

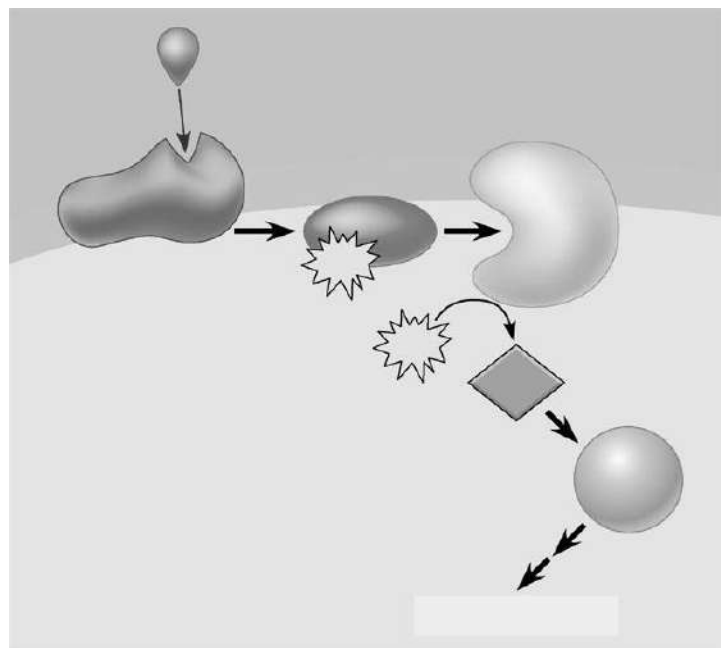
## CH 11 pt 2 Study Questions – Signal Transduction & Cell Response (11.3-11.5)

- 1) What is the role of enzymes called **PROTEIN KINASES**?
  
- 2) Summarize what occurs in a **phosphorylation cascade**. (see Fig. 11.10, page 215)
  
- 3) What are **protein phosphatases** and why are they so important?
  
- 4) What are **second messengers** and what are two characteristics of a second messenger (& why are these characteristics significant)?
  
- 5) What did Sutherland find in his experiments with regard to epinephrine and cyclic AMP and why is this important?
  
- 6) What is **adenylyl cyclase**?

- 7) Complete the diagram here of cAMP as second messenger: (see fig. 11.12)



- 8) How does the **cholera bacterium** (& how this microbe causes disease) connect with the concepts of cell to cell communication?



9) How does the drug known as **Viagra** work? Why was it originally prescribed for chest pain?

10) **How and why** are the calcium concentrations kept different and separate comparing the endoplasmic reticulum, mitochondria and cytoplasm?

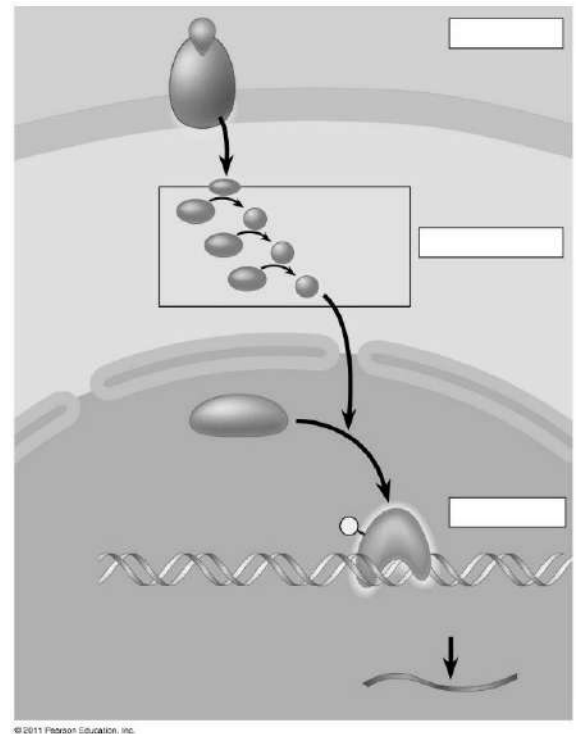
11) Label the diagram below showing **nuclear responses** to a signal. (see fig. 11.15)



12) How is **signal amplification** accomplished in the cell?

13) How is **specificity** accomplished in cell signaling?

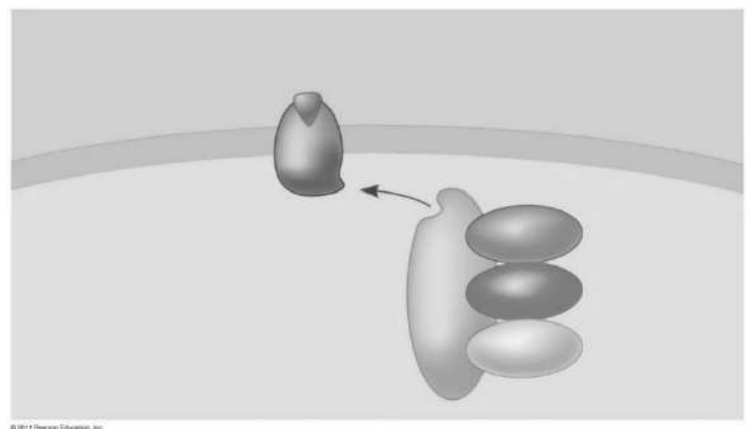
14) What is a **scaffolding protein** and why is it important?



15) Label the diagram of a **scaffolding protein** shown here. (see fig. 11.19)



16) How is the **termination of a signal** accomplished and why is it so important that termination be accomplished?



17) What is **APOPTOSIS**? What is the role of apoptosis in **embryonic development**?

18) Which **diseases** are thought to involve errors in **apoptosis**? (either too much or too little apoptosis?)