



Mechanisms and Therapeutic Targets for Cognitive Deficits in Neurologic and Psychiatric Diseases

June 11 - 16, 2017

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Conference Description

Almost all brain disorders are associated with cognitive impairment. For many clinicians and neuroscientists, cognitive dysfunction is specific for dementia. It is not until recently that the research community has come to appreciate that the degree of cognitive impairment in different brain diseases defines functional outcomes. Cognitive dysfunction has devastating effects on the patient and his/her family. Understanding the mechanisms underlying cognitive dysfunction in various brain diseases, their similarities and differences, will inform new strategies for prevention and treatment. In the past years, much progress has been obtained in the possibilities to assess the neurobiology of cognition with sophisticated assessment and advanced brain imaging techniques, which have greatly enhanced our understanding of the basis of cognitive deficits. More importantly, advanced imaging and genetic evaluations have started to elucidate the impact of lifestyle factors such as physical exercise, nutrition, sleep and biorhythm on cognitive functioning. Consolidation of knowledge in these areas is the key for the development of new treatment regimens, as across disorders there is little evidence for effective treatments to improve cognition at present. The specific aims of this GRC are to bring together experts to share their recent research on the assessment of cognitive dysfunction in different

brain disorders using advanced imaging, genetic and cognitive assessment techniques, and on the exploration of innovative lifestyle modulators of brain reserve, neuroplasticity and cognition. The experience of evaluating and intervening cognitive dysfunction through multimodal assessment schema across different brain disorders will hopefully converge to define a new paradigm for transdiagnostic approach towards intervention for optimization of cognition.

Conference Program

Sunday	
2:00 pm - 8:00 pm	Arrival and Check-in
6:00 pm - 7:00 pm	Dinner
7:30 pm - 7:40 pm	Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
7:40 pm - 9:30 pm	<p>Beyond the Boundaries of Diagnoses Across the Lifespan</p> <p><i>This session will highlight the dimension of cognitive dysfunction across major brain diseases in different age groups, drawing the similarity beyond current framework for diagnostic classifications.</i></p> <p>Discussion Leader: Pak Sham (University of Hong Kong, Hong Kong SAR China)</p>
7:40 pm - 8:15 pm	<p>William Honer (University of British Columbia, Canada)</p> <p>"Plasticity, Pathology and Cognitive Function Across Age and Diagnosis"</p>
8:15 pm - 8:35 pm	Discussion
8:35 pm - 9:10 pm	<p>Berry Kremer (University of Groningen, The Netherlands)</p> <p>"Cognitive and Behavioural Dysfunction in Huntington's Disease: Associations and Mechanisms"</p>
9:10 pm - 9:30 pm	Discussion
Monday	
7:30 am - 8:30 am	Breakfast

9:00 am - 12:30 pm	<p>Genetics and Behavior</p> <p><i>Advanced genetic evaluation has provided important insights into the development of major neuropsychiatric conditions. Recent explorations appear to inform the clustering of constitutional predisposed physiological functions that modulate behaviors independent of diagnosis. This session will draw the links between genetic studies, cognitive and behavioral disorders.</i></p> <p>Discussion Leader: Manabu Ikeda (Osaka University, Japan)</p>
9:00 am - 9:40 am	<p>Stephan Ripke (Broad Institute of Harvard and MIT, USA)</p> <p>"Insights from Common Variant Analysis in Schizophrenia About the Genetic Architecture of Cognition"</p>
9:40 am - 10:00 am	Discussion
10:00 am - 10:30 am	Group Photo / Coffee Break
10:30 am - 11:10 am	<p>Tao Li (West China Hospital, Sichuan University, China)</p> <p>"Multimodal Phenotypic Evaluation for Psychosis"</p>
11:10 am - 11:30 am	Discussion
11:30 am - 12:10 pm	<p>Yen Kuang Yang (National Cheng Kung University, Taiwan)</p> <p>"The Gap Between Gene and Behavior in Mental Disorder Studies – A Neuroimaging Perspective"</p>
12:10 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
3:00 pm - 4:00 pm	<p>Power Hour</p> <p><i>The GRC Power Hour is an optional informal gathering open to all meeting participants. It is designed to help address the challenges women face in science and support the professional growth of women in our communities by providing an open forum for discussion and mentoring.</i></p> <p>Organizer: Sandra Chan (The Chinese University of Hong Kong, Hong Kong SAR China)</p>
4:00 pm - 6:00 pm	Poster Session

