Programme for ‘The developing brain in health and disease’ scientific meeting

19 March 2019  Brain development – From early embryo to adolescence

09:00  Registration

Session 1 – Chaired by Professor Sir Robert Lechler PMedSci, President, Academy of Medical Sciences

09:30  Welcome and programme outline  
Professor Sir Robert Lechler PMedSci, President, Academy of Medical Sciences

09:40  Keynote - The evolution of brain development – mechanisms underlying the human-specific increase in brain size and complexity  
Professor Arnold Kriegstein, Director of the Developmental and Stem Cell Biology Program, University of California, San Francisco

10:20  Impact of early fate decisions on forebrain size and organisation: from zebrafish to human culture and back  
Professor Corinne Houart, Deputy Director of the Centre for Developmental Neurobiology, King’s College London

10:45  Selected poster ‘flash talks’ – sponsored by the International Society for Developmental Neuroscience

1. Dr Katherine Long, Postdoctoral researcher, Max Planck Institute of Molecular Cell Biology and Genetics  
Extracellular matrix components HAPLN1, lumican and collagen I cause hyaluronic acid-dependent folding of the developing human neocortex

2. Dr Daniel Cromb, PhD student, King’s College London  
Genetic variation on IGFBP7 associates with brain development in preterm infant

3. Dr Carla Silva, Postdoctoral researcher, GIGA Neurosciences, University of Liège  
Cell-Intrinsic Control of Interneuron Migration Drives Cortical Morphogenesis

4. Dr Berta Terre, Postdoctoral researcher, The Francis Crick Institute  
Investigating the role of MycN in human brain development

5. Dr Michael Bloomfield, Excellence Fellow, University College London  
The effects of developmental stress and trauma on the dopamine system in adulthood: A systematic review

6. Clarissa Catale, PhD student, Sapienza University of Rome  
Exploring the long-term effects of early-life adverse experiences on brain plasticity and maturation through perineuronal nets

7. Alexandra Lautarescu, PhD student, King’s College London  
Maternal trait anxiety and limbic-prefrontal white matter microstructure in a sample of premature neonates

11:00  Refreshment break

Session 2 – Chaired by Professor Sarah-Jayne Blakemore FBA, Deputy Director of the UCL Institute of Cognitive Neuroscience, University College London

11:25  Cellular and synaptic plasticity in the development of the cerebral cortex
Supported by

Professor Oscar Marin, Director of the MRC Centre for Neurodevelopmental Disorders and Centre for Developmental Neurobiology, King’s College London

11:50  Closing the gap between genes, brain, cognition and behaviour
Professor Seth Grant FMedSci FRSE, Professor of Molecular Neuroscience, University of Edinburgh

12:15  Role of glial cells in synaptic development and maturation
Professor Nicola Allen, Hearst Foundation Development Chair, Salk Institute for Biomedical Studies

12:40  Selected poster ‘flash talks’ – sponsored by the International Society for Developmental Neuroscience

1. Dr Harriet Cullen, Postdoctoral researcher, King’s College London
   Polygenic risk for Autism Spectrum Disorders and vulnerability to abnormal deep grey matter development in preterm infants

2. Dr Emily Brookes, Postdoctoral researcher, University College London
   Regulation of Bdnf through genome architecture during neuronal development in Rett syndrome

3. Anna Gui, PhD student, Birkbeck College, University of London
   Diminished engagement of attentive brain states to faces predicts later autism

4. Dr Susanna Mierau, Lecturer, University of Cambridge
   Cell-type Specific Development of Spontaneous Network Activity in Cortical Cultures in a Mouse Model of Rett Syndrome and Autism

5. Dr Heather Kitt, NIHR Clinical Academic Fellow, University of Liverpool
   A pilot study to evaluate which items in a culturally appropriate developmental assessment tool are most predictive in identifying infants with disabilities at 0-3 months

6. Dr Patricia Garcez, Lecturer, Federal University of Rio de Janeiro
   Congenital Zika Syndrome distribution is associated with co-factors

7. Dr Joanne Doherty, PhD student, Cardiff University
   Resting-state cortical connectivity in 22q11.2 deletion syndrome: a magnetoencephalography study

12:55  Lunch with poster session

Session 3 – Chaired by Professor David Rowitch FMedSci, Professor and Head of Paediatrics, University of Cambridge

14:25  Breakout sessions (refreshments served)

1. What are the main challenges and opportunities for experimental studies of brain development in animals and cellular models? What are the key priorities for research?

2. What are the major gaps in our understanding of normal human brain structural, behavioural and cognitive development? What are the key priorities for research in human subjects?

3. How does knowledge of critical and sensitive periods inform research into neurodevelopmental disorders? What are the key priorities for research?

4. How can we study development more effectively across the lifespan? What are the key priorities for research?

16:45  Feedback from the breakout sessions and panel discussion
Keynote - Big science approaches to the study of developing brain – how to best harness existing opportunities?
Dr Susan Weiss, Director of the Division of Extramural Research at the National Institute on Drug Abuse (NIDA), National Institutes of Health (NIH)

Drinks reception
Dinner

20 March 2019  Neurodevelopmental disorders

Session 4 – Chaired by Professor Kate Storey FMedSci FRSE, Head of the Division of Cell and Developmental Biology, University of Dundee

08:55 Welcome and programme outline

09:00 Keynote - The influence of the environment on the developing brain
Professor Peter Jones FMedSci, Deputy Head of the School of Clinical Medicine, University of Cambridge and Director, NIHR Collaboration for Leadership in Applied Health Research & Care East of England

09:40 Keynote – Neurodevelopmental disorders: Integrative omics approaches and beyond
Professor Daniel Geschwind, Gordon and Virginia MacDonald Distinguished Professor in Neurology, Psychiatry and Human Genetics; Senior Associate Dean and Associate Vice Chancellor for Precision Health; Director, Center for Autism Research and Treatment (CART), Semel Institute, University of California, Los Angeles

10:20 Refreshment break

Session 5 – Chaired by Dr François Guillemot FMedSci, Head of Division of Molecular Neurobiology, The Francis Crick Institute

10:45 Modelling neurodevelopmental disorders to study pathologic brain development
Professor Rick Livesey, Wellcome Trust Senior Investigator, University of Cambridge

11:10 Strategic brain mechanisms for lifelong learning and brain plasticity
Professor Zoe Kourtzi, Professor of Experimental Psychology and Deputy Head (Research) of the Department of Psychology, University of Cambridge

11:35 The value of cohort and population studies in neurodevelopmental research
Professor Anita Thapar CBE FMedSci FLSW, Professor of Child and Adolescent Psychiatry, Cardiff University

12:00 Lunch with poster session

Session 6 – Chaired by Professor Sir Michael Owen FMedSci FLSW, Director of the MRC Centre for Neuropsychiatric Genetics and Genomics, Cardiff University

13:15 Breakout sessions (refreshments served)

1. What are the implications of recent genetic findings in neurodevelopmental disorders for research into disease mechanisms and treatment? What are the new directions for research?

2. How can we leverage the potential of Big Data from population and cohort studies to understand neurodevelopmental disorders? What new study designs and databases are needed?
3. Can we prevent neurodevelopmental disorders? What are the major environmental factors that impact on the developing brain? *What are the new directions for research and policy?*

4. Can we develop valid models of neurodevelopmental disorders? *What should we model and how can we do it?*

15:35 Feedback from the breakout sessions and panel discussion

16:15 Closing remarks

16:30 Close