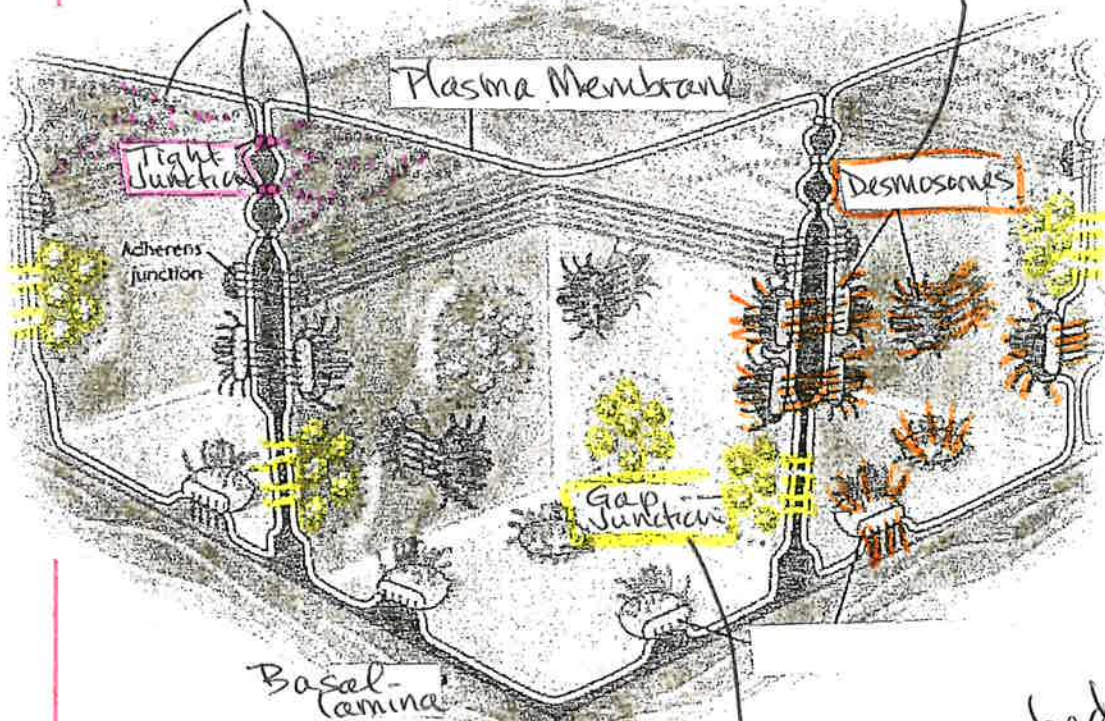


L1 Eukaryotic Cell Connections: Animal

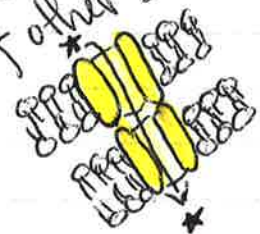
finish coloring 😊

Proteins imbedded in P.M. that bind neighboring cells create continuous seal to prevent leakage of cytoplasm.

Cytoskeleton "rivets" intermediate fibers of keratin that hold cells together.



Channel protein imbedded in P.M. that bind to neighboring cell creates pore for quick passage of ions, sugars, other small molecules.



