

GHOST OF COMMUNITIES PAST: EXTINCT COMMUNITY MEMBER SHAPES EVOLUTIONARY OUTCOMES. C. B. Turner¹ and V. S. Cooper¹, ¹Department of Microbiology and Molecular Genetics, University of Pittsburgh, 450 Technology Dr., Pittsburgh, PA 15219.

When studying a biological community, it is common to try to understand the composition and interactions of the community based on extant organisms. However, the community may have been shaped in important ways by organisms no longer present. We experimentally evolved communities of *Burkholderia cenocepacia* bacteria founded with varying numbers of ecologically distinct clones. The clones represented ecotypes which had co-evolved in a prior evolution experiment selecting for biofilm formation. The three ecotypes, denoted studded (S), ruffled (R), and wrinkly (W) based on their colony morphologies, differ in biofilm formation, planktonic growth and resource use [1].

gene *yciR* which has been shown to underlie the ecological differences between ecotypes [2]. Although the W ecotype went extinct, its transient presence has continued to shape the evolutionary trajectories and ecological composition of these communities.

References:

- [1] Poltak S. R. and Cooper V. S. (2011) *ISME*, 5, 369-378. [2] Traverse C. C. et al. (2013) *PNAS*, 110.3, E250-E259.

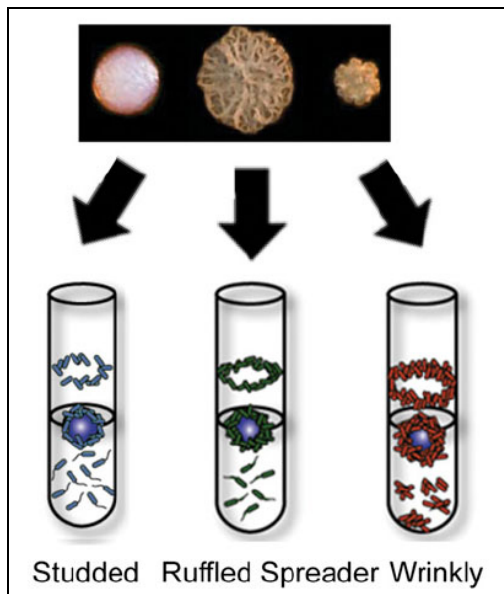


Figure 1: Founding ecotypes of evolution experiment showing growth on agar plates (top) and under evolutionary conditions (bottom) [2].

One of these ecotypes, W, quickly went extinct from the community. Nonetheless, the evolved communities founded with just S and R clones differed from those founded with S, R and W clones. In communities founded from S and R only, R generally diversified into two distinct morphologies whereas S exhibited only one morphology. In contrast, in communities founded from all three ecotypes, two morphotypes evolved from S were present in all replicate communities, together with 1-3 morphotypes evolved from R. The two morphologies which evolved from S differed in the presence of a deletion of the regulatory