

ICB PhD public presentations

DYNAMICS AND AGING OF BIOMOLECULAR CONDENSATES IN PHYSIOLOGY AND DISEASE

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Project Summary: The formation of biomolecular condensates via liquid-liquid phase separation of proteins and nucleic acids is a strategy of cells to compartmentalize their interior and to organize biochemical reactions and molecule storage in space and time. The properties of these condensates are tightly regulated to ensure correct function. Especially, appropriate material properties are crucial to modulate mass transport processes and to provide structural integrity. In this work, we investigate the molecular mechanisms of liquid-solid transitions of condensates towards dynamically arrested states and amyloid-like structures, associated with neurodegenerative diseases. We demonstrate that biochemical activity and composition of the condensates regulate condensate fluidity and aging. Moreover, we show on the molecular level how liquid-liquid phase separation promotes the formation of amyloid fibrils.

CV: Miriam obtained a B. Sc. In Molecular Medicine from University of Ulm (Germany) in 2015 and a M.Sc. in Biochemistry and Biophysics from University of Freiburg (Germany) in 2018. During her Masters, she spent a research semester at UCLA (USA) and then joined Prof. Paolo Arosio's lab at ETH Zurich for her Master thesis. She started her PhD studies in the same group in February 2018.