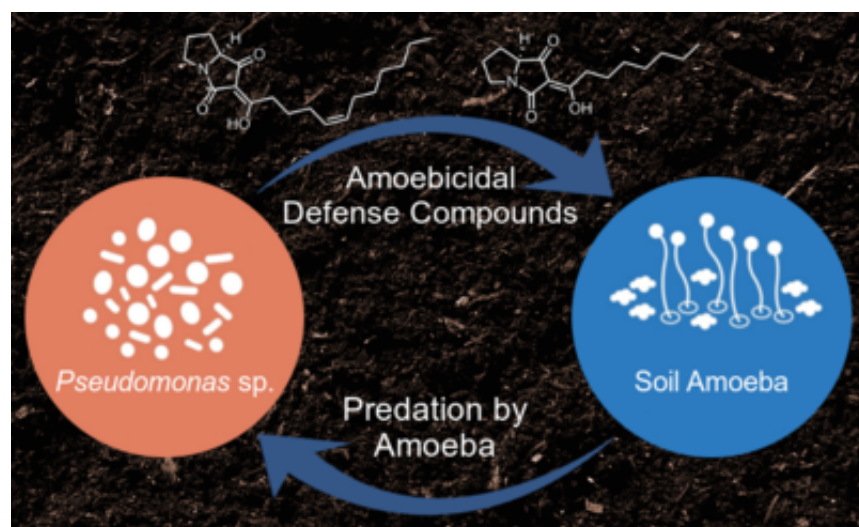


## Amoebae-bacteria interactions



Bacteria are constantly exposed to a multitude of threats: bacteriophages can infect and kill bacteria; amoebae, nematodes, and insects can prey on prokaryotes; and competitor strains fight for the same resources. In order to survive in this battlefield, bacteria have evolved highly effective defense mechanisms. Because killing and deterring the antagonists are powerful ways to thrive in this environment, bacteria display a great diversity of toxins and antibiotics that selectively act on their enemies. Amoebae are voracious and ubiquitous predators to bacteria that cause constant depletion of huge bacterial reservoirs. This puts both organisms under strong evolutionary selection pressure: the bacteria have evolved mechanisms to prevent grazing and the amoebae must counteract or surmount these mechanisms in order to survive.

We focus on the interactions between the eukaryotic soil amoeba *Dictyostelium discoideum* and various soil bacteria. In particular, we are interested in bacterial secondary metabolites that kill the amoebal predator. We use modern spectroscopic techniques as well as chemical synthesis to determine the structures of these compounds. Additionally, we use whole genome sequencing of the producer strain as well as mutational analyses to investigate the biosynthesis and regulation of these metabolites.