Vita

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Universities Attended:

University of New Brunswick (2020)
Bachelors of Science

University of New Brunswick (2023)
Masters of Science
Biology

Identifying Type III Secretion System Effectors and Interacting Proteins in Plant Growth-Promoting *Pseudomonas syringae* GR12-2

UNIVERSITY OF NEW BRUNSWICK

THESIS DEFENCE AND EXAMINATION

in Partial Fulfillment

of the Requirement for the Degree of
Master of Science

by

Emma M. Lewis

in the Department of Biology

U.N.B., Fredericton, N.B.

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1:00 p.m.

Via MS TEAMs

Examining Committee

Dr. Cheryl Patten	Supervisor
Dr. Tim Erickson	Internal Examiner
Dr. Yang Qu	External Examiner
Dr. Mike Duffy	Chair of Oral Examination

Abstract

The type III secretion system (T3SS) secretes effector proteins that contribute to the virulence of *Pseudomonas syringae* pathovars. The plant growth-promoting strain *P. syringae* GR12-2 possesses a Rhizobiales-type T3SS of unknown function, although previous research showed that it is not required for plant interactions. This research aimed to determine the function of the *P. syringae* GR12-2 T3SS by identifying secreted effectors. Mass spectrometry identified several alginate biosynthesis proteins and a predicted T3SS chaperone exclusively in the extracellular medium of the wild-type but not T3SS mutant strains. Affinity purification of proteins that interacted with the predicted T3SS chaperone included several that function in cell wall synthesis and remodelling. Confirmation of the candidate effectors' interaction with or secretion by the T3SS will provide insight into potentially novel functions of the T3SS in *P. syringae* GR12-2.