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Hong Kong identifies innovative strategy for treatment of Alzheimer's disease

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Alzheimer's disease, which affects over 50 million people worldwide, is currently an irreversible condition that lacks effective treatment

An international research team, led by Prof. Nancy IP, The Morningside Professor of Life Science at the Hong Kong University of Science and Technology (HKUST) and Director of the Hong Kong Center for Neurodegenerative Disease (HKCeND), has identified a blood protein that plays a key role in the pathogenesis of Alzheimer's disease (AD).

Their findings reveal an innovative strategy in reducing the risk of AD development and ameliorating disease pathologies in individuals living with AD.

Researchers have previously observed that impaired clearance of the toxic amyloid-beta (A?) peptides in the brain of AD patients by the immune cells (microglia) causes cellular dysfunction, resulting in memory loss and cognitive problems. Yet, the reason behind this impairment is still not well known.

Now, the team has discovered a blood protein, soluble ST2 (sST2), that plays a key role in disrupting A? clearance by microglia. The team showed that sST2 levels increase in the blood and the brain during ageing, thereby perturbing the activities of the cytokine interleukin-33 (IL-33), leading to reduced microglial clearance of A? and thus elevated A? deposition.

The team had, in fact, previously discovered the beneficial activity of IL-33 on microglial clearance of A? in the brain. Interestingly, they further found that reduced sST2 levels confer a protective effect against AD development, and ameliorate AD-related pathologies in individuals who have developed the disease.

These critical findings open up new possibilities for the therapeutic treatment of AD that are primarily aimed at decreasing sST2 levels.