

---

# DNA segregation in *E. coli*: the role of chromosome structuring

Ivan Junier\*<sup>†</sup>

<sup>1</sup>Laboratoire Adaptation et Pathogénie des Microorganismes (LAPM) – CNRS : UMR5163 – CNRS UMR5163 - Université Joseph Fourier Campus Santé - Institut Jean Roget Domaine de la Merci 38700 La Tronche, France

## Abstract

The mechanisms that control chromosome segregation in bacteria have not yet been elucidated. For instance, in *Escherichia coli*, the mere presence of an active process remains an open question. In this talk, I will discuss the impact of the structuring of bacterial chromosomes into macrodomains of condensation [1], a feature that is shared by phylogenetically distant bacteria. I will show that the differential condensation level along chromosomes induce strong osmotic-like organizational forces that need to be considered to apprehend the cellular organisation of bacterial chromosomes. More specifically, I will show that in *E. coli* the presence of such macrodomains together with the targeting of the origin and terminus regions to specific positions are sufficient to generate segregation patterns that are indistinguishable from experimentally observed patterns. [1]: Junier, I., Boccard, F., Espeli, O. (2014). Polymer modeling of the *E. coli* genome reveals the involvement of locus positioning and macrodomain structuring for the control of chromosome conformation and segregation. *Nucleic Acids Research*, 42(3), 1461–1473.

---

\*Speaker

<sup>†</sup>Corresponding author: [ivan.junier@ujf-grenoble.fr](mailto:ivan.junier@ujf-grenoble.fr)