

## Coarse-grained modelling of the bacterial nucleoid

The mechanism responsible for the organization of bacterial DNA inside a structure called the nucleoid is a longstanding but still lively debated question. Most puzzling is the fact that the nucleoid occupies only a small fraction of the cell, although it is not separated from the rest of the cytoplasm by any membrane and would occupy a volume about thousand times larger outside from the cell. In this talk, I will review recent results of numerical simulations based on coarse-grained models, which elaborate on the conjecture that the formation of the nucleoid may result from a segregative phase separation mechanism driven by the demixing of the DNA coil and non-binding globular macromolecules, presumably functional ribosomes. I will also discuss the extent to which demixing collaborates (or does not collaborate) with other mechanisms that are known to play a role in the organization of the nucleoid, like supercoiling and nucleoid associated proteins.

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