

Bacterial mobbing behavior - coordinated communal attack of Pseudomonas aeruginosa on protozoan predators

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Abstract

Mobbing, group attack of prey on predator, is a strategy enacted by many animal species. Here we present bacterial mobbing carried out by the bacterium *Pseudomonas aeruginosa* towards *Acanthamoeba castellanii*, a common bacterivore. This behavior consists of bacterial taxis towards amoebae, adhesion en masse to predator cells, and eventual killing of the amoebae. Mobbing behavior transpires in second's timescale and responds to predator population density. A mutant defective in the production of a specific quorum sensing signal displays reduced adhesion to amoeba cells, a deficiency which is ameliorated by external addition of the missing signal molecule. The same mutant also expresses long term deficiency in its ability to cause amoeba death and suffers higher predation rates, highlighting the importance of group coordination to mobbing and predation avoidance. These findings portray bacterial mobbing as a regulated and dynamic group behavior, which may explain some of *P. aeruginosa* success as an opportunistic pathogen, as mobbing behavior may apply to interaction with phagocytic components of host's immune systems.

Biography:

Nimrod Shteindel is a PhD student at the Gerchman laboratory at the Science department of the University of Haifa at the Oranim college of education, Tivon Israel, studying bacterial predation avoidance and bacterial adhesion behavior. He is the young ambassador of the American Society for Microbiology in Israel, and published one paper so far, describing a method for real time measurement of bacterial adhesion in a high throughput format.



Speaker Publications:

1. Bacterial mobbing behavior: coordinated communal attack of *Pseudomonas aeruginosa* on a protozoan predator Preprint Jun 2020 DOI: 10.1101/2020.06.15.152132
2. A sample protocol of a method for kinetic measurement of bacterial attachment in a simple plate reader setting Method Oct 2018 DOI: 10.13140/RG.2.2.29268.45442 Nimrod Shteindel Yoram Gerchman

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