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Type: **Invited Speaker / Conférencier(ère) invité(e)**

(I) Bacterial condensates under stress

Tuesday 7 June 2022 09:00 (30 minutes)

Living cells are divided into functional compartments called organelles. In eukaryotes, lipid membranes separate organelles from the cytoplasm such that each compartment maintains a distinct biochemical composition that is tailored to its function. In contrast, prokaryotes typically lack internal membranes and instead must use other mechanisms to spatially organize the cell. Using fluorescence imaging and single-molecule tracking, we show that *E. coli* RNA polymerase (RNAP) organizes into clusters through liquid-liquid phase separation (LLPS). RNAP clusters, or “condensates”, increase cell survival during stress, and appear to regulate ribosome biogenesis in response to nutrient availability. Our results demonstrate that bacteria, like eukaryotic cells, use LLPS to generate membraneless organelles that spatially organize biochemical processes to optimize cell fitness in various environments.

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