Copy of Exam 1 for printing - Results

Exit Preview

Attempt 1 of 2

Written Feb 28, 2024 10:03 AM - Feb 28, 2024 10:03 AM

Your quiz has been submitted successfully.

Attempt Score **0 / 50 - 0 %**

Question 1

0 / 1 point

The region of the postsynaptic neuron that integrates information from the presynaptic neurons is

- the axon terminals
- the dendrite
- the presynaptic membrane
- ➡ that initial segment of the axon
- the cell body of the neuron

Question 2

0 / 1 point

The image above shows the structure of insulin, which is a hormone. Insulin is a

- protein, but some hormones are not protein
- protein, because all hormones are protein
- lipid, because all hormones are lipid
- lipid, but some hormones are not lipid
- lipoprotein, because all hormones are lipoproteins

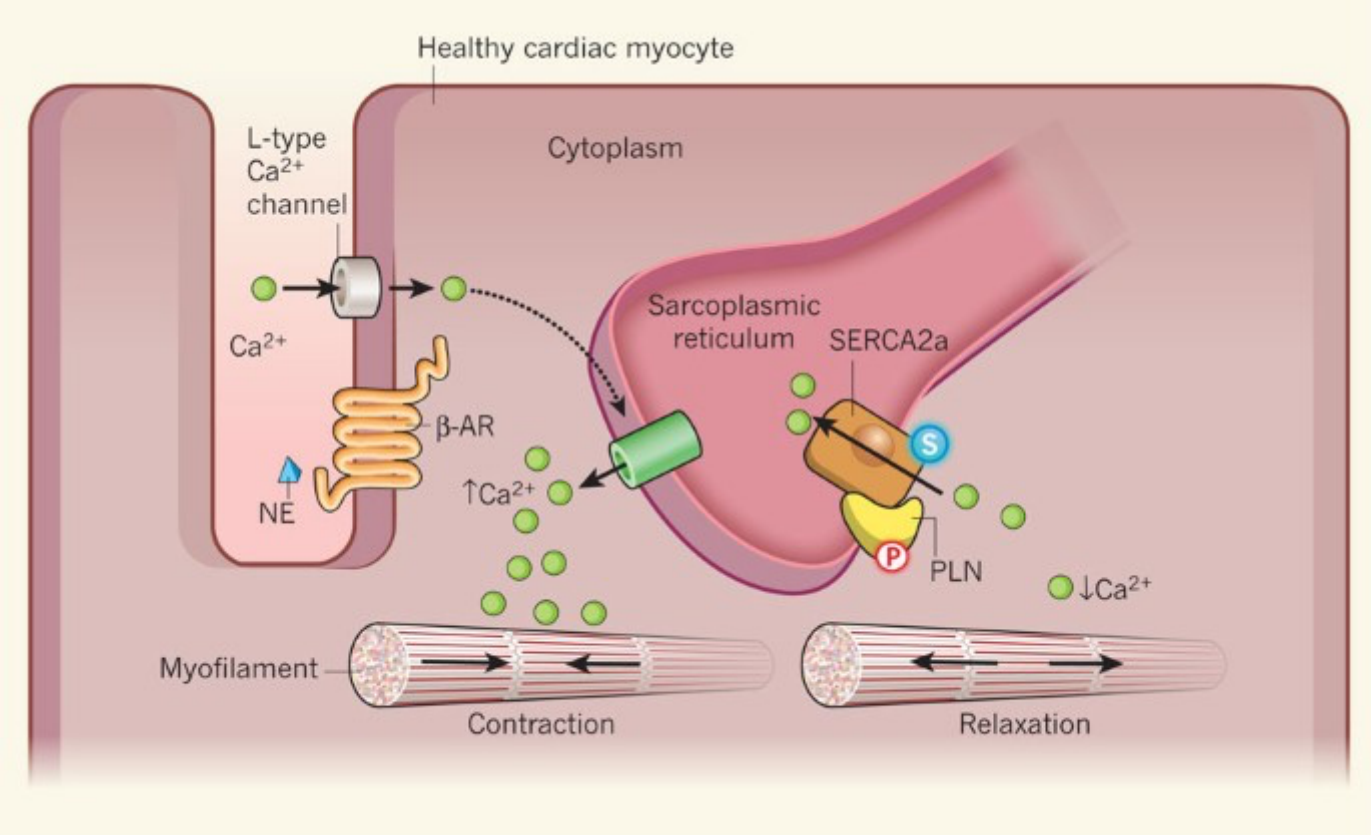
Question 3 **0 / 1 point**

Which of the following concerning the Na+/K+ pump is FALSE?

