of Personality Disorder</p>
<p>Course Facilitators: Dr George Morris, Dr Lindsey Sinclair, Dr Nik Bhandari, Dr Emma Phillips, Dr Kim Humby, Dr Clara Martinez, Dr Adrian Yan</p>		

Local programmes by Neuro Nets



Neuroscience from the lab to the clinic
 A fascinating series of presentations on the cutting edge neuroscience that is helping to shape our understanding of mental health conditions.



Research Techniques
 Computational Neuroscience



Dementia
 Dementia is a group of brain diseases that lead to long term loss of memory and other mental abilities. It becomes more common in the elderly.



An initiative of the SW Neuronet in association with the Project which is supported by The Gatsby Foundation.



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'NEURO NETS'

30th Sep 2019

Support in the regions: 'Neuro Nets'

- Regional excellence in neuroscience and neuroscience teaching
- Brain researcher—psychiatrist collaboration
- Support for trainers

In place:
 Scotland
 Southwest England
 Yorks & Humber

Developing:
 Pan-Midlands
 Wales
 N. Ireland + NW England

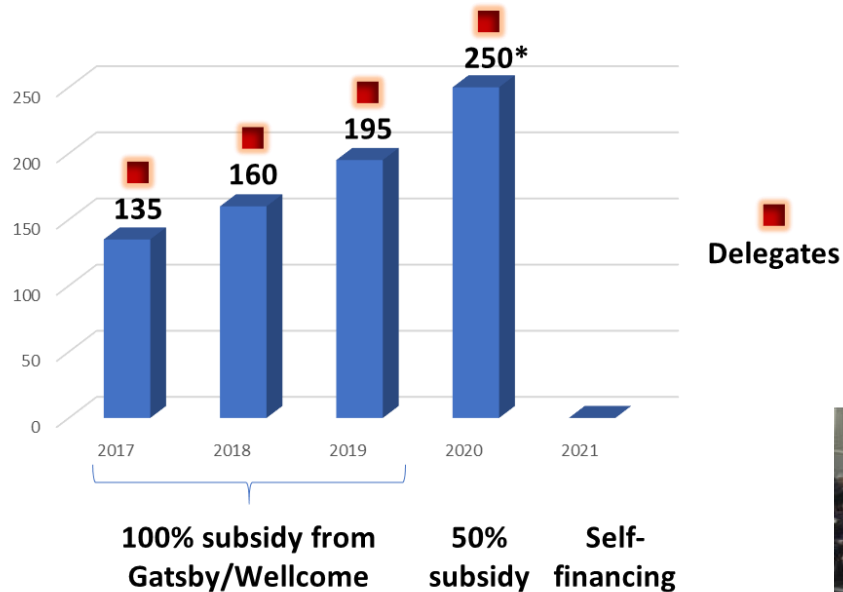
This month, the British Neuroscience Association (BNA) participated in one of the first regional Neuro Update days - 'Neuro Nets' - at the University of Bristol, with delegates benefiting from a range of talks with fascinating insights and networking opportunities to connect neuroscience with psychiatry.

The Neuro Update days are being run UK-wide as part of the Royal College of Psychiatrists Gatsby/Wellcome Integrating Neuroscience Project, bridging the gap

