NMT CHEMISTRY

CHEMISTRY DEPARTMENT SEMINAR

Membraneless Intracellular Organization: Role of Nucleic Acid Phase Separation

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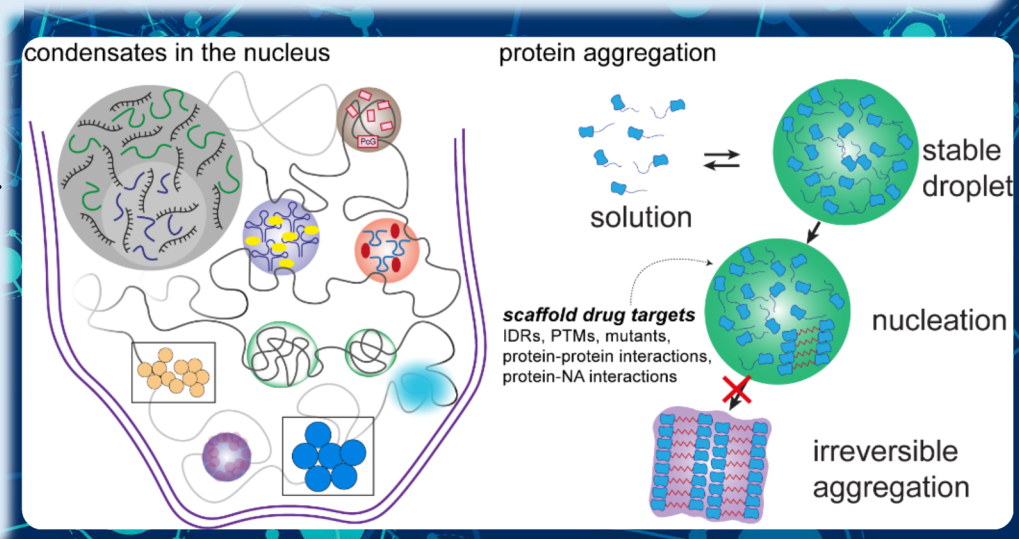
Compartmentalization of the cellular interior allows organization of the numerous biochemical processes that cells need for function. This can occur with or without lipid membranes. Condensation proteins and nucleic acids through phase separation into liquid-like biomolecular condensates has emerged as a central feature of compartmentalization in cells in the absence of lipid membranes. Phase separation can allow organization across length scales, ranging from large organelles, such as the nucleolus, to small functional compartments such as transcription "hubs". Misregulation of this physical phenomenon in cells has also been linked to diseases such as cancer and neurodegenerative diseases. My lab's research involves elucidating the formation, dynamics, and maintenance of biomolecular condensates, both in vitro and in cells, using modern optical microscopy techniques and a range of biophysical, biochemical, cell biology tools. In this talk, I will summarize our work on understanding the formation and dynamics of biomolecular condensates, the effect of the properties of nucleic acids on condensate behavior, and the role of phase separation of nucleic acid-binding proteins in cellular organization.



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