R1

□ =

□ =

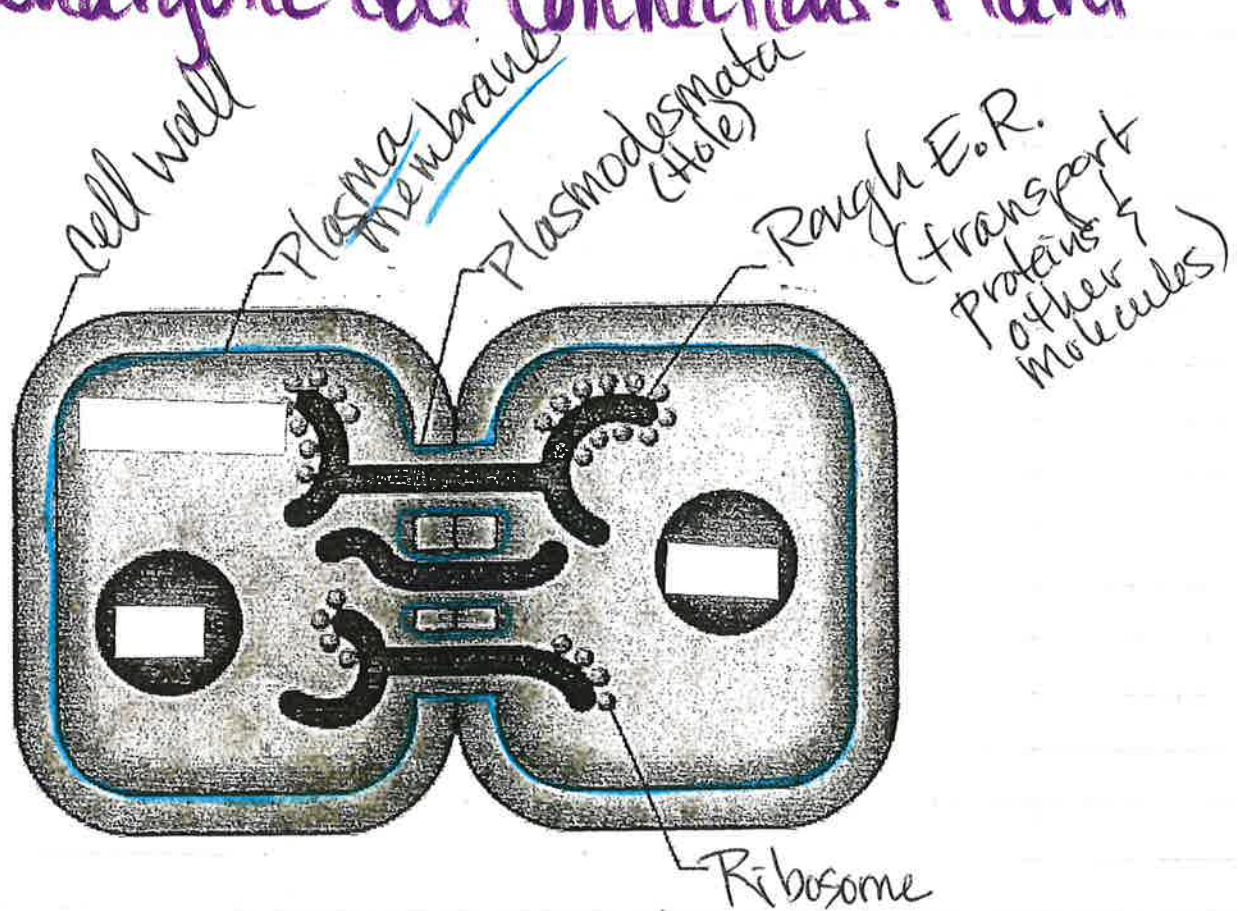
□ =

30's

Cell Connections & Communication

Summary/Reflection

↳ Eukaryotic Cell Connections: Plant



- Plasmodesmata - holes in cell wall lined w/ Plasma Membrane
P.M. contiguous w/ neighboring cells
- * share organelle connections (ex. Rough E.R.) \uparrow rate of transport
 - * share H_2O
 - * share large organic molecules

