**STUDY GUIDE RER, GOLGI, SECRETION**

**VOCABULARY**

Structures/structural components:

Ribosome RER Golgi apparatus

Trafficking Localizing signal Cisterna

Cis vs. Trans Golgi Condensing vacuole Exocytosis

Signal peptidase Signal recognition particle Docking protein

Polysome Posttranslational modification Ribophorin

Complex oligosaccharide High mannose N-linked Constitutive secretion

Leader sequence

Techniques:

Pulse chase Cell fractionation

**OBJECTIVES AND QUESTIONS**

1. Be able to describe the pathway through which all cellular proteins (secreted and intrinsic) proceed to reach their final destination. (Hint: all protein synthesis starts on cytoplasmic ribosomes).
2. What posttranslational modifications occur on proteins that traffic through the RER and Golgi? (Hint: RER adds mannose, glucose, and N-acetylglucosamine; these are asparagine (N)–linked. Golgi trims some mannose residues and adds sialic acid and galactose.
3. How are proteins transported from the RER to the Golgi and between Golgi stacks?
4. What determines whether a protein will be inserted into a membrane? (Hint: hydrophobic amino acid sequence)
5. Where do the peptides with the Mannose-6-PO4 signal go? (Hint: lysosome)
6. Be able to describe the ultrastructural features of the RER and Golgi apparatus?
7. What organelle plays a major role in membrane recycling?
8. What is the difference between condensing vacuoles and storage vacuoles (e.g., zymogen granules)?
9. Where would a protein localize if there was a mutation in the leader sequence? Or in the portion recognized by the signal peptidase?