



Course title and number Defense Hormone Signaling
Term Fall, 2018
Meeting times and location Monday/W 10:20-11:35, 308 L.F. Peterson Bldg
First class will be on November 1st, 2018

Course Description and Prerequisites

This course is designed to provide graduate students with most critical review of the most current literature on molecular and biochemical mechanisms of plant hormone-mediated defense responses to pathogen invasion; overview of major classes of defense-related proteins, phytoalexins and antibacterial secondary metabolites and signal-transduction pathways such as those mediated by reactive oxygen species (ROS), salicylic acid (SA), nitric oxide (NO), ethylene- and lipid-derived compounds such as jasmonic acid (JA).

A general knowledge of plant pathology, genetics, biochemistry and molecular biology is advised.

Learning Outcomes or Course Objectives

- Gain knowledge of pathogen induced biosynthesis of major defense hormones and signal transduction pathways regulated by specific hormones.
- Comprehend the concept and complexity and the cross-talk between defense hormones and the hormones involved in growth and development.
- Comprehend the experimental approaches necessary for molecular plant-microbe interaction research.
- Develop comprehensive view of current status of our knowledge of signaling events downstream of pathogen perception.
- Develop a better understanding of the process of scientific inquiry.

Class Organization

The class meets on Tuesdays and Thursdays from 9:35 until 10:50 AM. The course is composed of lectures and student discussions. The field of molecular and biochemical responses of plants to pathogens is very large and diverse and, furthermore, is very rapidly-changing. We will be learning these exciting new developments together as we discuss in a journal club-like format the most recent and breakthrough-caliber research papers. This is why, active discussion and participation of every student in class is highly encouraged and expected. Every topic covered in the class, will be preceded by an introduction lecture followed by a student presentation and discussions.

Class participation

Attendance is required for both the lectures/student presentations and discussions and for the laboratory exercise. In case of planned absences (such as participation in conferences and meetings), you have to notify the instructor ahead of the scheduled class session.

Instructor Information

Name Mike Kolomiets
Telephone number 979-548-4624
Email address kolomiets@tamu.edu
Office hours By appointment only
Office location Rm 308, Peterson bldg..

Textbook and/or Resource Material

The course will be based on the recent literature and there are no designated textbooks required. The instructor will correspond with students by email.

Grading Policies

Grading Policy	Exam 1 (Comprehensive close-book exam)	90%
	Class Participation	10%
	Total	100%
Grade Scale	90-100%	A
	80-89%	B
	70-79%	C
	60-69%	D
	59 and below	F

Course Topics, Calendar of Activities, Major Assignment Dates

Class Schedule:

(Note: Detailed subject of each lecture is subjected to update with the most recent advance in host-microbe interaction research)

- Week 11: **Class 1** Introduction: Overview of host biochemical defense
- Class 2** Salicylic acid biosynthesis and signal transduction
- Week 12: **Class 3** Reactive oxygen species and nitric oxide synthesis and signaling
- Class 4** Lipid-mediated signaling
- Week 13: **Class 5** Jasmonic acid biosynthesis and signal transduction
- Class 6.** Ethylene biosynthesis and signal transduction
- Week 14: **Class 7** The growth hormones and their new roles in defense or pathogenicity: auxin, cytokinins, and gibberellic acid
- Class 8** Cross-talk of defense hormones
- Week 15: **Class 9 Final Exam**

Other Pertinent Course Information

Attendance and Participation: See: <http://student-rules.tamu.edu/rule07>. It is expected that students be prepared for class and participate in the group discussion.

Make-Up Policy If an absence is excused, the instructor will either provide the student an opportunity to make up work that contributes to the final grade or provide a satisfactory alternative by a date agreed upon by the student and instructor.

Academic Integrity Statement

Aggie Honor Code "An Aggie does not lie, cheat, or steal or tolerate those who do." Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the Texas A&M University community from the requirements or the processes of the Honor System. For additional information, please visit: <https://aggiehonor.tamu.edu/>.

Plagiarism: <https://aggiehonor.tamu.edu/Rules-and-Procedures/Rules/Honor-System-Rules> Plagiarism is defined as theft or inadequate citation of other work, including (but not limited to) primary and secondary literature and internet sources. Plagiarism will result in a grade of 'zero' for the assignment AND a deduction of the equivalent amount of points from your grade. For example, if plagiarism is discovered on an assignment worth 10 points, the assignment will be given -10 points as its score. Infractions will be reported to the Honor Code Office.

Disability Services

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit <http://disability.tamu.edu>.