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ZBP Colloquium, Thursday, October 29, 2026

Biomolecular condensates in nuclear organization

Cells package their genomic DNA into a complex with proteins called chromatin. Chromatin is partitioned into subcompartments that differ from each other with respect to their molecular composition, mechanical properties and biological function. A prominent example are the micron-sized spherical heterochromatin foci that are present in several differentiated mouse cell types and that are readily visible under the microscope. It is a key question how such compartments can form even though diffusion constantly mixes the nuclear interior. One biophysical mechanism that can explain this phenomenon is liquid-liquid phase separation, which creates liquid droplets around nucleation sites on chromatin. Another one is polymer-polymer phase separation, which condenses polymers by bridging interactions. I will briefly introduce the theory behind these phase separation mechanisms and will present recent experiments that assess the dynamic properties of DNA-based condensates formed in the test tube and heterochromatin foci in living cells. I will compare these experiments to the different models and discuss the implication for the dynamic regulation of chromatin subcompartments and the mechanics of the entire cell nucleus.

Talk: 14:15

Tea/Coffee at 14:00

Campus Saarbrücken

Building C6.4

Room 0.09 (Lecture Hall II)

Schedule with
full abstract



Teams link

