

## Graduate Student Opportunities Available

### *Ecological Genomics, Forest Tree Biology and Plant-Insect Interactions*

Applications are invited for two 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](http://www.und.edu/dept/biology/ralph/ralph.htm)) at the University of North Dakota, beginning as early as May 2008. The overarching research theme is to advance our understanding of plant-insect interactions through genomics research. Poplar is our preferred model for studying the response to insect herbivory in long-lived woody perennials because of its ecological importance, suitability for experimental manipulation, and availability of genomics tools. Research projects consist of laboratory, greenhouse and field work. Students will receive training on advanced analytical instrumentation in a newly renovated lab.

#### **Potential research projects include:**

1. Functional characterization of candidate plant defense genes (e.g., signaling and transcriptional regulation) using tissue culture and RNA interference gene knockdown, followed by biochemical and genomic analysis of genetically modified plants.
2. Screening of activation tagged (i.e., random insertion of enhancers to activate gene expression) poplar trees for gain-of-function resistance to insect herbivory, followed by functional characterization of identified candidate genes.
3. Correlate phenotypic variation in resistance to feeding insects in natural or breeding populations of poplar with genotypic variation (e.g., SNPs) and gene expression patterns (e.g., microarray and qPCR) to elucidate the genetic basis for adaptation to insect herbivory.

#### **Qualifications:**

The successful candidates should have a strong interest in several of the following research areas: ecological genomics, functional genomics, forest tree biology, plant-insect interactions, biochemistry, quantitative genetics, and/or molecular biology. The successful applicant must meet the criteria for admission into the graduate program ([www.und.edu/dept/biology/biology\\_graduate\\_program.htm](http://www.und.edu/dept/biology/biology_graduate_program.htm)), with an application deadline of February 15th, 2008.

#### **Stipend:**

Funding in the form of a Graduate Teaching Assistantship or Graduate Research Assistantship is 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, 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, e-mail [steven.ralph@und.nodak.edu](mailto:steven.ralph@und.nodak.edu), phone: 701-777-4673.

