

**PLANT PATHOGENESIS**  
**16:765:538 (3 credits)**  
**Spring Semester 2011**  
**Foran Hall Room 138B, Tuesdays and Fridays 3:55-5:15pm**

**INSTRUCTORS:**

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**TOPICS:** Plant Pathogenesis is intended to expose students to the fundamental aspects of fungal, bacterial and viral pathogenesis and interactions that occur between pathogens and the host plant at the genetic and biochemical levels. The course is designed to provide the students with basic information about plant pathogen interactions, review key papers and recent developments in the field to expose them to novel discoveries and the state-of-the-art methods used to study plant-pathogen interactions. This course is designed to teach students how to write and critically evaluate research papers. In addition, each student will write a grant proposal, which will be evaluated by a panel that will consist of the students in the class. The topics that will be covered include the following:

- Programmed cell death and host defense response
- Viral pathogenesis/post-transcriptional gene silencing
- Viral suppressors of gene silencing
- RNA interference/micro RNAs
- Bacterial effectors/immunity/MAMPs
- Bacterial resistance mechanisms
- Fungal effectors/immunity
- Mycotoxins
- Fungal resistance mechanisms
- Systemic acquired resistance
- Endoplasmic reticulum stress and its related signaling in plant-pathogen interactions
- Functional genomics of plant-pathogen interactions
- Chemical genomic approaches
- Functional genomics in defense

There is no assigned text for the course but supplemental reading materials, which consist of review articles and key papers published in the field. Lectures will be presented at the beginning of each topic and will be followed by assigned papers presented by students.

Students will be required to read the assigned papers in advance and bring a written question about each manuscript to class. They will be evaluated based on their class presentations, their participation in the discussion and the grant proposal they will write about one of the topics discussed in class.

## PLANT PATHOGENESIS (16:765:538) Spring 2011

- Jan 18: Introduction / Class organization (Tumer)
- Jan 21: Functional genomics in plant defense lecture (Watanabe)
- Jan 25: Programmed cell death and ER stress lecture (Watanabe)
- Jan 28: Functional genomics in plant defense manuscript review (Lam)
- Feb 1: Programmed cell death and ER stress manuscript review (Lam)
- Feb 4: Microbiology symposium
- Feb 8: Programmed cell death and ER stress manuscript review (Lam)
- Feb 11: Chemical genomic approaches/activation tagging lecture (McLaughlin)
- Feb 15: Chemical genomic approaches/activation tagging manuscript review (McLaughlin)
- Feb 18: Chemical genomic approaches/activation tagging manuscript review (McLaughlin)
- Feb 22: Resistance genes/elicitors/effectors lecture (Lam)
- Feb 25: Resistance genes/elicitors/effectors manuscript review (Lam)
- March 1: Resistance genes/elicitors/effectors manuscript review (Lam)
- March 4: SAR, MAMP and PAMP-Host Immunity lecture (Lam)
- March 8: SAR, MAMP and PAMP-Host Immunity Host immunity manuscript review (Lam)
- March 11: Proposal review format- Proposals are due
- March 15: Spring break
- March 18: Spring break
- March 22: Proposal review panel
- March 25: Proposal review panel

- March 29: Host/Fungus interactions/Mycotoxins/ribotoxic stress lecture (Tumer)**
- April 1: Host/ Fungus interactions/Mycotoxins/ribotoxic stress manuscript Review (Tumer)**
- April 5: Fungal systematics and pathogenesis lecture (Ning Zhang)**
- April 8: Fungal systematics and pathogenesis paper review (Ning Zhang)**
- April 12: Virus/host interactions/translation lecture (Tumer)**
- April 15: Virus/host interactions/translation manuscript review (Tumer)**
- April 19: Post-transcriptional gene silencing/viral suppressors lecture (Tumer)**
- April 22: Viral suppressors of gene silencing manuscript review (Tumer)**
- April 26: Proposal review panel**
- April 29: Proposal Review panel**