



CHEMISTRY SEMINAR SERIES

11:45am-12:45pm

April 17

Via Zoom

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**“Liquid Phase Condensation in the Genome
Organization at the Single-Molecule Level”**

Zoom Link: <https://ucdenver.zoom.us/j/486220830>

The genome organization plays a critical role in control of gene activity, thereby controlling development and physiology; however, the fundamental physical and chemical principles underlying the organization remains elusive. Over the past few years, membraneless condensates assembled through liquid-liquid phase separation have emerged as a new theme in organizing the genome, which is one of science's 2018 breakthroughs. Despite the importance of phase separation for the genome organization, the underlying molecular mechanisms remain enigmatic. Our general goal is to use Polycomb group (PcG) proteins as a paradigm to understand how liquid-liquid phase separation organizes the genome. Here I will discuss how PcG proteins assemble into condensates through liquid-liquid phase separation and describe how we develop in vitro and in vivo single-molecule techniques that enable addressing key questions in the genome organization through liquid-liquid phase separation. Our results provide insights into epigenetic processes associated with normal development, physiology, and their dysregulation in cancer.