- it transports Na+ and K+ up their concentration gradients
- it is a type of passive transport
- it is an example of primary active transport
- it is an enzyme

- it is used in secondary active transport

Question 4 — 0 / 1 point



The image above shows the SERCA2a molecule, which is the sarco/endoplasmic reticulum Ca^{2+}-ATPase (a Ca++ pump). We'll cover this in the muscle and heart chapters. But until then, know that the SERCA2a molecule is a

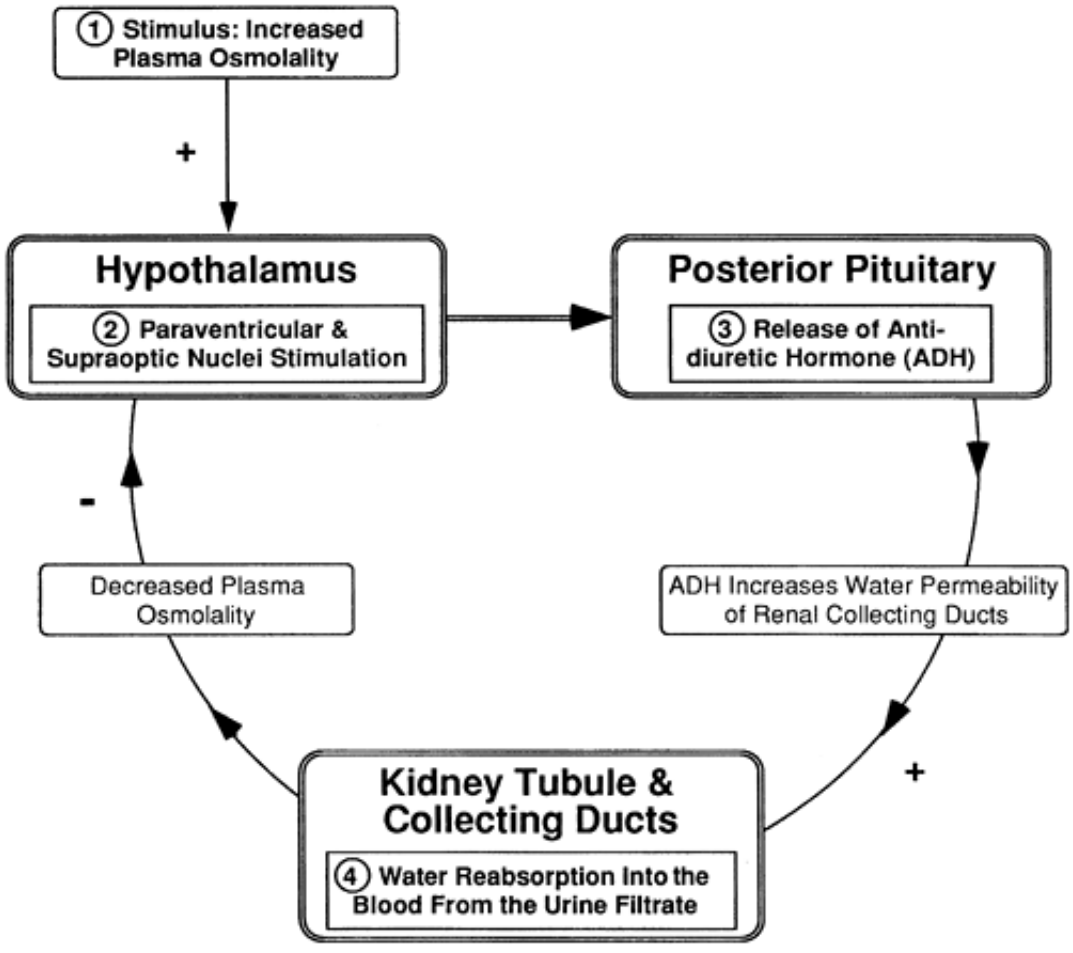
- protein
- carbohydrate
- amino acid
- nucelic acid
- lipid

