Bacteria on the Menu 2.0

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In this project, we aimed to investigate the potential use of phages (bacterial viruses) as a form of biocontrol against bacterial plant pathogens. Our goal was to specifically test the effect of phages on the plant pathogen Rhizobium rhizogenes, the causative agent of hairy root disease, and to demonstrate that phages can be effective against bacteria in living organisms. We discovered the new phage variant Mi-Rila, which specifically targets the plant pathogen Rhizobium rhizogenes, the causative agent of hairy root disease. We isolated Mi-Rila ourselves from compost soil, purified and propagated it, and characterised it under various environmental conditions to test its suitability for biocontrol use. Using electron microscopy methods, we determined its morphology. Mi-Rila belongs to the Podoviridae family and has double-stranded DNA. Characterization confirmed that it can successfully lyse its host under agrobiological conditions. Host range assays confirmed its specificity for the plant pathogen. Genome sequencing verified that Mi-Rila is a novel phage variant. In future experiments, we plan to infect dicotyledonous plants with bacteria in order to demonstrate the preventive effect of our phage in a plant model.

Awards Won:
Fourth Award of $600