

### **Biology 12: Chapter 3 – Review Worksheet Answer Key**

#### **A. Cell Theory:**

1. Cell theory = living things are composed of cells and new cells arise only from preexisting cells.
2. Resolving power of a microscope is the capacity to distinguish between 2 adjacent pts and is dependent on the wavelength of the illumination. Electron microscopes have greater resolving power b/c electrons have shorter wavelengths than visible light.

#### **B. Eukaryotic and Prokaryotic Cells**

1. Eukaryotic cell = membrane-bound nucleus, and membranous organelles.
2. Phospholipids and proteins.
3. Primary = cellulose molecules, form fibrils that lie at right angles.  
Secondary = Lignin, substance that makes secondary wall stronger.
4. Control center = nucleus. DNA molecules directs protein synthesis.
5. Chromatin: threadlike network in nucleus, made up of DNA and protein  
Chromosome: rod-like structure in nucleus seen during cell division; contains genes (hereditary units)
6. Nucleolus = Ribosomal subunit formation, contains DNA that produces rRNA for ribosome formation
7. 2 layers.
8. Permit passage of proteins into nucleus and let ribosomal units out of nucleus.
9. Ribosomes are dense granules composed of 2 subunits that contain both RNA and proteins. They are sites of protein synthesis. When several ribosomes are making the same protein, they are arranged in a functional group called a polysome.
10. Rough ER has ribosomes attached on outside, but smooth ER doesn't.
11. Rough ER = synthesizes protein
12. a) Smooth ER = synthesizes lipids and modifies proteins (macromolecules)