

Insights on spatial organization inside a bacterial cell using polymer-based model

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In Bacterial cell, the nucleoid and ribosomes are very well organized. In *Escherichia coli*, ribosomes and other small species concentrate near the cylindrical wall and at the end caps, whereas the chromosomal DNA segregates in the more centrally located nucleoid. We will present computer simulation results of a simple statistical model, which recovers the experimentally observed ribosome-nucleoid segregation very well. We will present a polymer-physics based minimalist model, which captures the basic essence of chromosomal DNA and ribosome and will show how the model can be used to simulate and interpret multiple experimentally observed cell-biological phenomena in a bacterium. Our work will touch upon many facets of self-organization of bacterial cell.