

Graduate Research Assistantships

NSF-funded project: "Genomic Approaches to Identify Insect Resistance Genes in Poplar Trees"

Applications are invited for graduate student positions (Ph.D. or M.Sc. level) to study plant-insect interactions in the laboratory of Dr. Steven Ralph (www.und.edu/dept/biology/ralph/ralph.htm) at the University of North Dakota (UND). Two Graduate Research Assistantships are **available immediately** to investigate the molecular basis for resistance to insect pests in poplar trees using a forward genetics strategy. This project is funded by a new three year grant from the National Science Foundation. One of the most successful approaches to identify genes responsible for variation in a trait of interest is to produce mutants that are then screened for alterations in such traits. Our previous research identified several dozen activation tagged mutant poplar lines that are resistant to feeding by defoliating insect larvae. In this project, the modified gene in these insect resistant (IR) lines will be identified and functionally characterized. The roles these genes play in mediating IR will be systematically examined in poplar through both gene knock-down and over-expression studies. Furthermore, mutant plants will be subject to thorough phenotypic characterization that includes evaluation of global changes in gene expression and measurement of insect feeding performance and larval development. It is expected that these studies will provide new insight into the genes and pathways that enhance resistance to feeding insects. Identification of specific IR genes will facilitate breeding of improved tree varieties in the future. The successful candidate will receive training in plant tissue culture, plant transformation, insect feeding/development bioassays, gene cloning and heterologous expression, bioinformatics, microarrays, and real-time PCR among other techniques. This project involves collaboration with researchers at North Dakota State University and the University of Florida and will require periodic travel to both institutions.

Qualifications:

Successful candidates should have a strong interest in research areas such as ecological and functional genomics, forest tree biology, plant-insect interactions, biochemistry and molecular biology. Candidates should possess good written and verbal English skills, be capable of working independently, and have demonstrated the ability to work as part of an interactive group. Successful candidates will be invited to submit a formal application for admission to the graduate program at UND (deadline October 15th, 2009 ; www.und.edu/dept/biology/biology_graduate_program.htm).

Stipend:

Graduate Research Assistantships are available at a rate of \$17,000 (M.Sc.) or \$20,000 (Ph.D.) per year and includes medical health insurance and a full tuition waiver.

How to apply:

Please supply a cover letter stating your interests, a CV describing your education and skills, undergraduate transcripts (unofficial is acceptable), and contact information for three referees. Send applications to Dr. Steven G. Ralph, Assistant Professor, Dept. of Biology, University of North Dakota, Grand Forks, North Dakota, 58202-9019, email steven.ralph@und.nodak.edu, phone: 701-777-4673.