Rz

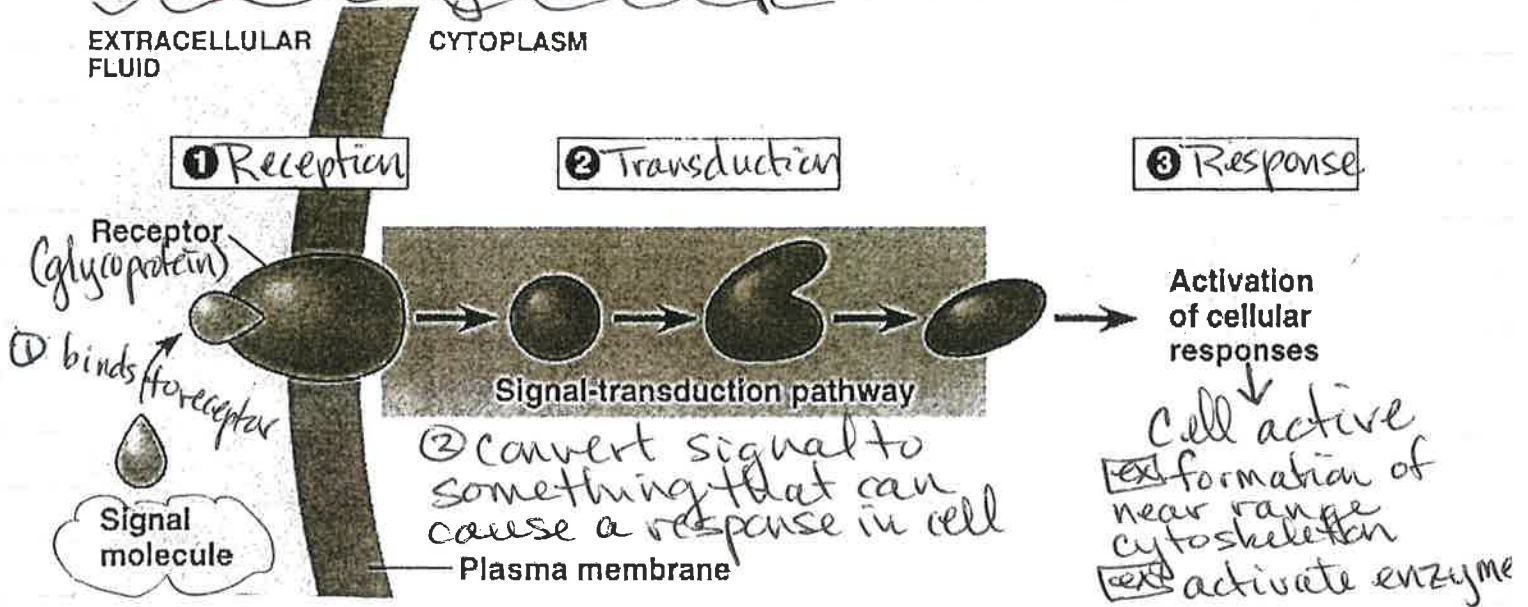
30's

Cell Connections & Communication

Summary/Reflection

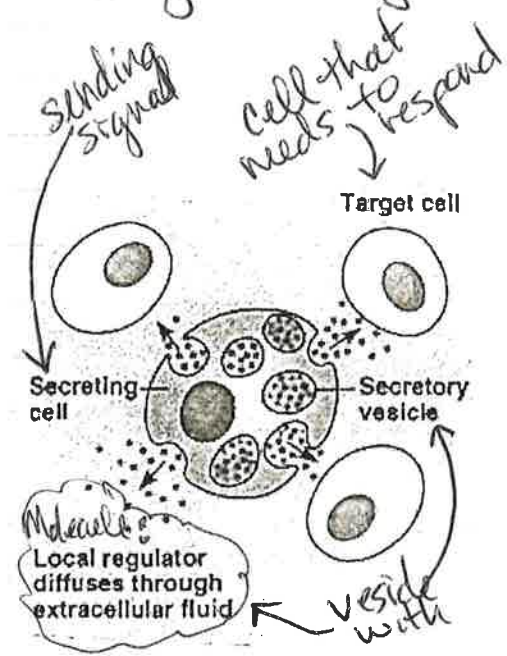
L3 Cell Signaling/Communication

Overall Signal Steps

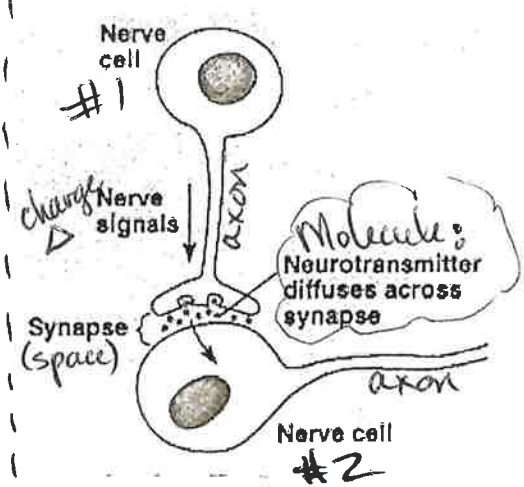


Local Signaling (cells close)