Question 5 0 / 1 point

"the synthesis of mRNA and its protein product" is a pretty good definition of

- translocation
- diffusion
- biogenesis
- ➡ gene expression
- hydrolysis
- exocytosis

Question 6 0 / 1 point



The image above is a map of the endocrine control of water balance. This kind of regulation is known as

- ➡ ◯ homeostasis
- ◯ histology
- ◯ expression
- ◯ apoptosis
- ◯ pathology

Question 7 **0 / 1 point**

In nervous signaling, a postsynaptic receptor that is an ion channel is called a

- ➡ ◯ ionotropic receptor
- ◯ excitatory receptor
- ◯ G-protein coupled receptor
- ◯ matabotropic receptor
- ◯ inhibitory receptor

Question 8 **0 / 1 point**

SSRIs are a class of drugs used to treat depression. The mechanism of action is

- ◯ bind to and inhibit the voltage-gated Ca++ channels, which dampens synaptic transmission
- ➡ ◯ bind to and inhibit the reuptake transporter of the neurotransmitter serotonin, which shortens synaptic transmission

- bind to and inhibit SNARE proteins, which blocks serotonin release.
- bind to and inhibit voltage-gated sodium channels, which blocks synaptic transmission
- bind to and inhibit the serotonin receptor, which blocks synaptic transmission

Question 9 **0 / 1 point**

The rapid falling phase (repolarization) of the action potential occurs when

- Na+ and K+ are pumped across the plasma membrane
- a neurotransmitter binds to a receptor on the postsynaptic membrane
- ➡ voltage-gated Na+ channels close and voltage-gated K+ channels open
- vesicles containing Ca++ are secreted into the synaptic cleft
- the pH inside the cell drops below 3

Question 10 **0 / 1 point**

The specificity of a receptor protein can be explained by

- primary active transport
- quaternary structure
- ➡ the lock-and-key model
- expression
- allosteric inhibition

