BIOL 101
Cells 2

I. Nucleus
   A. Contains cell’s DNA
   B. Functions
      1. production of new cells
      2. controls cytoplasmic events
      3. contains codes for protein synthesis
   C. Nuclear Membrane
      1. double bilayer = nuclear envelope
      2. nuclear pore complexes = points of membrane fusion
         a. nuclear pore
         b. selective permeability
         c. RNA must exit nucleus
         d. proteins enter nucleus to affect gene expression
   D. Nucleolus
      - builds ribosomes

II. Ribosomes
   A. Free or attached
   B. NOT membrane-bound
      - subunits manufactured in nucleolus

III. Endoplasmic Reticulum
   A. Membrane-bound channels (tubules)
      - interior is segregated from rest of cytoplasm
   B. 2 types
      1. RER
         a. 
      b. 
   2. SER

IV. Golgi apparatus (body, complex)
   A. Bowl-shaped organelle
B. Stack of sacs (cisternae)
C. “Processing and packaging plant”
   1. materials enter on one side (from ER)
   2. materials modified to produce final products
   3. products packaged into vesicles for
      a. insertion into membrane
      b. secretion
      c. incorporation into lysosome

V. Lysosomes- packets of enzymes (animals only)
   A. Can destroy harmful substances
   B. Can digest food particles
   C. Remove (recycle) worn out organelles
   D. Must remain membrane-bound
   E. Contain digestive enzymes
      1. 
      2. 
   F. Found in white blood cells

G Apoptosis

VII. Mitochondria
   A. Nutrient energy into ATP
   B. Chemical reactions that produce ATP
      1. outer membrane (smooth)
      2. inner membrane
         a. cristae
      b. site of ATP production
   C. Self-replication
      1. mtDNA
      2. mitochondrial division

VIII. Chloroplasts (plants and algae)
   A. Double membrane
      1. thylakoids: sacks of inner membrane fusions (discs)
a. photosynthesis

b. grana

2. stroma

B. Have own circular DNA

IX. Cell Walls