Chapter 22: Viridiplantae

1. Why do plants that do not express sugars present in animal cells (e.g., sialic acids) have lectins that bind to glycans containing these sugars?

2. Pectins in plants are sometimes compared to glycosaminoglycans in animals. How do they differ? How are they similar?

3. Why are recombinant mammalian glycoproteins generated in plants immunogenic?

4. Compare the structures of glycoglycerolipids in plants, lipid A in bacteria, and glycosphingolipids in animals.

5. Elicitors and Nod factors are active at very low concentration and therefore one might predict that their affinity for their signal-transducing receptors would be very high (in the pM range). Based on what you know about other glycan-binding proteins, how would such high affinity be achieved?

Chapter 29: L-type Lectins

1. Describe possible functions for L-type plant lectins present in the seeds of leguminous plants.

2. If L-type lectins are involved in defense, why does each plant produce only a very limited number of lectins?

3. Why are both plant seed lectins and glycan-binding proteins involved in protein quality control classified as L-type lectins?

4. Compare and contrast the “jelly-roll” fold in L-type lectins, the C-type lectin fold, and the link module.

5. Plant lectins are typically glycoproteins and therefore mature through the ER/Golgi secretory pathway. Propose a mechanism to prevent their interaction with other Golgi glycoproteins during their assembly and secretion.