

## **Influence of Bacterial Motility on Biofilm Formation**

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**Abstract :** Two motility mechanisms were introduced into iDynoMiCs software, which adopts an individual-based modeling method. Based on the new capabilities, along with the pressure motility developed before, influence of bacterial motility on biofilm formation was studied. Simulation results were evaluated both qualitatively through 3D structure inspections and quantitatively by parameter characterizations. It was showed that twitching motility increased the biofilm surface irregularity probably due to movement of cells towards higher nutrient concentration location whereas free motility, on the other hand, could make biofilms flatter and smoother relatively. Pressure motility showed no significant influence in this study.

**Keywords :** iDynoMics, biofilm structure, bacterial motility, motility mechanisms

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