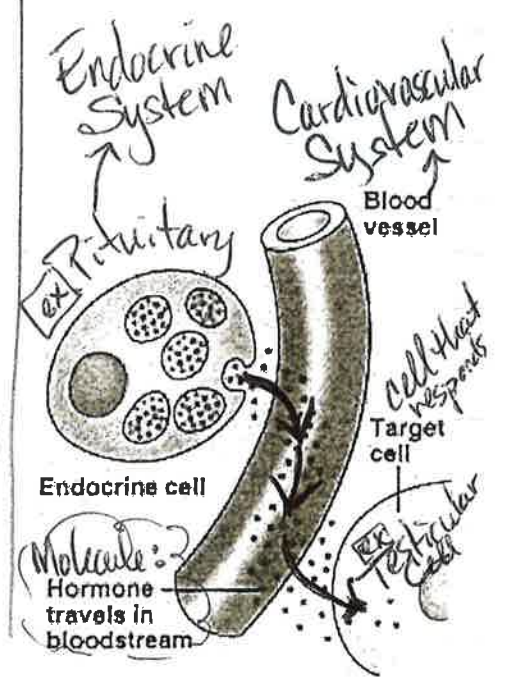
ex #1 | Paracrine Signaling



ex #2 | Synaptic Signaling



Long-Distance Signaling



R3

Cell Connections & Communication

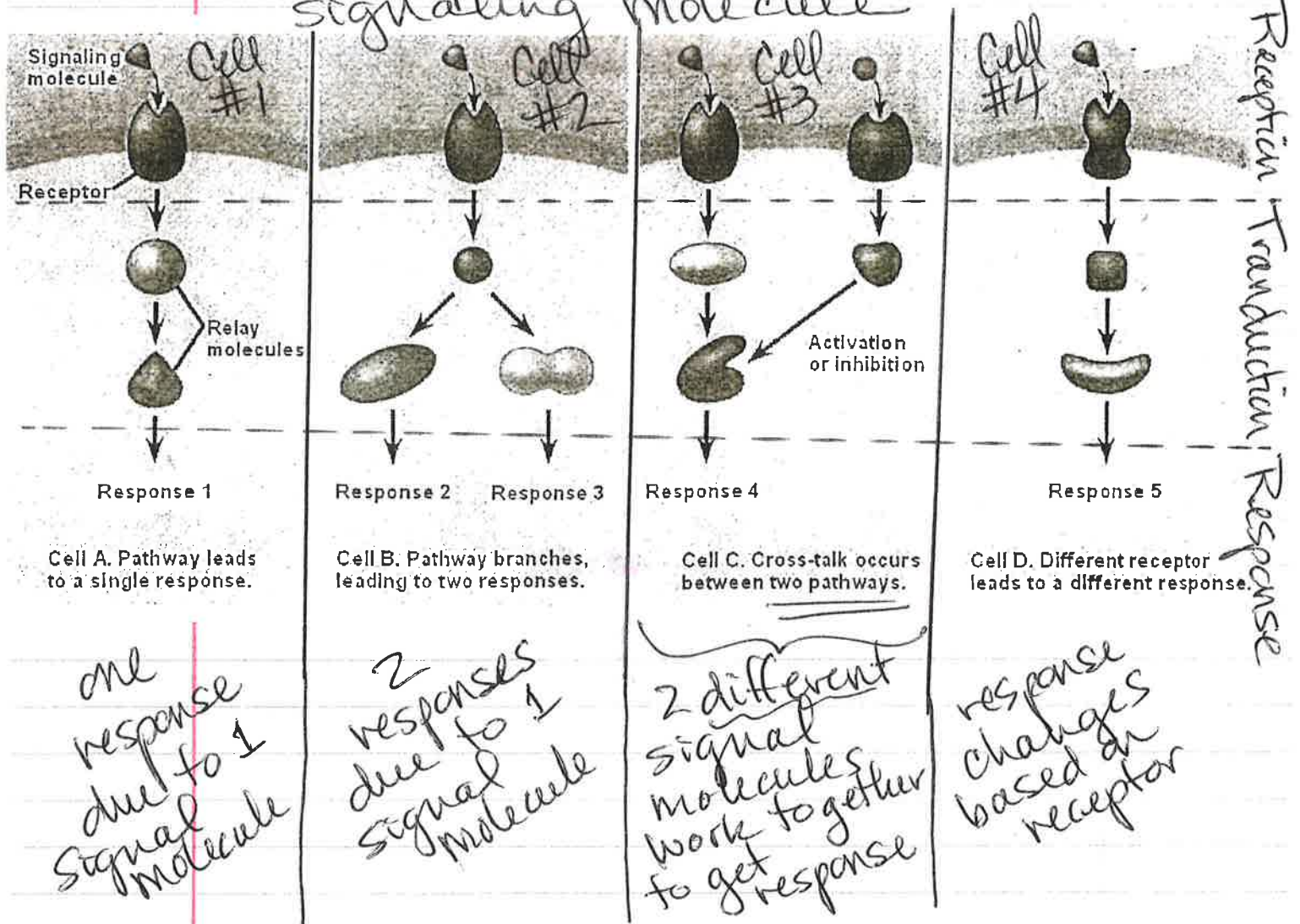
3Qs

Summary/reflection

L4 Cell Signaling & Cell Specificity

* Cell Specificity (cell does specific job ex. retinal cell)
 → Caused by different sections of DNA (genes) activated ∴ different proteins produced ∴ different proteins imbedded in plasma membrane

ex 4 different specialized cells reacting to SAME signaling molecule



Cell A. Pathway leads to a single response.

Cell B. Pathway branches, leading to two responses.

Cell C. Cross-talk occurs between two pathways.

Cell D. Different receptor leads to a different response.

one response due to 1 signal molecule

2 responses due to 1 signal molecule

2 different signal molecules work together to get response

response changes based on receptor

Cell Connections & Communication

I. Cell Connections:

A. Animal Cells - cells with no cell wall

1. Tight junctions:

- a. integral protein that binds integral proteins of neighboring cell plasma membranes
- b. cells "sealed" together to prevent leakage

2. Desmosomes

- a. protein cytoskeleton "rivets" made of intermediate fibers of keratin
- b. holds cells closer together

3. Gap junctions

- a. integral channel proteins in plasma membrane line up with integral channel proteins in neighboring cell plasma membrane
- b. creates a pore for quick movement of materials
 - 1) ex. ions, small molecules (amino acids, monosaccharides, ATP, etc)

B. Plant Cells - cells with cell walls

1. Plasmodesma/Plasmodesmata:

- a. channel through cell wall lined with plasma membrane
- b. cytosol & E.R. move through (connected)
- c. what moves
 - 1) H_2O , small solutes... even some RNA & small proteins

II. Cell Communications:

A. generalized stages:

1. Chemical signal:

- a. molecule released by specialized secretory cell or generalized cell

