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NEUROSCIENCE MEETING
FOR EUROPEAN MONTH OF THE BRAIN

Neuroscience Meeting for European Month of the Brain

May 21st 2013, Royal College of Surgeons in Ireland, Dublin, Ireland
Cheyne lecture theatre, RCSI, 123 St. Stephen's Green

14:00 – 14:10	**Welcome address (David Henshall)**
14:10 – 14:30	**Jochen Prehn, RCSI** Alarm in the brain –new insights into disease processes during stroke
14:30 – 14:50	**John Waddington, RCSI** 3D laser surface imaging and geometric morphometrics of craniofacial dysmorphology: a trans-disciplinary approach to the developmental biology of neuropsychiatric disorders
14:50 – 15:10	**David Henshall, RCSI** EpiMiRNA; microRNAs in the pathogenesis, treatment and prevention of epilepsy
15:10 – 15:30	**Stella Vlachou, DCU** Animal models of addiction: measuring reward/reinforcement and impulsivity in rats
15:30 – 15:50	**David Cotter, RCSI** From post-mortem schizophrenia brain to serum biomarkers for risk of psychosis
15:50 – 16:40	Coffee break, Concourse, RCSI
16:40 – 17:00	**Mary Clarke, RCSI** Evidence for a common aetiological factor between schizophrenia and neurodevelopmental disorders
17:00 – 17:20	**Andrew Coogan, NUIM** Chronobiology and chronotherapy for health and disease
17:20 – 17:40	**Richard Roche, NUIM** Human electrophysiology of Normality and Pathology
17:40 – 18:00	**Hans-Georg Koenig, RCSI** The axon initial segment in health and disease
18:00 – 19:00	**Invited Guest Speaker** Kevin Mitchell, TCD Thalamocortical connectivity in brain development
19:00 – 20:00	Drinks reception, Concourse, RCSI

JOCHEN PREHN

Professor and Chairman of the Department of Physiology and Medical Physics, RCSI

Jochen Prehn was the first recipient of the Science Foundation Ireland Fellows-Research Professorship award in 2003 and is considered an international authority on the single-cell analysis and the molecular control of nerve cell death. Professor Prehn's research interests include neuronal apoptosis and neuronal excitotoxicity, disease mechanisms, diagnostics, and therapeutics for motoneuron disorders and ischaemic brain injury, the role of mitochondria and the ER in nerve cell death, Bcl-2 family proteins in apoptosis, real-time imaging of protein dynamics, computational analysis and predictive in silico tools for neurotherapeutics.

Concannon CG, Tuffy LP, Weisová P, Bonner HP, Dávila D, Bonner C, Devocelle MC, Strasser A, Ward MW, Prehn JH. AMP kinase-mediated activation of the BH3-only protein Bim couples energy depletion to stress-induced apoptosis. J Cell Biol. 2010 Apr 5;189(1):83-94

JOHN WADDINGTON

Professor of Neuroscience, Molecular & Cellular Therapeutics, RCSI

There is now epidemiological and biological evidence that brain abnormalities in psychotic illness reflect disruption(s) in development over early gestational life. As the anterior brain and face evolve in embryological intimacy, and as the developmental biology of facial morphogenesis is considerably better understood than is brain morphogenesis, resolution of facial dysmorphology in schizophrenia may lead to increased understanding of brain dysmorphogenesis. We have recently applied 3D laser surface imaging and geometric morphometrics to resolve subtle topographies of facial dysmorphology in schizophrenia and bipolar disorder; these involves primarily the frontonasal prominences, which enjoy the most intimate embryological relationship with the forebrain. Currently, we are extending these studies to include craniofacial dysmorphology in individuals with velo-cardio-facial syndrome, which carries a 20-fold increase in risk for psychosis, and in mice mutant for the schizophrenia risk gene neuregulin 1. Additionally, we are developing techniques for automated identification of 3D craniofacial landmarks for geometric morphometrics.

O'Tuathaigh CM, Desbonnet L, Moran PM, Waddington JL. Susceptibility genes for schizophrenia: mutant models, endophenotypes and psychobiology. Curr Top Behav Neurosci. 2012;12:209-250.