6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	<p>Imaging Cognitive Function and Dysfunction in Alzheimer's Disease and Other Neurocognitive Disorders</p> <p><i>The state of the art neuroimaging techniques in elucidating underlying mechanisms for cognitive dysfunction will be introduced. Presentations will expand from the framework of degenerative conditions to other brain disorders.</i></p> <p>Discussion Leader: Berry Kremer (University of Groningen, The Netherlands)</p>
7:30 pm - 8:10 pm	<p>Vincent Mok (The Chinese University of Hong Kong, Hong Kong SAR China)</p> <p>"Neuroimaging for Small Vessels of the Brain – Implications on Cognition"</p>
8:10 pm - 8:30 pm	Discussion
8:30 pm - 9:10 pm	<p>Fernando Maestu (Universidad Politecnica de Madrid, Spain)</p> <p>"Functional Network Organization in the Early Stages of Alzheimer's Disease"</p>
9:10 pm - 9:30 pm	Discussion
Tuesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	<p>Physical Activity, Nutrition and the Ageing Brain</p> <p><i>There has been increasing interests in the relationship between physical activity, diet and brain function. The protective effects of these lifestyle activities in cognition have mostly been evaluated in older adults. However, the putative mechanisms are not only specific for the ageing brain. This session will discuss on the potential for further research beyond the current paradigm.</i></p> <p>Discussion Leader: Timothy Kwok (The Chinese University of Hong Kong, Hong Kong SAR China)</p>

9:00 am - 9:40 am	Nicola Lautenschlager (University of Melbourne, Australia) "Physical Activity and Brain Reserve – A Possible Transdiagnostic Intervention"
9:40 am - 10:00 am	Discussion
10:00 am - 10:30 am	Coffee Break
10:30 am - 11:10 am	Martha Clare Morris (Rush University Medical Center, USA) "Effects of Lifestyle Behaviors on the Brain: Immediate Versus Longterm"
11:10 am - 11:30 am	Discussion
11:30 am - 12:10 pm	Nikolaos Scarmeas (Columbia University, USA / Aiginition Hospital, Greece) "Nutrition and Brain Imaging Biomarkers: Where Are We and Where Do We Want to Be?"
12:10 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
2:00 pm - 4:00 pm	Poster Session
4:00 pm - 6:00 pm	Translational Cognitive Neuroscience <i>Basic neuroscience research provides models for diseases that are associated with cognitive dysfunction. This session draws on the significance of translation into potential clinical inference through different approaches.</i> Discussion Leader: Eric Chen (University of Hong Kong, Hong Kong SAR China)
4:00 pm - 4:40 pm	Peter Uhlhaas (University of Glasgow, United Kingdom) "Oscillations and Neuronal Dynamics in Schizophrenia: The Search for Basic Symptoms and Translational Opportunities"
4:40 pm - 5:00 pm	Discussion

5:00 pm - 5:40 pm	Sookja Chung (The University of Hong Kong, Hong Kong SAR China) "Transgenic and Knockout Mouse Models for Vascular Mechanisms in Neurodegenerative Disorders"
5:40 pm - 6:00 pm	Discussion
6:00 pm - 7:00 pm	Dinner
Wednesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Inflammation, Immunity and Neuroplasticity <i>Interests in inflammation and immunity as important mechanisms for brain disorders arose from findings of basic neuroscience research and genetic studies of susceptibility gene loci. This session will explore the mechanisms leading to brain dysfunction, as well as potential for intervention that may modify disease course.</i> Discussion Leader: Wing Ho Yung (The Chinese University of Hong Kong, Hong Kong SAR China)
9:00 am - 9:40 am	Raymond Chuen-Chung Chang (The University of Hong Kong, Hong Kong SAR China) "Impact of Systemic Inflammation on Neuroinflammation, Cognitive Functions and Neurodegeneration"
9:40 am - 10:00 am	Discussion
10:00 am - 10:30 am	Coffee Break
10:30 am - 11:10 am	Maja Djurisic (Stanford University, USA) "Bidirectional Changes in Plasticity Regulated by an Innate Immune Receptor in Neurons – An Endocannabinoid Connection"
11:10 am - 11:30 am	Discussion
11:30 am - 12:00 pm	Meenakshi Dauwan (University Medical Center Utrecht, The Netherlands) "Effect of Physical Exercise on Clinical Outcome Measures, Cognition and the Brain – A Transdiagnostic Therapeutic Prospect"

