**STUDY GUIDE LYSOSOMES, SER, MITOCHONDRIA, AND INCLUSIONS**

**VOCABULARY**

SER Lysosomes Endolysosome

Endocytosis Coated pit Coated vesicle

Clathrin Cristae Matrix

Sarcoplasmic reticulum Inclusions Heterophagy

Lipofuscin Residual body Autophagic vacuole

Pinocytosis Phagocytosis Active transport

Phagocyte

**OBJECTIVES AND QUESTIONS**

1. What is the difference in the contest and functions of lysosomes, peroxisomes, and storage granules?
2. What type of cells typically has pronounced SER? By the way, steroids have gained a lot of attention by the media and are not scheduled drugs making it a lot harder for small men (and women for that matter) to rapidly develop grossly distorted physiques. But are steroids really such a bad thing? Could we in fact survive as higher mammals without them? (Hint: NO!) Assuming you graduate and go on to become gainfully employed in your chosen profession, how will you explain to your patients, clients, or colleagues the difference between ROIDS? (steroids belong to a widely divergent class of molecules based on the structure of cholesterol, i.e., most hormones such as testosterone, estrogen, cortisol, etc. and of course synthetic anabolics). What would you predict about the SER in Leydig cells?
3. What is the approximate pH range in lysosomes, phagosomes, and secondary lysosomes (endolysosomes)? Why do lysosomes have low pH? What happens to cells in the vicinity when leukocytes release their lysosomes in an anti-inflammatory situation? (Hint: hydrolytic enzymes with pH optima in the acidic range).
4. What are the major functions of the SER?
5. What is the sarcoplasmic reticulum? Where is it found? What is its function? (Hint: specialized SER in muscle that is important intracellular calcium regulation.
6. What is the major function of the mitochondria? Be able to describe in general terms the structure of mitochondria.
7. Be able to differentiate types of transport of small molecules (i.e., passive, facilitated, and active transport) and types of transport of macromolecules AKA endocytosis (i.e., receptor mediated, phagocytosis, pinocytosis).