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

Seminar

Investigation of the mechanism of amyloid aggregation using single-molecule fluorescence techniques

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The mechanism of amyloid-β (Aβ) deposition in Alzheimer's disease (AD) remains a central yet elusive question in neurodegenerative research. Understanding how Aβ aggregates and the influence of lipids and apolipoprotein E (apoE) - a known AD risk factor, on Aβ42 aggregation pathways is crucial for unravelling AD pathology. In our study, we observed that distinct phospholipids promote the formation of lipid-peptide condensates with Aβ42, a process that initiates nucleation of Aβ42. Additionally, different apoE isoforms showed isoform-dependent effects on Aβ fibril elongation, where apoE4, specifically, exhibited weak binding to Aβ fibrils, making it a relatively ineffective inhibitor of elongation. Notably, apoE4 also enhanced condensate-mediated nucleation, further highlighting its unique role in AD progression. These findings shed light on the molecular interplay between Aβ, lipids, and apoE, providing insights into potential therapeutic targets for AD.

Thursday, Nov 14th 2024

16:00 Hrs (Tea / Coffee 15:45 Hrs)

Auditorium, TIFR-H