



# Multi-level analysis of stroke-induced cognitive impairment and prospects of transcranial ultrasound neuromodulation

## Ms. Rundi DENG

PhD Candidate

Supervisor: Prof. TIN Chung

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Venue: ZOOM Online

### Abstract

Stroke is a significant cause of disability and death in adults world-wide. Emerging evidence has showing a cortical stroke can trigger remote secondary neurodegeneration (SND), leading to cognitive impairment. We aimed to explore long-term cognition impairment after chronic ischemia stroke, and the underlying mechanism associated with SND. To explore the underlying pathological pathways is to reveal the multicellular interactions within the neurovascular unit (NVU), both involved in the evolution of damage to the blood-brain barrier (BBB), glial reactions, and vascular structure. We established a permanent focal stroke model by electrocoagulation distal middle cerebral artery occlusion (dMCAO), not affect subcortical regions compared to intraluminal MCAO model. Motor dysfunction and cognition impairment including long-term memory and learning ability were assessed by multi-level behavior tasks. Microglia, astrocyte, and vessel were investigated in the peri-infarct and ipsilateral hippocampal regions at different phase post-stroke. Besides, ultrasound stimulation is an emerging tool for neuromodulation, achieved through the delivery of high-frequency mechanical waves to neural tissue. In particular, low-intensity pulsed ultrasound stimulation (LIPUS) has been shown to have positive effects in animal models after stroke. In this study, we aimed to investigate the role of LIPUS in improving neurological function and vascular remodeling in stroke model.

***ALL are Welcome!***