



Seminar Announcement

Network-sensitive brain imaging in preclinical and clinical neuropsychiatric disorders: a longitudinal perspective

Date: 9 September 2019
Time: 2.30 p.m.
Venue: Classroom 4, SBS
Hosted By: A/P Koh Cheng Gee

The spatial patterning of each neurodegenerative disease relates closely to a distinct structural and functional network in the human brain. This talk will mainly describe how brain network-sensitive neuroimaging methods such as resting-state fMRI and diffusion MRI can shed light on network dysfunction associated with pathology from preclinical to clinical dementia. I will first present our findings from two independent datasets on how amyloid and cerebrovascular pathology influence brain functional networks cross-sectionally and longitudinally in individuals with mild cognitive impairment and dementia. Evidence on longitudinal functional network organizational changes in healthy older adults and the influence of APOE genotype will be presented. In the second part of my talk, I will describe our work from diffusion MRI examining how cortical cerebral microinfarct, a novel cerebrovascular marker, influence brain structural network topology and cognition. Our recent findings on how brain white matter abnormalities such as extracellular water increases and axonal damage relate to amyloid burden and age of disease onset across disease spectrum will be briefly described. If time allows, I will touch on how functional networks can predict psychosis transition. These findings push beyond region-specific differences to connect ageing- and pathology-related changes in brain networks with decline in cognitive performance and underscore the importance of longitudinal studies. Further developed with machine learning approaches, multimodal neuroimaging signatures will help reveal disease mechanisms and facilitate early detection, prognosis and treatment search of neurodegenerative disorders.



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