

Syllabus for PLP 6303 Host-Parasite Interactions II (3 Credits)

Instructor: Dr. Wen-Yuan Song

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Office hours: Tuesday 9:30 – 11:00 a.m. or by appointment

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Spring, 2026

Video Conferencing: Zoom' link to join from PC, Mac, Linux, iOS, or Android:
<https://ufl.zoom.us/j/91698478235?pwd=9iOcNhKDp8pGk0AOrGl9Zr20YRPuiE.1>
(**Passcode:** 224979). Please use the link above if you virtually participate in the class from an off-campus site.

A. Course Description

Course objectives: *Host-Parasite Interactions II* focuses on molecular mechanisms underlying the plant immune system and its control. Emphasis will be placed on molecular characterization of disease resistance genes, fitness costs of resistance, and effector- and Pathogen-Associated Molecular Pattern (PAMP)-triggered immunity. Systemic Acquired Resistance (SAR) will also be presented. Strategies used in transgenic plants for disease control will be discussed. There will be two lectures and a discussion every week.

Course goals: Upon completion of this course, students should be able to:

1. Describe the fundamental concepts of plant immunity.
2. Explain the experimental methods used to study plant disease resistance at the molecular level.
3. Summarize literature and assess scientific reports in the field of plant immunity.

B. Time and Location

2564 Fifield Hall

Lecture: Monday and Wednesday 10:40 am – 11:30 am

Discussion: Friday 10:40 am – 11:30 am

C. Textbook and Readings

There will be no formal textbook for this course.

Key reading lists

1. Jones JDG, Staskawicz BJ, Dangl JL. (2024). The plant immune system: From discovery to deployment. *Cell* 187(9):2095-2116. doi: 10.1016/j.cell.2024.03.045.
2. Spoel SH, Dong X (2024). Salicylic acid in plant immunity and beyond. *Plant Cell* 36(5):1451-1464. doi: 10.1093/plcell/koad329.

Handouts with more suggested readings will be available on the class Canvas site two days prior to the start of each class.

D. Assignment and Grading

Grades will be determined based on the number of total points obtained from the following:

Review paper:	116 points
Discussion:	200 points
Mid-term exam:	300 points
Final exam:	300 points
Class participation:	84 points

Grading Scale

Total points possible: 1000
A = 900-1000 (90-100%)
B = 800-899 (80-89.9%)
C = 700-799 (70-79.9%)
D = 600-699 (60-69.9%)
E = less than 600 (<60%)

Make-up Exams: Make-up exams will be given to those who have a good excuse in accordance to the University attendance policy. Students are expected to provide excuses ahead of the exams.

Students are expected to complete a review paper (2-page maximum) on a given topic individually and lead the discussion of original research articles (see below). The discussion may be conducted individually or in groups of 2-3 students (highly encouraged).

Discussions are evaluated based on the following criteria:

- Content knowledge
- Presentation delivery
- Slide structure and organization
- Active participation in other discussions

Class participation: Students begin with full points in class participation. Two points will be deducted for each lecture, discussion, or review missed without prior notification.

E. Feedback:

After the mid-term exam, Dr. Song will meet with each student to discuss the result of the exam within one week. This is also an opportunity for students to share their feedback with Dr. Song about the course.

F. Prerequisites:

Host Parasite Interaction I (PLP 6502) or Plant Molecular Biology (PCB 6528) or Introduction to Biochemistry and Molecular Biology (BCH4024) or Molecular Genetics (PCB4522) or their equivalents at other universities or consent of the instructor.

G. Topic outline and course activities (Spring, 2026)

Date	Format	Presenter	Topic	Discussion
Jan. 5	Lecture	Dr. Song	Introduction	
Jan. 7	Lecture	Dr. Song	Map-based cloning of disease resistance (<i>R</i>) genes	
Jan. 9	Discussion		Preparation	N/A
Jan. 12	Lecture	Dr. Song	Plant <i>R</i> proteins	
Jan. 14	Lecture	Dr. Song	Fitness costs of <i>R</i> genes	
Jan. 16	Discussion	Student (TBD)	Isolation of the tomato <i>Cf-9</i> gene for resistance to <i>Cladosporium fulvum</i> by transposon tagging	Jones et al., Science 266: 789
Jan. 21	Lecture	Dr. Song	Mitigation of <i>R</i> gene costs	
Jan. 23	Discussion	Student (TBD)	Epigenetic regulation of antagonistic receptors confers rice blast resistance with yield balance	Deng et al., Science 355: 962
Jan. 26	Lecture	Dr. Song	Tools for the detection of <i>R</i> protein partners	
Jan. 28	Lecture	Dr. Song	<i>R</i> protein partners	
Jan. 30	Discussion	Student (TBD)	Rhomboid-mediated cleavage of the immune receptor XA21 protects grain set and male fertility in rice	Vergish et al., 122: e2502025122
Feb. 2	Lecture	Dr. Song	Ubiquitin-mediated protein modification	
Feb. 4	Lecture	Dr. Song	Genetic screenings of defense mediators I	
Feb. 6	Discussion	Student (TBD)	A bacterial E3 ubiquitin ligase targets a host protein kinase to disrupt plant immunity	Rosebrock et al., Nature 448: 370
Feb. 9	Lecture	Dr. Song	Genetic screenings of defense mediators II	
Feb. 11	Lecture	Dr. Song	Molecular basis of gene-for-gene interactions	
Feb. 13	Discussion	Student (TBD)	Evolution of the rice <i>Xa21</i> disease resistance gene family	Song et al., Plant Cell 9: 1279
Feb. 16	Review	Dr. Song		
Feb. 18	Mid-term exam			
Feb. 20	Discussion	Student (TBD)	Cleavage of Arabidopsis PBS1 by a bacterial Type III effector	Shao et al, Science 301: 1230
Feb. 23	Lecture	Dr. Song	Alteration of host cell transcriptome: resistance or susceptibility	
Feb. 25	Lecture	Dr. Song	Pathogen-associated molecular patterns (PAMPs)	
Feb. 27	Discussion	Student (TBD)	<i>Os8N3</i> is a host disease-susceptibility gene for bacterial blight of rice	Yang et al., PNAS 103: 10503
Mar. 2	Lecture	Dr. Song	PAMP-triggered immunity I	

