Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Internal Webinar

APOE4 drives a condensate-mediated pathway of Amyloid-β toxicity

Prayasee Baruah

TIFR, Hyderabad

The aggregation of Aβ and tau is considered a central event in Alzheimer's Disease (AD) pathogenesis, ultimately leading to synaptic dysfunction, neuronal loss, and cognitive decline. The APOE4 isoform is the strongest genetic risk factor for late-onset AD. However, the molecular mechanisms underlying its pathogenicity remain poorly understood. In this study, we demonstrate that APOE4 modulates the aggregation pathway of amyloid-β (Aβ) by driving the formation of stable condensate-like assemblies instead of canonical fibrils. These APOE-induced condensates exhibit enhanced cellular toxicity, increased intracellular accumulation, and direct co-localisation with APOE, suggesting a distinct pathogenic aggregation pathway. Using complementary biophysical and cellular approaches, we investigate the structural, dynamic, and toxic properties of these assemblies and explore the isoform-specific effects of APOE. In parallel, the formation and maturation of P301L tau condensates in cells are examined to provide insights into the interplay between Aβ and tau aggregation in Alzheimer's disease.

Tuesday, Aug 18th 2026

14:30 Hrs