

## Cell Communication Review

### Chapter 11

1. Explain how signaling ensures that yeast cells fuse only with cells of the opposite mating type.
2. If epinephrine were mixed with glycogen phosphorylase and glycogen in a cell-free mixture in a test tube, explain why glucose 1-phosphate would or would not be produced?
3. Identify and describe the three stages of cell signaling.
4. Nerve growth factor (NGF) is a water-soluble signaling molecule. Would you expect the receptor for NGF to be intracellular or in the plasma membrane? Justify your answer.
5. Choose one of the three types of receptors we discussed and briefly explain how it functions.
6. Describe the role of protein kinases in signal cascades.
7. What would be the effect if a cell made defective receptor tyrosine kinase proteins that were unable to dimerize?
8. In a signal transduction pathway that involves phosphorylation, how does the cell's response get turned off?
9. Explain the adaptive value for signaling pathways to shut down rapidly in the absence of a signal molecule.
10. What is the actual "signal" being transduced in a signal transduction pathway? How is this "signal" passed from outside to inside the cell?
11. How does a phosphorylation cascade allow a signal to be amplified?
12. Some diseases are caused by defective protein phosphatases. Explain how such a defective protein would affect a signal transduction pathway.
13. cAMP is a common second messenger. Explain how it is formed, how it is degraded and how it serves as a messenger.
14. a) What determines whether a cell is a target cell for a particular signal molecule?  
b) How can two cells respond differently to the same signaling molecule?
15. Why is signaling important for cells?