PPA 673: Advanced Plant Disease Resistance
Semesters taught: Every fall.
Credit hours: 1
Prerequisites: PPA 400G, PPA 500, PPA 600
Requirement: Option to fulfill the requirement for two courses in Advanced Plant Pathology
Organizer and Instructor: Pradeep Kachroo
Major Teaching Objectives: Give student an in-depth understanding of the interaction between host and pathogen. Emphasis is on the host defense signaling.
Readings: At least 1 week before each lecture, students will be assigned one review paper and one recent research paper for that lecture.
Lecture formats: Each lecture will begin with a brief overview of the topic, and will conclude with a 15-20 minute critical discussion of the research paper. Students will be assigned to lead the discussions of research papers.
Topics:
Lecture 1 Genetic analysis of plant disease interactions
Gene for Gene interaction
Lecture 2 Mapping, map based cloning of genes,
Lecture 3 R gene structure and function
Lecture 4 Hypersensitive response, Lesion mimics
Lecture 5 Downstream signaling, signal transduction
Lecture 6 Signaling and disease resistance
Lecture 6 SA and disease resistance
Lecture 7 JA/ethylene and disease resistance
Lecture 8 Midterm exam
Lecture 9 FA signaling and disease resistance
Lecture 10 NO and disease resistance
Lecture 11 Cross talk and comparison of R signaling pathways against virus, bacterial, oomycete and fungal pathogens
Lecture 12 Virus-induced gene silencing
Lecture 13 Virus-induced gene silencing
Lecture 14 Resistance via tolerance
Assignments, Exams and Grades:
Participation: 40 pts
Midterm exam: 30 pts
Final exam: 30 pts
Grades: 90-100%, A; 80-89%, B; 70-79%, C; <70%, D