Biol 1002 Chapters 15/4 Part II Eukaryotic Cell Structure

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I. **Eukaryotic Cells have many structures called organelles** (like small organs, each has a specific function).

A. Plasma membrane surrounds the cell separates the inside from the outside of the cell. Controls what enters and leaves the cell. The cell membrane is composed of both phospholipids and proteins. Phospholipids are made of phosphate and 2 fatty acid tails. The phosphate heads are oriented inside and outside the cell with the fatty acid tails oriented together in the middle. **There are 2 layers of lipids forming what we call the lipid bilayer. Proteins are embedded in the lipid bilayer. These proteins have many functions such as transport of nutrients into the cells (glucose to make ATP). For cells to recognize each other, and for ions to transport into the cell. The plasma membrane regulates what enters and leaves the cell.**

B. Cytoplasm region of the cell between the plasma membrane and the nucleus.

C. Nucleus DNA surrounded by a double membrane called a nuclear envelope. When DNA is not wound up as chromosomes, we call it Chromatin. Chromosomes are visible just before a cell is getting ready to divide. Usually your DNA is found as Chromatin.

D. Nucleolus is inside the nucleus makes RNA parts.

E. Ribosomes are protein factories. Ribosomes translate the DNA message into proteins amino acids that are bonded together. (Messenger RNA feeds into the ribosome and every 3 nucleotides codes for a particular amino acid. So amino acids joined together come out the other side of the ribosome to form a protein. **DNA messenger RNA (carries message of DNA to the cytoplasm) Ribosomes translate the message into proteins.**

F. **Endoplasmic Reticulum forms a membrane tubular network inside the cell.**

Two types: **A. Rough ER (RER): the endoplasmic reticulum membrane is dotted by ribosomes** so the proteins are translated on the ribosomes they are transported into the RER to be folded into their correct forms and transported. Remember the shape of the protein determines its function.

B. Smooth ER (no ribosomes). Lipid and steroid hormone synthesis. Ovaries and testes that produce estrogen and testosterone, respectively have a lot of smooth ER.

G. Golgi Apparatus: warehouse and shipping center.
The Golgi modifies, stores and distributes the protein products of the cell. The golgi can package and ship proteins such as antibodies, hormones, enzymes etc. by putting them in **secretory vesicles which fuse with the plasma membrane and releases its contents outside the cell.**