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Host: Natalia Baranova

Mechanobiology: how bacteria sense and respond to forces



Wednesday, 23th April
12.00 p.m.

CIC biomaGUNE - Seminar Room

Microbes have evolved to thrive in virtually any terrestrial and marine environments, exposing them to a variety of mechanical cues including the ones generated by contact with surfaces and fluid flow. Bacteria have cellular components allowing them to progress with - or against - these forces. Deploying these systems when sensing relevant physical cues optimizes their function, ultimately improving bacterial fitness. Owing to newly developed biophysical techniques, we are now starting to appreciate the breadth of bacterial phenotypes influenced by mechanical inputs: adhesion, motility, biofilm formation and even pathogenicity. In this presentation, I will try survey the various physical forces bacteria experience in their natural environments and describe the structures that transmit these forces to a cell. We then discuss how forces can be transduced by dedicated cellular machinery to regulate diverse phenotypes including virulence and motility. Finally, I will provide a perspective on how mechanics influence the biogenesis of multicellular structures known as biofilms.