Alzheimer's Disease: The Contribution of Biological Factors and the Need to Account for Differences Between Eastern and Western Populations

Alzheimer's disease dementia (ADD) is the result of a series of pathological events, starting with genetic and environmental factors that lead to brain changes and ultimately to cognitive decline and AD dementia. A genetic risk for instance does not always translate into pathology. Thus, some individuals with similarly elevated genetic risk of AD will progress to dementia, while others will not. This is particularly important in asymptomatic persons with biological evidence for amyloid and tau pathology who are now recognized as preclinical AD.

Genetic variants and environmental factors are different across populations, adding complexity to predicting dementia cases. To better predict future cases, it's crucial to combine genetic information with fluid biomarkers and neuroimaging. While compelling research has been done on European ancestry, similar initiatives combining genetic and brain imaging approaches are still lacking in other ancestries.

In this seminar, the speakers will share their research studies in ADD across ancestries to close this gap across populations. Their findings using structural and functional MRI have shown inconsistencies in the relationship between brain network alterations and AD pathology across two ongoing large-scale studies from Germany and China. These imaging results cast some questions on the validity and behavior of these biomarkers in other ancestries. Genetics and fluid biomarkers might also behave differently across populations. As global population diversity increases, understanding population-shared and -specific risk factors of AD is vital in translating research findings into population-oriented personalized medicine to prevent and treat the disease.