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## **Dying Escherichia coli cells absorb antimicrobial peptides, enhancing the survivability of the cell culture**

*Thursday, 6 June 2019 13:45 (30 minutes)*

Antimicrobial peptides (AMPs) are broad spectrum antibiotics that utilize electrostatics to selectively attack bacteria. In this talk, I present our discovery of a new class of antibiotic tolerance that Escherichia coli exhibit against human AMPs LL37: the dying bacteria rapidly absorb a large amount of antibiotics helping the remaining cells survive. Like all antibiotics, AMPs need a minimum concentration to inhibit growth of a bacterial culture. But in cultures with high cell density we observed two distinct subpopulations: a non-growing population that absorb peptides and a growing population that survive owing to the sequestration of the AMPs by dead cells. A mathematical model based on this binary picture reproduces various experimental observations, including the increase of the minimum inhibitory concentration with cell density (even in dilute cultures) and the extensive lag in growth introduced by sub-lethal dosages of AMPs.

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