Mar. 4	Lecture	Dr. Song	PAMP-triggered immunity II	
Mar. 6	Discussion	Student (TBD)	Perception of the bacterial PAMP EF-Tu by the receptor EFR restricts Agrobacterium-mediated transformation	Zipfel et al., Cell 125: 749
Mar. 9	Lecture	Dr. Song	PAMP-triggered immunity III	
Mar. 11	Lecture	Dr. Song	Innate immunity in plants and animals I	
Mar. 13	Discussion	Student (TBD)	Interfamily transfer of a plant pattern-recognition receptor confers broad-spectrum bacterial resistance	Lacombe et al., Nature Biotechnology 28: 365
Mar. 23	Lecture	Dr. Song	Suppression of PAMP-triggered immunity	
Mar. 25	Lecture	Dr. Song	Damage-associated molecular patterns	
Mar. 27	Discussion	Student (TBD)	Plant immunity triggered by engineered in vivo release of oligogalacturonides, damage-associated molecular patterns	Benedetti et al., PNAS 112: 5533
Mar. 30	Lecture	Dr. Song	Systemic acquired resistance I	
Apr. 1	Lecture	Dr. Song	Systemic acquired resistance II	
Apr. 3	Discussion	Student (TBD)	Opposite roles of salicylic acid receptors NPR1 and NPR3/NPR4 in transcriptional regulation of plant immunity	Ding et al., Cell 173: 1454
Apr. 6	Lecture	Dr. Song	Systemic acquired resistance III	
Apr. 8	Lecture	Dr. Song	Growth-defense tradeoffs I	
Apr. 10	Discussion	Student (TBD)	ZmICE1a regulates the defence-storage trade-off in maize endosperm	Wang et al., Nature Plants 10: 1999.
Apr. 13	Lecture	Dr. Song	Growth-defense tradeoffs II	
Apr. 15	Lecture	Dr. Song	Bacterial immunity I	
Apr. 17	Discussion	Student (TBD)	uORF-mediated translation allows engineered plant disease resistance without fitness costs	Xu et al., Nature 545: 491
Apr. 20	Lecture	Dr. Song	Bacterial immunity II	
Apr. 22	Review	Dr. Song		
Apr. 27	Final exam			

Academic Policies & Resources (<https://go.ufl.edu/syllabuspolicies>.)

Academic Policies:

- Requirements for class attendance and make-up exams, assignments, and other work in the course are consistent with university policies. [See UF Academic Regulations and Policies for more information regarding the University Attendance Policies.](#)
- Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. [See the “Get Started With the DRC” webpage on the Disability Resource Center site.](#) It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.
- Information on current UF grading policies for assigning grade points. This may be achieved by including [a link to the University grades and grading policies.](#)
- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online. Students can complete evaluations in three ways:
 1. The email they receive from GatorEvals
 2. Their Canvas course menu under GatorEvals
 3. The central portal at <https://my-ufl.bluera.com>

Guidance on how to provide constructive feedback is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

- The University's Honesty Policy regarding cheating, plagiarism, etc.:

UF students are bound by The Honor Pledge which states “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. [See the UF Conduct Code website for more information.](#) If you have any questions or concerns, please consult with the instructor or TAs in this class.

- In-Class Recording:

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal education use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor. A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and deliver by an instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course.

A class lecture does not include lab sessions, student presentations, clinical presentation such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or guest lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless, of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Academic Resources:

- E-learning technical support: Contact the [UF Computing Help Desk](#) at [352-392-4357](tel:352-392-4357) or via e-mail at helpdesk@ufl.edu.
- [Career Connections Center](#): Reitz Union Suite 1300, [352-392-1601](tel:352-392-1601). Career assistance and counseling services.
- [Library Support](#): Various ways to receive assistance with respect to using the libraries or finding resources. Call [866-281-6309](tel:866-281-6309) or email ask@ufl.libanswers.com for more information.
- [Academic Resources](#): 1317 Turlington Hall, Call [352-392-2010](tel:352-392-2010), or to make a private appointment: [352-392-6420](tel:352-392-6420). Email contact: teaching-center@ufl.edu. General study skills and tutoring.
- [Writing Studio](#): Daytime (9:30am-3:30pm): 2215 Turlington Hall, [352-846-1138](tel:352-846-1138) | Evening (5:00pm-7:00pm): 1545 W University Avenue (Library West, Rm. 339). Help brainstorming, formatting, and writing papers.
- Academic Complaints: Office of the Ombuds; [Visit the Complaint Portal webpage for more information.](#)
- Enrollment Management Complaints (Registrar, Financial Aid, Admissions): [View the Student Complaint Procedure webpage for more information.](#)
- UF Student Success Initiative: Visit <https://studentsuccess.ufl.edu/> for resources that support your success as a UF student.
- [Public Speaking Lab](#): (Dial Center, 501 Rolfs Hall). Offering online and in-person help developing, organizing, and practicing oral presentations. Contact email: publicspeakinglab@clas.ufl.edu.

Campus Health and Wellness Resources:

- UF Whole Gator Resources: Visit <https://one.uf.edu/whole-gator/discover> for resources that are designed to help you thrive physically, mentally, and emotionally at UF.