

Review Guide for Unit 4 Exam – Cell Communication and Cell Cycle

- o Know the three major steps in signal transduction
- o What is a target cell? What makes it a target cell?
- o Explain signal amplification
- o Know the differences between autocrine, juxtacrine, paracrine and endocrine signaling and be able to give an example of each.
- o What is the difference between a kinase and a phosphatase?
- o What are some examples of secondary messengers?
 - o Name the enzyme that converts ATP into a secondary messenger
- o What is a ligand?
- o How are hydrophilic ligands and hydrophobic ligands different in their mode of action?
- o What is an intracellular receptor and how is it different from a membrane receptor?
- o 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
- o How does quorum sensing work?
- o Know the stages of the cell cycle. How/when does the amount of DNA per cell change during the cell cycle?
- o Be able to explain the difference between a proto-oncogene and a tumor suppressor gene
- o ***Given a diagram of a cell signaling pathway, be able to explain the result of a disruption in any step in the pathway (this is a “biggie”, expect to see multiple questions about this)***
- o How do growth factors work?
- o What is the role of mitosis in the cell cycle?
- o What do checkpoints do?
- o How do the levels of cyclins, cyclin-dependent kinases and MPF change during the cell cycle?
- o What is apoptosis and give an example of when it may be used
- o Give the purpose(s) of cell division in both prokaryotes and eukaryotes
- o Explain the difference between mitosis and cytokinesis
- o Describe the differences between malignant and benign tumors