Structural analyses of biomolecular condensates using cryoelectron tomography

Drs. Michael Rosen and Daniela Nicastro, in the Departments of Biophysics and Cell Biology at UT Southwestern Medical Center seek to jointly recruit a postdoctoral fellow to develop and apply cryoelectron tomography (cryoET) methods to understand the molecular organization of biomolecular condensates. Biomolecular condensates are compartments in eukaryotic cells that concentrate macromolecules in discrete foci without a surrounding membrane. Examples include cytoplasmic P bodies associated with RNA metabolism, promyelocytic leukemia nuclear bodies involved in transcription and antiviral responses, signaling clusters in T cell activation, HP1 clusters in heterochromatin organization, and transcriptional assemblies involved in gene regulation. The behaviors of these compartments suggest that they may form through liquid-liquid phase separation of multivalent proteins and RNA. Our goal is to understand how molecules are organized in natural condensates in cells and in reconstituted condensates in vitro, and ultimately relate this organization to biochemical and cellular functions.

Candidates should have experience in cryoEM and/or areas relevant to condensate biology, such as cell biology or biophysics. Those without experience in cryoEM must have a strong commitment to learn all aspects of cryoET. Candidates will have access to state-of-the-art facilities, including a Titan Krios microscope and Aquilos cryoFIB mill, and will work at the leading edge of cryoEM technology and condensate biology.

Information on the UT Southwestern postdoctoral training program and benefits can be found in our Postdoc Handbook or at http://www.utsouthwestern.edu/postdocs.

Candidates should send C.V. and a 1-page statement of research experience and future goals, as well as arrange to have three letters of reference sent to:

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