Neuroscience Spring Conference

2017—2021

Cutting-edge neuroscience with a focus on clinical application



Neuroscience Champions: Our ambassadors

- Scheme launched March 2019
- 28 trainees from across the UK



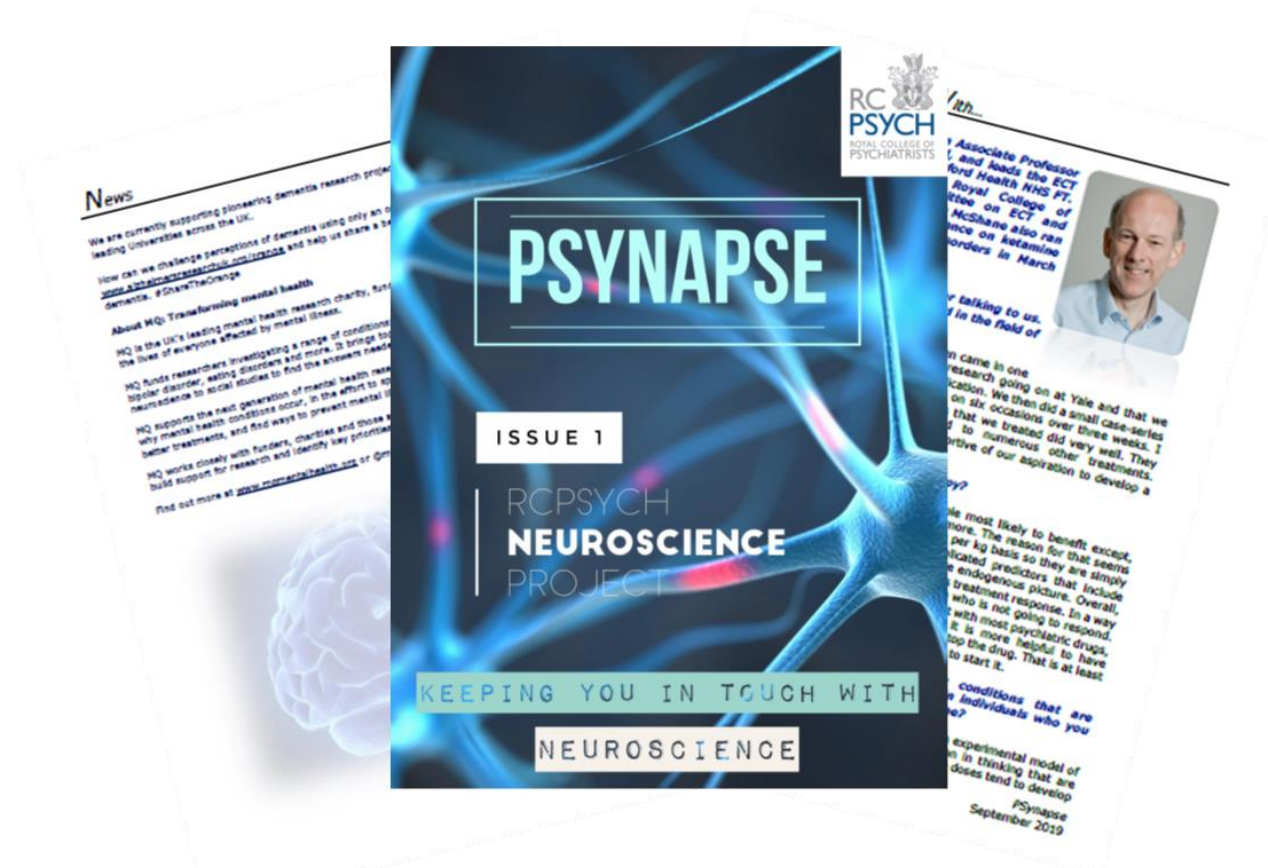
Neuroscience Champions: Activities

- **Communications:**
Newsletter co-production; cascade of inspiration, information and opportunities
- **Events development:**
Local training (Brain Camps, Neuroscience Days, short courses) with NeuroNets



'PSynapse': Our neuroscience newsletter

- Quarterly
- Informing and keeping up-to-date



RCPsych Neuroscience Champions: Activities

- **Local MRCPsych course redevelopment** with Course Organisers
- **Impact analysis:** Generating surveys for feedback to Neuroscience Board
- **Presenting data** at Med Ed Conference and Masterclass at International Congress



Engaging with Neuroscience in Ireland



- Gatsby Travelling Fellows at BNA2019 in Dublin
- 12 Trainee/Early-career UK psychiatrists
- Largest event of its kind in Europe in 2019, held in partnership with Neuroscience Ireland
- 4-day immersion in cutting-edge neuroscience research



Engaging with Neuroscience in Ireland

“Neuroscience is beginning to help us to direct our treatments from first principles.

Psychiatry is behind other branches of medicine, but we’re rapidly catching up.

Translating that understanding for the benefit of patients is going to require a multi-disciplinary effort.”



Dr Angharad de Cates,
Gatsby Travelling Fellow 2019, Dublin

Gatsby Travelling Fellows at BNA2019 in Dublin with
(L-R):

Professor Stafford Lightman,
Professor Ray Dolan,
Professor Anne Lingford-Hughes

Sharing learning globally



Looking for new collaborations!



Thank you



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www.rcpsych.ac.uk/neuroscienceproject