DAVID HENSHALL

Associate Professor, Department of Physiology & Medical Physics, RCSI

Our research is focused on cell and molecular mechanisms of epilepsy. We employ experimental models, human tissue, pharmacological approaches and genetic tools. MicroRNA is a major focus, with research exploring the functional contributions of microRNA to epileptogenesis, their in vivo targets/mechanisms, microRNAs as biomarkers of epileptogenesis and as treatment targets for seizure control and epilepsy prevention. Other research interests include apoptosis-associated signaling pathways in seizure-induced neuronal death, epileptic tolerance and endogenous programmes of neuroprotection, neonatal seizures, and the ATP-gated P2X class of receptor as a novel target for anticonvulsants.

Jimenez-Mateos E.M., Engel T., Merino-Serrais P., McKiernan R.C., Tanaka K., Mouri G., Sano T., Prenter S., O'Tuathaigh C., Waddington J.L., Delanty N., Farrell M.A., O'Brien D.F., Stallings R.L., deFelipe J., Henshall D.C. Silencing microRNA-134 produces neuroprotective and prolonged seizure-suppressive effects. Nat. Med. 2012, 18: 1087-1093

STELLA VLACHOU

Lecturer in Psychology, DCU

Dr Vlachou studied psychology and received a PhD in Neuropsychopharmacology (Department of Psychology, University of Crete, Greece). Her PhD studies focused on the role of the endogenous cannabinoid system on behaviour and reward mechanisms. Her studies also investigated the effects of cannabinoid compounds on cocaine-induced reinforcement as an EU Marie-Curie Pre-doctoral Fellow (School of Life Sciences, University of Sussex, Brighton, UK). During Post-doctoral research (Department of Psychiatry, University of California at San Diego, CA, USA), she extensively investigated the effects of gamma-aminobutyric acid B (GABAB) receptor compounds on the reinforcing effects of nicotine or the depression-like aspects of nicotine withdrawal. She is currently a Lecturer in Psychology, and a Principal Investigator of the Behavioural Neuroscience Laboratory (BNL) at DCU. Current studies at the BNL are focused on the interactions of drugs of abuse, such as nicotine, alcohol and cannabinoids, and their effects in impulsivity and drug dependence during adolescence and adulthood.

Vlachou, S., Guery, S., Froestl, W., Banerjee, D., Benedict, J., Finn, M.G., and Markou, A. (2011). Repeated administration of the GABAB receptor positive modulator BHF177 decreased nicotine self-administration and acute administration decreased cue-induced reinstatement of nicotine seeking in rats. Psychopharmacology, 215: 117-128.

DAVID COTTER

Associate Professor of Psychiatry, RCSI and HRB Clinician Scientist

David's research has focused on the neuropathology of schizophrenia and bipolar disorder and he has identified glial and synaptic changes in the major psychiatric disorders using cytoarchitectural-based and proteomic-based methods. He is now working on the earlier stages of psychosis, the so-called prodrome, and is seeking to identify serum biomarkers of risk for psychosis. Such biomarkers could have significant impact on patients outcome as early identification and treatment improves outcome.

Glial cell loss and reduced neuronal size in the anterior cingulate cortex in major depressive disorder. Cotter D, Mackay D, Landau S, Kerwin R, & Everall I. Archives of General Psychiatry 2001, 58: 545-553

MARY CLARKE

Lecturer, Departments of Psychiatry and Psychology, RCSI

Mary Clarke is a lecturer in the Departments of Psychiatry and Psychology in RCSI. She was educated in Trinity College Dublin and The London School of Hygiene and Tropical Medicine. Mary's area of research is psychiatric epidemiology, especially the role of early life experiences in the aetiology of schizophrenia. In collaboration with colleagues from RCSI and The National Institute for Health and Welfare in Helsinki she examines the effect of prenatal and neonatal risk factors for psychotic disorder, particularly prenatal infection, prenatal stress and the attainment of motor and language developmental milestones.

