

XANTHOMONAS CITRI SUBS. CITRI, CAUSAL AGENT OF CITRUS CANKER: MOLECULAR EPIDEMIOLOGY AND ASSESSMENT OF LYTIC BACTERIOPHAGE AS BIOCONTROL AGENTS

Asiatic Citrus Canker (ACC) is a serious, untreatable infection of citrus trees that threatens sweet orange production in the state of Sao Paulo – a key industry economically. ACC is caused by the bacterium *Xanthomonas citri* subsp. *citri*. Infection with this organism necessitates removal and destruction of infected trees and prevention measures typically rely on the use of spraying with environmentally harmful copper bactericides. In this project we will examine the current genetic diversity of *X. citri* from infected plants in Sao Paulo using whole genome sequencing. This will allow us to study how the pathogen is spreading in an endemic situation - after the changes in legislation allowing the presence of the bacterium in the orchards. This information will give us important knowledge regarding its population biology. In this project, we will also isolate and characterize *X. citri* specific viruses (known as bacteriophage). Bacteriophages are proposed as an alternative to antibiotics in human health and they are currently used in the food industry eg for controlling *Listeria* contamination in cheese production. They are also used in the control of bacterial infections in tomato and pepper crops in the United States. We will isolate and characterize a large collection of bacteriophage from infected plant material to assess their suitability for use in biocontrol of ACC. This initial pump-priming proposal will be developed in years two and three to include in vitro infection studies in greenhouse using bacteriophages as treatments or protective agents. We will also investigate bacteriophage host-binding structures as possible species-specific ligands for delivery of antimicrobial.

PRINCIPAL INVESTIGATORS

HENRIQUE FERREIRA

Rio Claro Institute of Biosciences / State University of São Paulo (UNESP)

MARK CHARLES ENRIGHT

Manchester Metropolitan University

ABOUT THE PROJECT

FAPESP Process 2017/50454-9

Term: Jul 2018 to Jun 2019

Regular Research Grant

UKRI – BBSRC (Newton Fund)

CONTACT

✉ henfer@rc.unesp.br