**REVIEW GUIDE FOR AP BIO UNIT 4 EXAM – CELL SIGNALING AND CELL CYCLE**

BE ABLE TO….

* Describe the major steps in cell signaling
* Compare and contrast the actions of hydrophilic and hydrophobic ligands
* Explain the various steps that can be used in transduction
* Explain how signals are amplified in a cell
* Explain how molecules are activated and deactivated in cell signaling and know the names of the enzyme that do these tasks
* Predict what would happen if a given step in signal transduction is disrupted (for example, I give you a brief description of a signaling pathway, then I will ask you something like “What would happen if there was a mutation that changed the shape of the receptor protein?” or “What would be the effect of a molecule that prevented the formation of a secondary messenger?”)
* Recognize the differences between G-protein linked receptors, Tyrosine kinase receptors, and Ligand gated ion channels and give a brief explanation of how each works
* Describe the process of negative feedback and give an example
* Describe the process of positive feedback and given an example
* Explain how bacteria communicate
* Define and give an example of the autocrine, paracrine, juxtacrine and endocrine signaling
* Describe what happens in G0, G1, S, G2, and M in the cell cycle
* Predict what would happen if a particular phase of the cell cycle was disrupted
* Explain how levels of CDKs and Cyclins vary during the cell cycle and how they work together to control the cell cycle
* Explain what is apoptosis and give an example of when it may be used
* Give the purpose(s) of cell division in both prokaryotes and eukaryotes
* Explain the difference between mitosis and cytokinesis
* Describe the differences between malignant and benign tumors