2. Reception:

- b. receptor on another cell binds to the chemical signal

3. Transduction:

- a. transfer signal within a cell

- 1) 3 types of receptors intake signal (pg 206-208 Campbell)

- a) G-protein-linked receptors

b) Receptor tyrosine kinases

c) Ion channel receptors

2) specific chain of transduction (pg 209 Campbell)

4. Response:

a. activation of cell response of target cell

1) one chemical signal can cause multiple responses depending on specialized target cell it binds to

B. Signaling examples:

1. 2 main types:

a. local signaling: neighboring cells

1) general steps:

chemical → binds to receptor of neighbor → endocytosis by neighbor & cell response

2) ex: paracrine signaling: fig 11.4 (a)

secretory cell with secretory vesicle



secretory vesicle fuses with plasma membrane



chemical signal released into environment



receptor of target cell binds to chemical signal



transduction



target cell active response

3) ex: synaptic signaling: fig 11.4 (b) & fig 48.17

electrical signal (Action Potential down axon of neuron to presynaptic bulb)



cause Ca^{++} flood into presynaptic bulb



vesicles with neurotransmitter within presynaptic bulb migrates to presynaptic membrane



vesicle fuses with presynaptic membrane



neurotransmitter released into synapse (gap)



neurotransmitter attaches to ligand-gated ion channel
(transport protein) of postsynaptic cell



Δ levels of Na^+ & K^+ of postsynaptic cell



generates or stops Action Potential of postsynaptic axon

b. long-distance signaling:

1) systems involved (animal):

a) endocrine system & circulatory system

2) ex. of sequence of events:

gland with secretory cells



secretory cell vesicles fuse with plasma membrane



chemical signals (hormone) enter circulatory system



target cell with hormone specific receptors



hormone binds with receptor of target cell



transduction



active response by target cell