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Spatial and functional organization of bacterial genomes: from 1D to 3D

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<https://www.i2bc.paris-saclay.fr/page-equipe-bml/>

The genome is far more than a linear sequence of information: its three-dimensional architecture provides the spatial context that shapes gene expression, a principle that extends across all domains of life, including bacteria. Building on recent work in key bacterial models, *Pseudomonas aeruginosa*, a human opportunistic pathogen, and *Streptomyces*, renowned for antibiotic production, we will explore how genome organization operates across multiple scales, from the activity of molecular machineries such as condensins, to the chromosome spatial dynamics during the cell cycle. We will discuss how these layers integrate into a coherent and functional framework, offering a unified perspective on the principles governing genome dynamics in bacteria.