



Global Impact Initiative
MICHIGAN STATE UNIVERSITY

*MSU Plant Resilience Institute
Faculty Candidate*



Monday, April 17, 2017

2:00-4:00PM

Room 247 Plant Biology Building

Dr. Justin Whitehill

The University of British Columbia

“Improving Tree Resistance Against Forest Pests: Ecology to Forest Health Genomics”

Research

My research explores the intricacies of plant-pest (insect/pathogen) interactions in the context of forest health genomics. The specialized interactions between plants and pests offer novel opportunities to explore defense mechanisms and identify unique traits (physical/chemical) such as underlying genes, biochemical pathways, proteins, and phytochemicals involved in plant defense. Broadly, I have a specific interest in exploring plant responses to biotic stresses such as pathogens and insects. My research will focus on genomics of plant resilience and the use of gene editing to improve plant resilience. I plan to accomplish this through an integration of extensive experimental understanding of natural tree resistance mechanisms combined with advanced genomic techniques including transgenic, RNAi, and CRISPR/Cas9 technologies to identify and utilize key resistance genes. At Michigan State University, my research program will focus on three major objectives to adapt resistance traits to benefit the forest sector:

1. Identify natural resistance against major forest pests (endemic/invasive) in tree species;
2. Dissect plant defense mechanisms through a multi-pronged approach that integrates molecular, biochemical, microscopic, and ecological approaches with cutting-edge genomics technologies to isolate the underlying genetic basis for resistance traits against major forest pests;
3. Develop easy-to-use genomic tools for use in tree breeding programs to rapidly select genetically resistant plants and/or generate pest resistant genotypes.

2:00 p.m. *Seminar*

3:15-4:00 p.m. *Future Directions*

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