

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

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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

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- 17:15** 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)
- 18:00** Drinks reception
- 19:00** Dinner
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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?*

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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**

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