

Cell Communication Project

Purpose: Create a video to show the steps of the signal transduction pathway for two different cell responses. Your group will have to create props and use any video app or camera to film and edit the video. Pick one from each of the following lists to act out. A picture of each pathway can be found at the end of the Cell Communication Notes my website.

- Taste, Epinephrine, or Growth factor
- Phytochrome in plants or vision stimulation in humans

| Project Criteria | Points Possible | Points Earned |
|--|-----------------|---------------|
| Each part of the signal transduction pathway (reception, transduction, response) is clearly indicated for each pathway | 30 | |
| Every group member has a visual role in the video | 10 | |
| All components of the pathways are represented and clearly recognizable (Pick one) | 30 | |
| <p>Taste</p> <ul style="list-style-type: none"> - Reception: Sugar molecule, Sweet receptor, G protein, Membrane enzyme (phospholipase C) - Transduction: Activated second messenger IP₃, Endoplasmic reticulum, Ca²⁺ ligand gated ion channel, Ca²⁺ second messenger - Response: Na⁺ ligand gated ion channel, Na⁺ <p>Epinephrine</p> <ul style="list-style-type: none"> - Reception: Epinephrine, G protein coupled receptor, G protein, GTP, GDP, Adenylyl cyclase - Transduction: ATP, cyclic AMP second messenger, Protein kinase - Response: Glycogen, Glucose <p>Growth Factor</p> <ul style="list-style-type: none"> - Reception: Growth factor, Tyrosine kinase receptor (picture in powerpoint does not show this), ATP, ADP, P, Activated relay proteins - Transduction: 3 Protein kinases, ATP, ADP, Nucleus, Inactive transcription factor - Response: Active transcription factor, DNA, mRNA, Protein | | |
| All components of the pathway are represented and clearly recognizable (Pick one) | 30 | |
| <p>Phytochrome protein in Plants</p> <ul style="list-style-type: none"> - Reception: Light, Phytochrome protein - Transduction: Ca²⁺ ligand gated ion channel, Ca²⁺, ATP, cyclic AMP, 2 Protein kinases, Nucleus, 2 Inactive transcription factors - Response: Active transcription factors, DNA, mRNA, Protein, De-etiolation of plants (greening) <p>Vision in Humans (rod cells)</p> <ul style="list-style-type: none"> - Reception: Light, Rhodopsin protein, G protein (transducin), Activated enzyme (phosphodiesterase) - Transduction: cyclic GMP, GMP, Na⁺ protein channel, Na⁺ - Response: Na⁺ protein channel, Na⁺, Hyperpolarization (this is opposite of the normal way neurons fire) | | |
| TOTAL | 100 | |