

- Why do cells need to communicate with each other? Two reasons.
- When cells communicate with one another, how does cellular physiology change (what two things in the cell change)?
- What are the two categories of response to hormonal communication?
- How does local communication happen (three ways)?
- How does long-range communication happen (two categories of mechanism)?
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- What are the three scales of hormone signalling?
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- Hormones circulate through the entire body. Why do only some cells respond?
- Describe feedback loops in physiology. What is a feedback loop?
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- Describe the two types of feedback loops: name, general description of what they are, general effect on the body, an example.

- Why are negative feedback loops important in hormonal communication?
- How is time sensed and tracked by the body?
- How do hormones respond to time of day? What kind of pattern is generally produced?
- Diagram hormonal communication through the body:
- Only certain kinds of chemicals can be hormones; a hormone is defined by what kind of chemical compound it is. True or false?
- What are the two big categories of hormones? How are they secreted, circulated, and received?
- Give three examples of lipid-soluble hormones:
- What are the receptors for lipid-soluble hormones called? Why are they called this (what do they do)?

- How do water-soluble hormones have their effect, since they don't actually enter the cell themselves?
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- Describe the general steps of a signal transduction/signal cascade:
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- What do kinases do?
- Describe the activity of a hormone receptor kinase
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- Why is it important that hormone receptor kinase cascades involve multiple phosphorylation events?
- What are the two parts of a g-protein coupled receptor?
- Explain how g-protein coupled receptors work. Explain the steps of the process.
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- What secondary messenger does adenylate cyclase produce?
- Explain the steps in hormone-activated calcium signalling pathways

- Based on its name, can you figure out what kind of enzyme **phospholipase** is? What does it break down?
- Why do organisms need transduction pathways that activate more than one molecule during each step of the process?
- Why are hormones able to have significant cellular effects even at very low circulating blood concentrations?
- If a single cell is exposed to auxin, what happens?
- Explain how auxins travel through the body of a plant to regulate plant growth and shape.
- What hormone causes phototropism?
- How do cells respond to this hormone in a manner that leads to phototropism? How was this experimentally determined?
- Describe apical dominance. What does this term mean?

- What causes apical dominance?

- Why is apical dominance important to plants?

- How does auxin signalling translate into the shape of a tree?

- Match the tree shape to its sensitivity to auxin.



A.



B.



C.