**![MC900359511[1]]()**Cell Communication Webquest- Part 1 ![MC900354132[1]]()

We have now learned (through cell projects and Ch. 7 of the text) how cells can transport chemicals and molecules into and out of their boundaries (cell membrane/wall), as well as changing the molecular construction of the molecules to create new macromolecules that are needed such as like proteins. However, we have left out a chief component of how our cells work, which is the transduction of chemical signals between cells. In this webquest you will use the University of Utah genetics website and some google searching to learn a little about signal transduction.

PART 1: Cell Communication- The Basics 🡪 Directions: Use [www.google.com](http://www.google.com) to define the following…

1. What is a cell **surface receptor**?

2. What is an **ligand**?

Go to the following website: *NOTE- YOU NEED VOLUME FOR THIS PART!*

<http://media.pearsoncmg.com/bc/bc_campbell_biology_7/media/interactivemedia/activities/load.html?11&B>

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| **Directions:** Using the information on this website, answer questions #3-11 below.  |

***Click on the G-protein linked receptor in the animation. Then click on the correct signal molecule to activate the G-protein-linked receptor shown.***

3. What are the two events that must happen in order for enzyme activity to occur using a G-protein linked receptor?

***Click on the receptor tyrosine kinase in the animation. Then click on the correct signal molecule to activate the receptor tyrosine kinase shown.***

4. How does the bonding of the signal molecule to the receptor tyrosine kinase lead to the activation tyrosine-kinase enzymes?

5. How does the activated receptor tyrosine kinase trigger several different effects within the cell?

***Click on the ion channel receptor in the animation. Then click on the correct signal molecule to activate the ion channel receptor shown.***

6. What are ligand gated ion channels?

7. Explain how signal proteins can activate ion channel proteins.

***Click on the intracellular receptor. Then click on the correct signal molecule to activate the intracellular receptor shown.***

8. Where are intracellular receptors located?

9. List two examples of steroid hormones that act on intracellular receptors.

10. Explain why nonpolar molecules are able to pass through the plasma membrane to bind to intracellular receptors.

11. Explain how steroids cause changes inside a cell.

Go to the following website: ***NOTE- YOU NEED VOLUME FOR THIS PART!***

<http://media.pearsoncmg.com/bc/bc_campbell_biology_7/media/interactivemedia/activities/load.html?11&C>

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| ***Directions: Using the information on this website, answer questions #12-17 below.***  |

12. What are signal transduction pathways?

13. List two things signal transduction pathways allow for.

14. What are second messengers?

15. List 2 important second messenger molecules

16. What is a protein kinase?

17. Discuss how protein kinases function to produce signal amplification in a cell.

18. Go to the following website: ***NOTE- YOU NEED VOLUME FOR THIS PART!***

<http://highered.mcgraw-hill.com/sites/0072507470/student_view0/chapter17/animation__membrane-bound_receptors__g_proteins__and_ca2__channels.html>

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| ***Directions:*** ***On the left-hand side of the webpage, there are animations to watch.*** * ***Watch each of the following animations then summarize each on next page.***
* ***Next, complete the quiz for each animation and write results on next page. Make notes in your notebook***

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a. Animation: Membrane-Bound Receptors, G Proteins, and Ca2+ Channels *(Quiz score: \_\_\_\_\_/5)*

*Summarize events:*

b. Animation: Membrane-Bound Receptors that Activate G Proteins *(Quiz score: \_\_\_\_\_/5)*

*Summarize events:*

c. Animation: Second Messenger: camp *(Quiz score: \_\_\_\_\_/5)*

*Summarize events:*

d. Animation: Hormonal Communication *(Quiz score: \_\_\_\_\_/5)*

*Summarize events:*

e. Animation: Intracellular Receptor Model *(Quiz score: \_\_\_\_\_/5)*

*Summarize events:*