12:00 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:30 pm - 8:30 pm	<p>Traumatic Brain Injury</p> <p><i>Severe traumatic brain injury (TBI) is well recognized cause for brain damage. Other TBIs may escape clinical attention, and lead to under-recognition of behavioral changes associated with cognitive impairments. This session will draw attention to newly explored risk factors between TBI and cognitive dysfunction.</i></p> <p>Discussion Leader: Winnie Chu (The Chinese University of Hong Kong, Hong Kong SAR China)</p>
7:30 pm - 8:10 pm	<p>Rong Chen (University of Maryland School of Medicine, USA)</p> <p>"Altered Cerebellar Anatomical Connectivity in Patients with Mild Traumatic Brain Injury"</p>
8:10 pm - 8:30 pm	Discussion
Thursday	
7:30 am - 8:30 am	Breakfast
8:30 am - 9:00 am	<p>Business Meeting</p> <p><i>Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair</i></p>
9:00 am - 12:30 pm	<p>Sleep, Biological Rhythm and Neurodegeneration</p> <p><i>Sleep and biological rhythms are not only basic physiological function, but also are recognized important clinical manifestations of brain diseases. This session brings into spotlight that biorhythm studies may inform new direction for research in cognitive and neuropsychiatric disorders.</i></p> <p>Discussion Leader: Ian Hickie (The University of Sydney, Australia)</p>

9:00 am - 9:40 am	Yang Dan (University of California, Berkeley, USA) "Neural Circuits Controlling Sleep"
9:40 am - 10:00 am	Discussion
10:00 am - 10:30 am	Coffee Break
10:30 am - 11:10 am	Kathleen Merikangas (National Institute of Mental Health, NIH, USA) "Dysynchrony of Homeostatic Rhythms in Bipolar Disorder"
11:10 am - 11:30 am	Discussion
11:30 am - 12:10 pm	Yun Kwok Wing (The Chinese University of Hong Kong, Hong Kong SAR China) "Sleep Disturbance and Circadian Disruption as Biomarker and Pathogenesis of Psychiatric and Neurodegenerative Disorders"
12:10 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Towards Intervention for Brain Reserve <i>This session will provide an integrative framework towards the possibility of multimodality intervention to enhance neuroplasticity for cognitive dysfunction from a transdiagnostic perspective.</i> Discussion Leader: Nicola Lautenschlager (University of Melbourne, Australia)
4:00 pm - 4:30 pm	Tobias Hartmann (Saarland University, Germany) "Multi-Nutrient Intervention in Pre-Dementia Alzheimer's Disease"
4:30 pm - 4:40 pm	Discussion
4:40 pm - 5:10 pm	Michael Valenzuela (Sydney Medical School, University of Sydney, Australia) "Neurogenesis in the Live Human Brain: A New MR Spectroscopic Method and Functional Relevance to Psychiatry, Neurodegeneration and Intervention-Related Plasticity"
5:10 pm - 5:20 pm	Discussion

5:20 pm - 5:50 pm	Marcus Richards (University College London, United Kingdom) "A Life Course Approach to Optimizing Cognitive Reserve?"
5:50 pm - 6:00 pm	Discussion
6:00 pm - 7:00 pm	Dinner
Friday	
7:30 am - 8:30 am	Breakfast
9:00 am	Departure

Contributors

		
		
		