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Singapore identifies new cell population in Alzheimer's disease

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Holding great relevance to the efforts to understanding the ageing process



An immunity research study has found that the previously identified disease-associated microglia (DAM) population detected in murine Alzheimer's disease models actually contained an additional population of macrophages recruited during ageing and disease that exhibit inflammatory features, named disease inflammatory macrophages (DIMs). This new cell population was identified by a team of international scientists led by A*STAR's Singapore Immunology Network (SIgN).

Previously perceived as one population, this discovery of two different cell populations will allow for a better targeting—whether to mobilise the beneficial cell population or block the detrimental one—of relevant macrophage populations in the treatment of neurodegeneration.

In order to determine the two distinct cell populations, the team collected published single cell RNA-seq data sets on the brain in homeostasis, brain development and brain disease, and integrated these with their own data to generate a single cell universe from development to disease. This refined mapping of cell types was focused on the macrophages of the brain, which led to the discovery of the two regions.

Prof Lam Kong Peng, Executive Director at A*STAR's SIgN, said, "Singapore faces increasing life expectancy and a rapidly ageing population, and diseases like Alzheimer's can be expected to rise. This highly innovative research has great relevance to our efforts to understand the aging process, delay the onset of neurological diseases as well as enhance the mental and overall well-being of our population, and will provide greater insight for the development of targeted therapeutics and better healthcare outcomes."