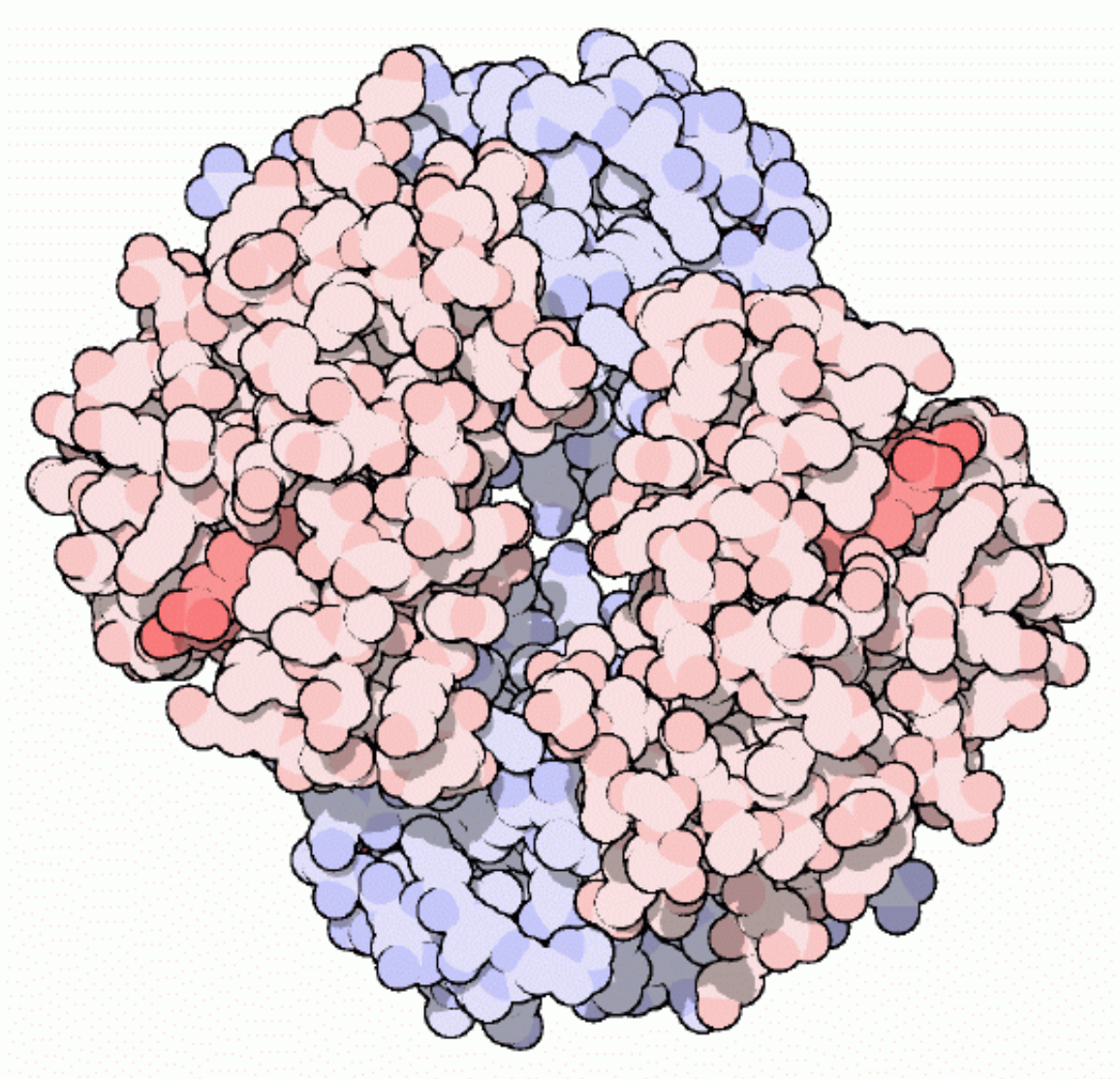
Question 11 **0 / 1 point**

What is the correct order of organelles for the synthesis and modification of a protein and its trafficking to its site of function?

- ER, golgi, vessicle, ribsome
- ribosome, ER, golgi, vessicle
- ribosome, golgi, vessicle, ER
- vessicle, ER, golgi, ribosome

Question 12

0 / 1 point



The image above is space-filling model of Hemoglobin. You can see four subunits, two are colored red and two are colored blue. What is a "subunit" as used here?

- a separate protein
- ➡ an independently synthesized polypeptide
- an amino acid
- a part of the protein that has a different function
- a binding site

Question 13 **0 / 1 point**

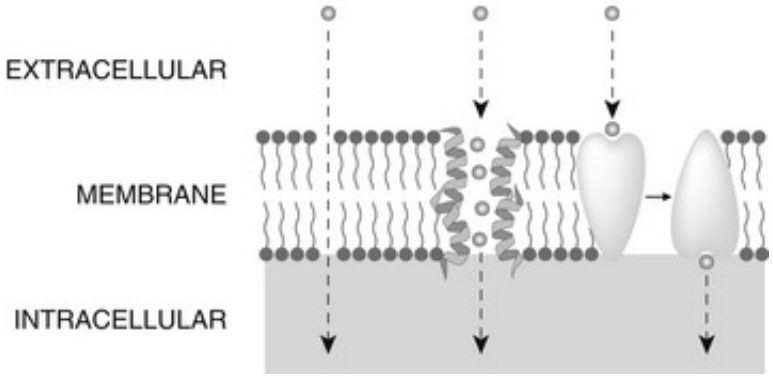
The steps of neurotransmitter secretion at a synapse are

