Lecture 9 Study Guide (video: 1 hour, 3 minutes)

Study Questions

1. Describe each of the layers on the outside surfaces of epidermal cells that help protect the plant from plant pathogens.
2. Cellulose is notoriously difficult to digest. What type of chemical is it, where does it come from, and what organisms can digest it? What would happen if such organisms did not exist?
3. What type of symptom usually results when pathogens destroy the middle lamellae of plant cells?
4. What are enzymes and what do they do? What suffix is used to identify an enzyme, i.e. what might an enzyme that reacts with cutin be called? Pectin" Cellulose? Also, who is buried in Grant's tomb?
5. Certain plant pathogens typically induce gall and deformations instead of blights or spots. List several such pathogens and describe why they make such bizarre symptoms.
6. Growth regulators are used in plant tissue culture. Which ones are used to promote root formation? Shoot formation?
7. Describe exactly why the southern corn leaf blight epidemic caused such a serious problem in the US in the 1970s. In so doing, describe what role "Texas male sterile cytoplasm" and "T toxins" played. What steps were taken to halt this epidemic?
8. What role did "sex" play in the southern corn leaf blight outbreaks of the 1970 with regard to the suscept? The pathogen?
9. What steps are taken by plant leaves to shed water? Why is this done, especially those that thrive in the tropical rainforests?
10. Although completely unrelated, *Sclerotium rolfsii* and *Sclerotinia sclerotiorum* both have extremely wide host ranges and induce identical symptoms? Why?

Key Words

Agrobacterium tumefaciens (crown gall)
Amino acids
Auxins
Carbohydrates
Cellulose
Cochliobolus heterostrophus (*Bipolaris maidis*)
Cutin
Cytokinins
Cytoplasm
"Drip tip"
Enzymes (words ending in "-ase")
Fatty acids
Glucose
Gibberellin (in relation to rice foolish seedling disease)

Growth regulators)
Heterosis
Hybrid vigor
Lipids (fatty acids)
Mitochondria
Nucleic acids
Nucleotides
Oxalic acid
Pectin
Plasma membrane
Proteins
Race T of *Cochliobolus heterostrophus*
Saccharides (mono- and poly-)
Southern corn leaf blight
Texas male sterile cytoplasm
T toxin (in relation to southern corn leaf blight)
Ti plasmid (in relation to crown gall)
Wax