

Population Dynamics Virtual Seminar



Fordyce Davidson
University of Dundee

27.05.22 - 2:30 pm BST - 3:30 pm CEST

The Architecture of Bacterial Biofilms

Biofilms are social communities of microbial cells that underpin diverse processes including sewage bioremediation, plant growth promotion and plant protection, chronic infections and industrial biofouling. They are hallmarked by the production of an extracellular polymeric matrix. One of the phenotypic consequences of biofilm formation is that resident microbes are highly resistant to physical stresses and antimicrobial agents. We will discuss how we have combined theory and experiment to better understand certain fundamental, yet open questions regarding the dynamic organisation of these complex bacterial communities. Much of the talk will comprise movies and pictures, with more questions posed than answers given.

Suggested readings: *Pulcherrimin formation controls growth arrest of the Bacillus subtilis biofilm* - Sofia Arnaouteli, *et al.* - Proceedings of the National Academy of Sciences Jun 2029, 116 (27) <https://doi.org/10.1073/pnas.1903982116>

Wrinkle patterns in active viscoelastic thin sheets - Matoz-Fernandez, *et al.* - Physical Review Research. 2. Feb. 2020 <https://doi.org/10.1103/PhysRevResearch.2.013165>

Founder cell configuration drives competitive outcome within colony biofilms - Eigentler, *et al.* - ISME J 16, 1512–1522 (2022). <https://doi.org/10.1038/s41396-022-01198-8>

A theoretical framework for multi-species range expansion in spatially heterogeneous landscapes - Eigentler, *et al.* - bioRxiv 2021.11.09.467881 <https://doi.org/10.1101/2021.11.09.467881>