

Do bacterial biofilms have lineage and cell trajectory maps?

Lineage and cell trajectory maps have been made for cells in developing embryos (4,5,15), yet no such maps exist for bacterial biofilms. Many fundamental activities that transcend all of biology are relevant in bacterial biofilms.

Where does trapping occur in wt biofilm cells?

For WT biofilm cells, high levels of trapping occurred in the biofilm core (planar radius $r \leq 18$ mm and height $z \leq 4$ mm), where cells essentially remained fixed in space (Fig. 3A). These cells were trapped at the substrate, moving only minimally over the course of biofilm development (Fig. 3A).

How do biofilm cells expand?

We found that biofilm cells had one of two cell fates: They either became trapped by the substrate to anchor the biofilm, or they moved ballistically to expand the biofilm. We observed an emergent collective fountain-like cell flow that coordinated global biofilm expansion driving its overall morphology.

Do micron-sized bacteria move in biofilms?

Micron-sized bacteria are densely packed within biofilms, making it exceptionally challenging to track their movements. Qin et al. studied biofilm formation in the pathogen and model biofilm former *Vibrio cholerae* (see the Perspective by Dal Co and Brenner).

Is biofilm dispersion equally regulated as its formation?

Nat. Rev. Microbiol. 10,39-50 (2012). This classic work on the reasons for and mechanisms of biofilm dispersal shows that the disassembly of biofilms is as equally regulated as their formation. Rumbaugh, K. P. & Sauer, K. Biofilm dispersion.

Are photosynthetic mats a stratified biofilm?

Photosynthetic mats are well-described flat biofilms where the penetration of sunlight and metabolic activity of the organisms leads to stratified species distribution and microenvironments 141. Suspended biofilm aggregates used for wastewater treatment, such as aerobic granules, are another example of a stratified biofilm.

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This review provides an overview and an updated perspective on staphylococcal biofilms, describing the characteristic features of biofilm formation, the structural and functional ...

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(Li, Ni, Co) from NIBs. Future directions for research are also discussed, along with potential strategies to overcome obstacles in battery safety and sustainable recyclability. Keywords: ...

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