



Presenter: Dinh Hieu Pham

Session & Time: Science I / 4:30 to 6:30pm

Room: Science Building

Discipline: Biological Sciences

Faculty Mentor: Wolfgang Schweigkofler

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Title: Physiological Activity and Pathogenicity of *Phytophthora elongata* and *P. ramorum*, two invasive plant pathogens in California

Abstract:

Phytophthora is a genus of plant pathogen that threatens nurseries and ecosystems, leading to economic costs for disease prevention and management. Among them, *Phytophthora ramorum* has been studied in the U.S. as the cause of Sudden Oak Death with over 100 host plants. In contrast, *Phytophthora elongata* is known for causing root and collar rot on Eucalyptus in Western Australia, which led to ecosystem damage. At our NORS-DUC, *P. elongata* has recently been detected on *Rhododendron* by Dr. Tomas Pastalka, raising concerns about its potential spread and impact in California. However, the biology, pathogenicity, and ecological risk of *P. elongata* in North America are less well understood. Thus, further research is necessary to confirm the presence of this pathogen and its competition with *P. ramorum* in California. I aim to i) confirm the pathogenicity of *P. elongata* on *Rhododendron* through immunological test and DNA identification, ii) compare its physiological traits with *P. ramorum* using Biolog

EcoPlate™, and iii) monitor their growth at various temperatures and on different media to determine their optimum conditions. Preliminary results confirmed the presence of *P. elongata* on symptomatic Rhododendron leaves. Physiological analysis revealed that *P. elongata* rapidly metabolizes carbohydrates and amino acids in the early stages, with polymers in later days, while *P. ramorum* prioritizes amino acid metabolism. Understanding *P. elongata*'s biology and comparing it to *P. ramorum* will improve future disease management to reduce its impact in California's nursery and forest ecosystems.