Clarke MC, Cotter D, Clancy M, Cannon M. Evidence for shared susceptibility to epilepsy and psychosis: a population-based family study. Biological Psychiatry (2012) 1;71(9); 836-9.

ANDREW COOGAN

Senior Lecturer, Department of Psychology, NUIM

Circadian rhythms are recurring patterns in a host of behavioural and physiological processes that recur with periods of approximately 24 hours. These rhythms are primarily generated by an intrinsic circadian timekeeping system. It is noted that in many common and important conditions (eg. diabetes, depression, neurodevelopmental disorders) that there are changes in circadian rhythms, and that addressing these changes with chronobiologically-based therapeutic strategies can produce significant clinical benefit. Our group is interested in trying to develop a deeper understanding of circadian dysfunction in such disorders, using both animal models and patient-based studies, with the aim of developing more effective chronotherapuetic protocols. We have specific interests in understanding neuroimmune regulation of the clock and its relevance for conditions with neuroinflammatory components and in assessing circadian function in attention deficit hyperactivity disorder and drugs used in the management of this disorder.

O'Callaghan EK, Anderson ST, Moynagh PN, Coogan AN. Long-lasting effects of sepsis on circadian rhythms in the mouse. PLoS One. 2012;7(10):e47087.

RICHARD ROCHE

Lecturer in Psychology, Department of Psychology, NUI Maynooth

Dr. Richard Roche graduated from his undergraduate degree in Psychology at Trinity College Dublin in 1999, where he also completed his PhD in Cognitive Neuroscience (1999-2002) under the supervision of Prof Shane O'Mara. He completed his subsequent Postdoctoral Research Fellowship (2002-2005) with Prof O'Mara and Prof Ian Robertson, also at TCD. He was appointed as Junior Lecturer at the Department of Psychology, NUI Maynooth in 2005, and was promoted to Lecturer in 2008. His research interests include memory processes of consolidation and reconsolidation in the young and old age, spatial representation, psychosis and psychotic-like experiences, cognitive deficits following stroke/TIA and their rehabilitation, decision-making and neuroeconomics. In the recent years, his research has begun to move in more clinical and applied directions with the emerging collaborations between NUI Maynooth and the Stroke Unit of Tallaght Hospital in Dublin and the National Rehabilitation Hospital in Dun Laoghaire, and with Prof Mary Cannon of RCSI.

Murphy, JR, Rawdon, C, Twomey, D, Markey, P, Kelleher, I, Molloy, C, Roche, RAP & Cannon, M (2013). Reduced Duration Mismatch Negativity in Adolescents with Psychotic Symptoms: a Community based Study. BMC Psychiatry, 13, 45.

HANS-GEORG KOENIG

Lecturer in Physiology, Department of Physiology and Medical Physics, RCSI

Hans-Georg Koenig studied pharmacy and received his PhD from the Department of Pharmacology and Toxicology, Phillips-University in Marburg, Germany. His research interest encompass neuroprotective cytokine signalling, the transcription factor NF-kB and the physiology of the axon initial segment. He was involved in the discovery of the first transcription factor cascade at this neuronal compartment and is interested in mechanisms of axonal plasticity and axonopathy. His latest interest focuses on establishing a platform for induced pluripotent stem cell-derived (inducible-)neurons for live-cell imaging and high content screening purposes at RCSI.

König, H.G. et al. Fibroblast growth factor homologous factor 1 interacts with NEMO to regulate NF- B signaling in neurons. J Cell Sci. 2012 Dec 15;125(Pt 24):6058–70.

KEVIN MITCHELL

Associate Professor of Developmental Neurobiology, Trinity College Dublin

Kevin Mitchell is interested in the genetics of brain development, specifically how the connectivity between brain areas is genetically directed. He has a particular focus on the establishment of connectivity between thalamus and cortex. His lab also studies the effects of mutations in such genes as models of neurodevelopmental disorders.

Little GE, López-Bendito G, Rünker AE, García N, Piñon MC, Chédotal A, Molnár Z, Mitchell KJ. Specificity and plasticity of thalamocortical connections in Sema6A mutant mice. PLoS Biol. 2009 Apr 28;7(4):e98