With the brain in mind: How neuroscience is changing psychiatry

Dr Gareth Cuttle
Royal College of Psychiatrists
Gatsby/Wellcome Neuroscience Project

Integrating modern neuroscience and psychiatry for better mental health
Every thought...
Every decision...
Every move...
Your brain: the ‘old’ view...
Europe’s biggest brain imaging centre opened by Queen
The biological basis of mental illness

Some psychosis cases an 'immune disorder'

By James Gallagher
Health and science reporter, BBC News website

8 December 2016 | Health

Is depression a state of body not mind?

24 August 2016 Last updated at 11:57 BST
The biological basis of therapies

Stimulating the brain with electricity may reduce bulimia symptoms

Study reveals for first time that talking therapy changes the brain's wiring

A new study from King's College London and South London and Maudsley NHS Foundation Trust has shown for the first time that cognitive behaviour therapy (CBT) strengthens specific connections in the brains of people with psychosis, and that these stronger connections are associated with long-term reduction in symptoms and recovery eight years later.

CBT – a specific type of talking therapy – involves people changing the way they think about and respond to their thoughts and experiences. For individuals experiencing psychotic symptoms, common in schizophrenia and a number of other psychiatric disorders, the therapy involves learning to think differently about unusual experiences, such as hearing voices.
Can electrical stimulation of the dorsolateral prefrontal cortex (DLPFC) enhance psychotherapy for major depression? A double-blind randomised controlled trial

Screening

fMRI + n-back working memory task (measures DLPFC activity)

Randomisation to real or sham tDCS

8 weeks of therapy (CBT) + brain stimulation (tDCS)
Where is all this taking us?
The Neuro Future
11,108 books on Amazon
Different brains

Different approach

Successful neuro advertising for both genders: male and female
Gatsby/Wellcome Neuroscience Project

Structure and activities

November 2017
## Key project activities

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Modernise the Neuroscience
- Core Curriculum
- Syllabus
- MRCPsych Exam

Support teaching & learning
- Training for trainers
- Resources for trainers & trainees

Promote integration & sharing of knowledge
- Annual Spring Conference
- Links with Europe, US & beyond

November 2017
Curriculum review by Project Commission

- 15-strong group of international experts on Neuroscience and Education

- Based on an American experience
Project Commission: Co-chairs

- Professor Wendy Burn (President, RCPsych)

- Dr Mike Travis (University of Pittsburgh; Co-Director of the National Neuroscience Curriculum Initiative [NNCI], USA)
A New Curriculum for the Psychiatrist of the future

- Armed with the latest neuroscience knowledge, psychiatrists will be better prepared for the advances that will be made during their working lives
A New Curriculum for the Psychiatrist of the future

- Trained to be neuroscientifically literate, prepared to critically evaluate new research findings and integrate these with psycho-social explanations

November 2017
So what about training?
Being afraid

- Tell the person next to you about the last time you were afraid

- What was the cause?

- Was the fear rational or irrational?
Watch the video...
The fear response

Part 2:

- Draw the circuit involved in generating her (or your!) fear response.
- Please include pathways for how the signal gets IN, how the brain processes CONTEXT for this signal, and how the brain generates a FEAR OUTPUT.
Circuitry of fear
Updating the MRCPsych Examination Syllabus

- Syllabus for Paper A under revision, will be updated
- All Neuroscience questions for Paper A have been checked, outdated ones removed
- New questions written for December 2017 sitting
Developing resources: Trainees Online (TrOn)

- College online learning resource
- Free for College members, affiliates and trainees registered with the College
- New questions cross checked with TrOn
- Modules will be revised and added to support updated syllabus
Stakeholder consultation and engagement
June 2016-November 2017

- Faculty and Division conferences
- Psychiatric Trainees Committee of the RCPsych
- Healthcare Trusts
- Social media
Outreach programme: Event participation

RCPsych Postgraduate Medical Education Conference, Bristol
RCPsych Faculties of CAMHS & General Adult, Birmingham
RCPsych Faculty of Neuropsychiatry, London
Psychiatry Trainees’ Committee, Cardiff
Interdisciplinary Conference on Dementia, Cardiff
Exeter University Medical School, Exeter
RCPsych Southwestern Division, Totnes

RCPsych Eastern Division, Cambridge
RCPsych Northern & Yorks Division, York
Yorkshire & The Humber School of Psychiatry, York
National Student Psychiatry Conference, Leeds

RCPsych Western Division, Solihull
RCPsych Faculties of CAMHS & General Adult, Birmingham
RCPsych Faculty of Intellectual Disability, Cardiff

University of Newcastle Medical School, Newcastle
Tees, Esk & Wear Trust, Middlesbrough

RCPsych Medical Education Conference, Belfast
LCFT Medical Educators’ Conference, Blackpool

RCPsych Faculties of CAMHS & General Adult, Birmingham

University of Lancaster Medical School, Lancaster
Universities of Lancaster, Liverpool & Manchester Joint Summer School, Chorley

RCPsych West Midlands Division, Solihull
RCPsych Faculty of Intellectual Disability, Cardiff

RCPsych Southwestern Division, Totnes

RCPsych International Congress, Edinburgh

RCPsych Educational and Clinical Supervisors Training Day, London
Association of University Teachers of Psychiatry, London

RCPsych Faculty of Neuropsychiatry, London
RCPsych Service Users & Carers Forum, London

The Gatsby/Wellcome Neuroscience Project

November 2017
Events

- Increasing number of invitations to Medical Schools
- Neuroscience very well received by students
- In the USA they think their Neuroscience Project has improved recruitment

November 2017
Supporting nationally: Brain Camp for Trainers

November 2017

The Gatsby/Wellcome Neuroscience Project
Supporting teaching locally

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

Pilot Network launched
June 2017
Neuroscience symposium
RCPsych International Congress
Edinburgh

- June 29, 2017
  - ‘Targeted control of specific neural circuits: using optogenetics to illuminate and guide clinical outcomes’
    Professor Karl Deisseroth, USA
  - ‘The sleeper’s net catches fish: the limbic-cortical neurophysiology of offline cognition’
    Dr Matt Jones, University of Bristol
  - ‘If a proportion of schizophrenia has an autoimmune basis, is it still a psychiatric disorder?’
    Professor Belinda Lennox, University of Oxford

The Gatsby/Wellcome Neuroscience Project
November 2017
First Spring Conference
London

- March 24, 2017

Integrating modern neuroscience and psychiatry for better mental health

The Neuroscience Project Conference
Connecting brain and mind: Neuroscience and the future of psychiatry
Second Spring Conference
Downing College, Cambridge

Save-the-date!
April 13, 2018

Connecting brain and mind: Neuroscience and the future of psychiatry

The Neuroscience Project Conference
Progress

- Stakeholder engagement and consultation: ongoing
- Scoping of syllabus and curriculum complete
- Neuroscience commission has met twice, third meeting planned for April
- Development of revised syllabus for MRCPsych and curriculum ongoing
- Preparation for implementation national training programme for educators, regional networks, teaching resources ongoing

November 2017
Summary

- Full review and modernisation of the Core Curriculum to incorporate advances of basic and clinical neuroscience
- Update the assessment system
- Equip trainees for the advances that will be made over their working lives
- Better prepared psychiatrists of the future to develop and deliver innovative biomedical approaches
- Improve patient care

November 2017
Contact us

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Co-chair

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