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

Webinar

Biophysical Characterization of Interactions between Apolipoprotein E and Amyloid-β

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Alzheimer's Disease (AD) is one of the most prevalent form of dementia among the elderly population in the world. It is characterized primarily by the deposition of Amyloid-β (Aβ) in the brain. However, the major genetic risk factor is apolipoprotein E4. Apolipoprotein E (ApoE) is the major lipoprotein present in human brain and it exists as three isoform apoE2 (Cys 112, Cys 158), apoE3 (Cys 112, Arg 158) and apoE4 (Arg 112, Arg 158). Apolipoprotein E plays a critical role in the modulation of Aβ metabolism in an isoform dependent manner. But how it interacts with Aβ, causing AD, remains poorly understood.

In this talk, I will discuss, how interaction of apoE with oligomers and fibrils affects the microscopic processes viz. primary nucleation, elongation and secondary nucleation involved in the pathway of aggregation of Aβ using total internal reflection fluorescence microscopy (TIRFM). Then I will discuss the molecular mechanism of apoE-Aβ interactions by comparing the effects of different domains of apoE on aggregation of Aβ. Finally, I will discuss the effects of different isoforms of apoE, in their lipid free state and physiologically relevant lipidated state.

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11:30 AM