Chapter 14: Sialic Acids

1. Compare and contrast the structure of sialic acids with other vertebrate monosaccharides.

2. What advantages does sialic acid diversity provide in vertebrate systems?

3. What are the unique features of the sialic acid biosynthetic pathways in comparison to those of other vertebrate monosaccharides?

4. How would you determine if a previously unstudied organism contains sialic acids?

5. Contrast the addition of α2-6-linked sialic acids to O-GalNAc glycans and N-glycans and their recognition by sialic acid–binding lectins.

Chapter 32: I-type Lectins

1. There are now more than a dozen human Siglecs known. Why were these and other sialic-acid-binding proteins not discovered until very recently?

2. Compare the potential function of Siglecs with inhibitory motifs in their cytosolic tails with those that can recruit activatory motifs.

3. Why are Siglec homologs found primarily in “higher” animals?

4. Explain the likely mechanism and driving forces for the rapid evolution of some Siglecs.

5. Why do plants and invertebrates that do not express sialic acids have sialic acid–binding proteins?