

## Vita

Candidate's name: Kaitlyn Lillith Blatt-Janmaat

Universities  
Attended: Saint Mary's University (2019)  
Bachelor of Science

University of New Brunswick (2022)  
Masters of Science

### Publications/Conference Presentations:

The Biochemistry of Phytocannabinoids and Metabolic Engineering of Their Production in Heterologous Systems Blatt-Janmaat K, Qu Y. *Int J Mol Sci.* 2021 Feb 28;22(5):2454.

Does size matter? An investigation into the impact of coarse and fine ground inoculated biochar on *Hordeum vulgare* (barley) growth and yield. Blatt-Janmaat, K.L., MacQuarrie, S.M., and Sit, C.S. *Rhizosphere.* 2020, 13, 100184

Plants, microbes, and air quality: an investigation into the efficacy of a living wall at VOC removal, Maritime Natural Products Conference & Saint Mary's University Student Research Day

Impact of targeted soil inoculation on the germination rate, vegetative growth, and secondary metabolites of *Hordeum vulgare* (barley), *Tagetes sp.* (marigolds), *Glycine max* (soybeans), and *Vitis vinifera* (wine grapes) 101<sup>st</sup> Canadian Chemistry Conference and Exhibition

Porous, pyrogenic material as a vector for targeted, beneficial delivery of microbes to the rhizosphere, Maritime Natural Products Conference

## A Metabolomic Investigation of *Radula complanata*

UNIVERSITY OF NEW BRUNSWICK  
THESIS DEFENCE AND EXAMINATION  
in Partial Fulfillment  
of the Requirement for the Degree of  
Master of Science

by

**Kaitlyn L. Blatt-Janmaat**

in the Department of Chemistry  
U.N.B., Fredericton, N.B.

**Tuesday, April 12<sup>th</sup>, 2022  
9:00 a.m.**

Via MS TEAMS

Examining Committee

Dr. Yang Qu	Supervisor
Dr. Ghislain Deslongchamps	Internal Examiner
Dr. Kristian Peters	Int-Ext Examiner
Dr. Gilles Villemure	Chair of Oral Examination

UNNB

## Abstract

Bibenzyls are a medicinally interesting class of specialized metabolites that are found throughout the plant kingdom. Liverworts (Phylum Marchantiophyta) are one of the most prolific producers of bibenzyls, specifically plants of the *Radula* genera, however the *in planta* function and biosynthesis of these metabolites has been largely unexplored. To investigate the role of these metabolites *in planta*, six prenylated bibenzyls were isolated from *Radula complanata* and their response to various phytohormones was investigated. The whole metabolic response was also explored through untargeted metabolomics to investigate larger metabolic shifts that were occurring. Unfortunately, due to the small size and slow growing nature of liverworts, harvesting these natural products directly

from the plant is not feasible or sustainable. To address this, transcriptome mining was conducted to identify candidate genes involved in the biosynthetic pathway that could be expressed in heterologous systems for *in vitro* bibenzyl production.