Research Theme
Neuroscience and Mental Health

Research Project Title
Elucidating Molecular Biomarkers of Neurovascular Ageing in Stroke and Cognitive Impairment

Principal Investigator
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Collaborating Institution
National University Hospital

Project Description
The crux of many diseases lies in the blood vessels. Even though vascular damage often precedes neuronal deficits in certain brain disorders, relatively less attention has been paid to blood vessel pathology in the context of mental health. Genome-wide association studies have identified several gene polymorphisms which could confer increased risk of stroke. Blood circulating biomarkers, such as nucleic acids and proteins, have also been associated with adverse vascular outcomes. Despite the availability of such data, a majority of them has not been translated into the intended benefit of developing new treatments and diagnostics. There remain significant knowledge gaps in the functional interpretation of clinical biomarkers.

Our goal is to advance the understanding of cerebrovascular complications through the convergence of biomarker mechanistic interrogation and informative disease models. The main thrusts of this project are

1. Vascular disease biomarkers: Leveraging on our collaborations with the clinicians, we will identify molecular signatures of key vascular processes related to stroke and cognitive impairment.
2. Functional analysis: Deep-dive elucidation of such molecular signatures would enable us to unravel implicated pathways, so as to inform potential mechanistic targets for early intervention.
3. Validation in disease models: We will investigate the pathological or protective pathways involving appropriate animal models and in vitro patient-relevant organotypic models.

Contact Us
If you have questions regarding this project, please email the Principal Investigator.

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