

1137-92-112

**Diana Schepens\*** (diana.schepens@montana.edu), Bozeman, MT 59717, and **Ross Carlson, Jeff Heys, Ashley Beck** and **Tomas Gedeon**. *Emergence of Cooperativity in Microbial Consortia*.

Metabolic cross-feeding between microbes is observed in many microbial communities. It has been experimentally observed that cross-feeding synthetic communities have an increased level of fitness and cell growth as compared to wild type cells. There are also numerous examples of cross-feeding communities in nature. We developed a model to analyze the conditions under which cross-feeding emerges in a microbial community. Specifically, we analyze the different behaviors resulting from varying levels of transport efficiency in models which use passive transport of metabolites compared to models that incorporate active transport. We also consider the effect of a non-cooperative cheater strain on emerging cooperative behavior. (Received January 30, 2018)