

A winning strategy for multicellular life

January 7 2016



Environmental triggers may have tipped the transition from single- to multi-cellular life, according to new research by SFI REU Emma Wolinsky and Omidyar Fellow Eric Libby.

The current research, published in *Evolutionary Ecology*, simulates three [evolutionary strategies](#) that could have coordinated growth and reproduction across multiple cells of *Pseudomonas fluorescens* bacteria in a changing environment. The best strategy for multicellularity proved to be an epigenetic, external sensing scheme wherein a cell's DNA switches its phenotypic expression in response to cues from the external environment. This external sensing strategy outperformed both an internal sensing strategy based on cell history and a stochastic strategy where gene expression switches randomly.

In the case of *Pseudomonas fluorescens*, bacteria have been experimentally observed to switch between single- and multi-celled forms, creating chemical and physical alterations in their [environment](#) as they do so. "While the experimental system we consider is a limited case," the researchers write, "our framework is plastic enough to analyze other types of interactions."

More information: Emma Wolinsky et al. Evolution of regulated phenotypic expression during a transition to multicellularity, *Evolutionary Ecology* (2015). [DOI: 10.1007/s10682-015-9814-3](https://doi.org/10.1007/s10682-015-9814-3)

Provided by Santa Fe Institute

Citation: A winning strategy for multicellular life (2016, January 7) retrieved 2 May 2024 from <https://phys.org/news/2016-01-strategy-multicellular-life.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.
