NUS National University of Singapore | Life Sciences Institute

Neurobiology/Ageing Programme



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"Developing tau-targeted treatments for Alzheimer's disease"

Alzheimer's disease (AD) is the most common neurodegenerative disorder, characterized by progressive loss of cognition. More than 35 million people are currently diagnosed with AD or related forms of dementia worldwide, with numbers expected to rise significantly in the future, causing a huge socio-economic problem. Unfortunately, there is no cure and current therapies are limited to only very modest symptomatic relief. To develop effective treatments, it is absolutely necessary that basic mechanisms underlying dementia be understood.

AD brains are characterized by deposition of hyperphosphorylated forms of the microtubule-associated protein tau forming intraneuronal neurofibrillary tangles (NFTs), and extracellular deposition of amyloid-β (Aβ) in plaques. However, it is the tau pathology that correlates best with disease progression. We have recently identified the first molecular link between the two pathologies by demonstrating a critical role of tau in mediating Aβ toxicity in different AD mouse models. This paved the way for developing a new therapeutic strategy by targeting post-synaptic tau function.

Given the central role of tau pathology in disease progression, we developed further new therapeutic approaches, including activation of tau phosphatases and tau-targeted active and passive immunization. Taken together, our work highlights tau pathology as a promising drug target for future treatments of AD and related forms of dementia.

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Convenor: A/P Lim Kah Leong