

Webinar

Delineation of the aggregation pathways of tau protein using single-molecule fluorescence microscopy

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Tau aggregation is a pathological hallmark of several neurodegenerative disorders, yet the molecular mechanisms that give rise to structurally diverse tau assemblies remain poorly understood. In this work, we employed single-molecule fluorescence microscopy such as Total internal fluorescence microscopy (TIRFM) together with other complementary biophysical techniques to investigate tau aggregation under different biochemical environments. Our studies reveal multiple aggregation pathways, including the formation of RNA-mediated nanoaggregates, aggregation through liquid-liquid phase separation, and the long-term structural evolution of PiD tau aggregates. These pathways produce distinct assemblies with unique nucleation and growth kinetics, structural characteristics, and aggregation outcome. In this seminar, I will present the experimental approaches used to characterize these pathways and discuss how competing aggregation mechanisms contribute to the heterogeneity, polymorphism, and long-term evolution of tau aggregates.

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16:00 Hrs

