



S N BOSE NATIONAL CENTRE
FOR BASIC SCIENCES
Block JD, Sector III, Salt Lake, Kolkata 700 106

DEPARTMENTAL SEMINAR

Chemical and Biological Sciences

9th July, 2024

4.00 PM

ONLINE / FERMION

SPEAKER

Dr. Krishnananda Chattopadhyay
Chief Scientist and the Head of the Structural
Biology and Bioinformatics Division,
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TITLE OF THE TALK

**Conformational fluctuations of proteins:
from soft-matter physics to the disease biology of neuro-degenerations**

ABSTRACT

More than 50 million people worldwide are now living with different forms of neurodegeneration, a group of diseases that pose a large economic burden to developing countries. No disease-modifying cure is available for the majority of these diseases, although it is believed that the aggregation of proteins may have a role to play. The processes of protein aggregation are difficult to study, particularly at the early stages. This is because they often share common conformational landscapes, which are inherently heterogeneous, consisting of multiple pathways and intermediates of varying toxicities. Our lab has been developing and using sensitive fluorescence methods—both at ensemble and single-molecule resolution—and complementing these using biochemical assays to address the heterogeneity and toxicity of Parkinson's Disease and ALS. In this talk, we will discuss conformational fluctuations of proteins and their implications in protein phase separation and eventual amyloidosis using these two disease models. The influence of metal cofactors and their implication in the pathology of ALS will also be discussed, highlighting recent findings.

Few References:

Das et al (2023) The EMBO Journal, <https://doi.org/10.15252/embj.2022111185>
Sannigrahi et al (2022) eLife, <https://doi.org/10.7554/eLife.61453>
Chakraborty et al (2022) Communications Biology, <https://doi.org/10.1038/s42003-021-02026-z>

HOST FACULTY

Dr. Suman Chakrabarty
ASSOCIATE PROFESSOR, CHEMICAL and BIOLOGICAL SCIENCES
