

Course lecture schedule – Fall 2024

Module	Date	Topic	Items
Module I: Characterization of fastidious vascular-colonizing plant pathogenic bacteria	August 22	Introduction to plant vascular-colonizing bacteria (genetic variation but having similar lifestyles)	Cause similar plant diseases Restricted to the vascular system Transmitted by hemipteran vectors Fastidious growth in artificial media
	August 23	Pathogenesis and plant responses	Responses to phloem-colonizing bacteria
	August 29	Pathogenesis and plant responses	Responses to xylem-colonizing bacteria
	August 30	Mechanism of insect vector transmission	Modes of transmission: Circulation, Multiplication, and Persistence
	September 5	Mechanism of insect vector transmission	Molecular and biochemical bases of transmission process: Bacterial membrane proteins, Insect receptors in gut and salivary glands
	September 6	Factors affecting the transmission efficiency	
	September 12	Role of exopolysaccharides/lipopolysaccharides/ extracellular polymeric substances in plant pathogenicity and insect transmission	Case study i - <i>Xylella fastidiosa</i>
	September 13	Role of exopolysaccharides/lipopolysaccharides/ extracellular polymeric substances in plant pathogenicity and insect transmission	Case study ii- '<i>Ca. L. asiaticus</i>'
	September 19	Role of quorum sensing in plant pathogenicity and insect transmission	Case study i - <i>Xylella fastidiosa</i> (diffusible signaling factor, DSF)
	September 20	Role of quorum sensing in plant pathogenicity and insect transmission	Case study ii - '<i>Ca. L. asiaticus</i>' (the two components quorum sensing, LuxR-AHSL)
	September 26	Mid-term exam	
Module II: Diseases caused by Spiroplasmas	September 27	Evolution, phylogeny, taxonomy, and morphological properties of Spiroplasmas	
	October 3	Case studies; epidemiology, symptoms, host range, insect transmission, and control strategies	i- Citrus stubborn (<i>S. citri</i>) ii- Corn stunt (<i>S. kunkellii</i>) iii- Periwinkle dwarfing (<i>S. phoeniceum</i>)
	October 4	Quiz 1 and Paper discussion	
Module III: Diseases caused by Phytoplasmas	October 10	Evolution, phylogeny, taxonomy, and morphological properties of phytoplasmas	
	October 11	Case studies; epidemiology, symptoms, host range, insect transmission, and control strategies	i- Phytoplasma diseases of fruit crops: Ex. Flavescence drée and Stolbur in grape, Western X in cherries ii- Phytoplasma diseases of vegetable crops: Ex. Witches broom, little leaf, flat stem iii- Phytoplasma diseases of ornamental and medical plants: Ex.

			Aster yellow, virescence and phyllody
	October 17	Quiz 2 and Paper Discussion	
Module IV: Diseases caused by Liberibacters	October 18	Evolution, phylogeny, taxonomy, and morphological properties of ' <i>Ca. Liberibacter spp</i> '	
	October 24	Case studies ; epidemiology, symptoms, host range, control strategies	i- Citrus Greening (' <i>Ca. L. asiaticus</i> ') ii- Potato zebra chip (' <i>Ca. L. solanacearum</i> ')
	October 25	Quiz 3 and Paper discussion	
Module V: Diseases caused by <i>Xylella fastidiosa</i>	October 31	Evolution, phylogeny, taxonomy, and morphological properties of <i>Xylella fastidiosa</i>	
	November 1	Case studies ; epidemiology, symptoms, host range, insect transmission, and control strategies	i- Pierce's disease of grapes ii- Olive quick decline syndrome iii- Citrus variegated chlorosis iv- Leaf scorch/Golden Death of Almond
	November 7	Quiz 4 and Paper discussion	
Module VI: Questions for open discussion, students should prepare in advance. <i>Students need to prepare in advance</i>	November 8	What makes periwinkle an excellent experimental host for fastidious bacteria? Why can fastidious bacteria be easily transmitted by dodder and grafting?	
	November 14	Why are all fastidious bacteria insect-transmitted? Can we block the insect transmission of fastidious bacteria? If so, would the strategies be different between phloem-restricted and xylem-restricted bacteria?	
	November 15	Quiz 5 and Paper discussion	
	November 21	Does natural competence play a role in the evolution and diversity of mollicutes, ' <i>Ca. Liberibacter spp</i> ', and <i>Xylella fastidiosa</i> ?	
	November 22	General Discussion	
	November 28	Holiday	
	November 29	Holiday	
	December 5	Reading day	
	December 6	Reading day	
	December 12	Final exam	