Bio121
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Review Questions
**Lecture 4**

1. Cell mass is a combination of what two factors? What factors determine cell number?

2. What is the difference between necrosis and programmed cell death? (List the different types of each and understand their basic definition.)

3. What is ECM and why is it so critical for cells? What functions does it perform?

4. Most organisms use a combination of carbohydrates and proteins to build their ECM and may use inorganic molecules to harden their ECM. How do vertebrates differ from arthropods? How do plants differ from prokaryotes?

5. What are biofilms? And what is the ECM of biofilms called and composed of? How is the composition of biofilm ECM different from the ECM of a single bacterium?

6. What are the main purposes of cell-cell communication for single-celled and multi-cellular organisms?

7. What is quorum sensing? Why is it thought that quorum sensing is the evolutionary predecessor of cell-to-cell signaling in multicellular organisms?

8. Describe a generalized signal transduction pathway.

9. Describe the four different types of cell-cell signaling.

10. If every cell in an organism contains the same DNA, why aren't all cells the same? (i.e., How can they have such different qualities and perform different functions if they all contain the same DNA?)

11. Describe the anatomical organization of multicellular organisms. How is it organized and what is it based on?

12. What is the difference between epithelial and mesenchymal cells?

13. What is the difference between parenchymal and stromal cells?

14. What is the difference between stem cells and differentiated cells?

15. If a cell was removed from its tissue, could it still function in the same manner? Explain.