Undergraduate Summer Research Internships

Department of Botany and Plant Pathology, Purdue University

2008 Application Form

Please PRINT all information

Name:

E-Mail:

Current University Mailing Address:

Home Mailing Address:

Day Phone: ( ) Evening Phone: ( )

Undergraduate School/Department:

Major: G.P.A.:

Academic Advisor: Phone: ( )

Please provide the following on separate pages:

1. List all undergraduate science and math courses taken and grades received.
2. Describe any research experience or skills you have acquired from courses or work experience.
3. Include a statement describing your personal career goals and objectives.

In addition, two letters of recommendation are required. Please have your references mail their letters directly to the address below.

Application Deadline: January 15, 2008

Return application and supporting documents to:

Dr. Peter Goldsbrough, Department Head
Department of Botany and Plant Pathology
Purdue University
915 W. State Street
West Lafayette, IN 47907-2054

Phone: (765) 494-4614
E-mail: goldsbrough@purdue.edu

Applicants will be notified of their acceptance on or before February 1, 2008.

Research Projects

Indicate your 1st, 2nd, and 3rd choice of projects from the list below. Every effort will be made to honor your first choice.

	How does plant sperm find the egg? - *Jody Banks*
	Resistance is futile – *Janna Beckerman* Understanding apple scab, fungicide resistance, and resistance breakdown in the fungal pathogen, *Venturia inaequalis*.
	Functional genomics of the maize cell wall - *Nick Carpita* Step 1 in the improvement of bioenergy crops.
	Mechanisms of plant gene expression –*Zhixiang Chen* This project involves studies of a group of pathogen-induced plant DNA-binding transcription factors in the regulation of plant defense gene expression and activation of plant disease resistance mechanisms.
	Ecology of plant invasions – *Steve Hallett* We hypothesize that introduced plant species become invasive as a result of escape from coevolved relationships. Invasive plants may be more fit as a result of escape from specialized pathogens and pests during geographic displacement [Enemy Release Hypothesis]. Plant adaptations for competition (e.g. toxic allelochemicals released from the roots) may be particularly potent against new competitors in North America since these new competitors have not had the opportunity to coevolve counter-strategies to compete with them [Novel Weapons Hypothesis]. We will test the Enemy Release Hypothesis and the Novel Weapons Hypothesis by comparing the relationships between the biennial plant garlic mustard (*Alliraria petiolata*), a European invader of North America, and its associated soil biota from North America and Europe.
	The wonderful world of weeds – *Bill Johnson* The estimated average monetary loss caused by weeds in field crops grown in the U.S. is over 4 billion dollars each year. Weed management expenses are one of the largest variable costs incurred by growers annually. Weeds growing on cropland are like crop plants themselves, drawing upon the soil and air for essential elements. Production of food and energy for humans and livestock and the economic well being of U.S. citizens depends heavily on effective, integrated management of weeds.
	Mechanisms of plant disease resistance - *Tesfaye Mengiste* By applying molecular and genetic tools we seek to understand plant innate mechanisms that fight microbial infection and how these resistance mechanisms can be utilized for crop improvement.
	Safeguard bread and beer by understanding DON and head blight – *Jin-Rong Xu* Wheat and barley head blight is the most important plant disease to US agriculture. In addition to yield loss, infested grains are often contaminated with a secondary metabolite known as deoxynivalenol (DON) that is toxic to human and animals and regulated by US and other governments. Our research aims to identify fungal regulatory genes and plant factors that control DON production and influence disease development.
	Heavy Metal Plants – *Peter Goldsbrough* Plants need a number of metals for growth, but these metals can be toxic if they are not handled properly within plant cells. We study a family of proteins that bind metals, especially copper and zinc. Our hypothesis is that these metal-binding proteins affect the accumulation and distribution of metals in various organs, including roots and seeds. We are using plants that lack these proteins, or have been genetically engineered to produce more of these proteins, to test this hypothesis.