

II. Abstract

Fire blight is the most economically important bacterial disease in apples and pears worldwide. Fire blight is caused by the bacterium *Erwinia amylovora*. The objective of my research is to find and study novel genes required for *E. amylovora* to cause disease. While some of the *E. amylovora* genes involved in the disease process have been identified, new genes continue to be discovered. My research has identified three new genes required for *E. amylovora* to cause disease: *rpoN*, *argD* and *yrjF*. The *rpoN* gene encodes a transcription factor that controls the expression of various pathogenic genes, and my results about this gene have been published. My results with *argD* demonstrate its potential as an antibiotic target and biotechnological research tool. I want to test if the *E. amylovora yrjF* gene has the same functions as its homologous gene in the human pathogen *Salmonella enterica*. The homologous gene in *S. enterica* (*igaA*) is involved in attachment, biofilm production and other processes directly related to disease development. I am requesting support in order to finish my experiments and publish my work with the *argD* gene, as well as continue studying and characterizing the *yrjF* gene function in fire blight disease.