

Disc 1 Background and Overview

1. Why are studies of the biology of glycans ("glycobiology") not fully integrated into conventional molecular and cellular biology? In other words what makes this field unique?
2. Why do you think evolution repeatedly selected for glycans to be the dominant molecules on all cell surfaces?
3. Why are extracellular and nuclear/cytosolic glycans so different from one another?
4. What are the different ways in which glycans can mediate or modulate biological functions?
5. Be able to define the following terms: D- and L-stereochemistry, epimer and anomer, axial and equatorial, reducing end and non-reducing end, α - and β -linkages.
6. Referring to specific atoms and functional groups within monosaccharides, describe the ways in which they might interact with proteins (e.g., electrostatic interactions, H-bonding, van der Waal forces, hydrophobic interactions)?
7. If there are 21 amino acids and only 10 major monosaccharides in eukaryotes, why are there so many more possible combinations of monosaccharides in a hexasaccharide than amino acids in a hexapeptide?

Assigned Reading

Chapter 1, Essentials of Glycobiology

<http://www.ncbi.nlm.nih.gov/books/NBK1931/?report=printable>

Chapter 1, Introduction to Glycobiology (Drickamer and Taylor)

http://