key: "V-G" = voltage-gated

- membrane of axon terminus depolarizes > neurotransmitter channels open > neurotransmitter diffuses into synaptic cleft
- membrane of axon terminus depolarizes > V-G Ca++ channels open > neurotransmitter transporter is activated > neurotransmitter diffuses into synaptic cleft
- V-G Ca++ channels open > membrane of axon terminus depolarizes > neurotransmitter transporter is activated > neurotransmitter diffuses into synaptic cleft
- V-G Ca++ channels open > membrane of axon terminus depolarizes > activated motor proteins move vessicles to pre-synaptic membrane > vessicle fuses to membrane and neurotransmitter is excocytosed
- ➡ membrane of axon terminus depolarizes > V-G Ca++ channels open > activated motor proteins move vessicles to pre-synaptic

membrane > vessicle fuses to membrane and neurotransmitter is excocytosed

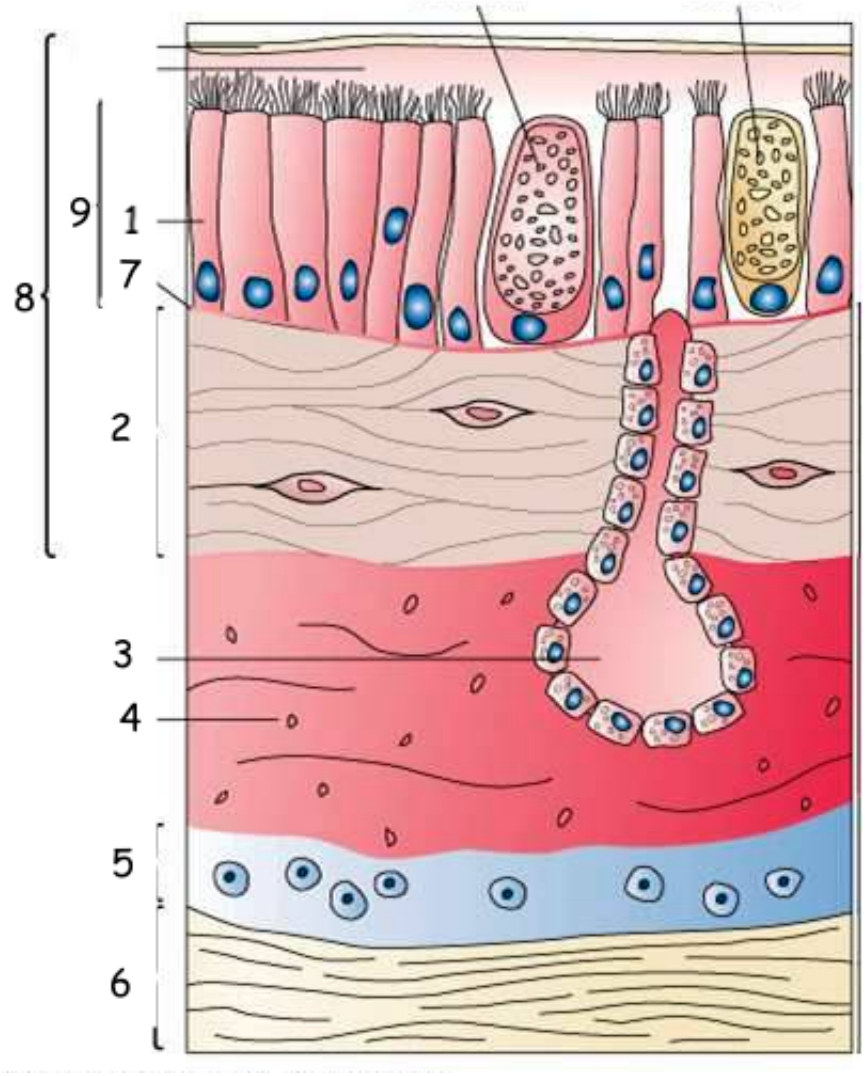
Question 14 **0 / 1 point**



The image above shows three mechanisms of the transport of a drug across a plasma membrane. The right mechanism is an example of

- simple diffusion
- facilitated diffusion
- primary active transport
- endocytosis
- secondary active transport

Question 15 **0 / 1 point**



The tubes in our body are all organs and have an organization pretty much like that in this image. In this image, the lumen is located where?

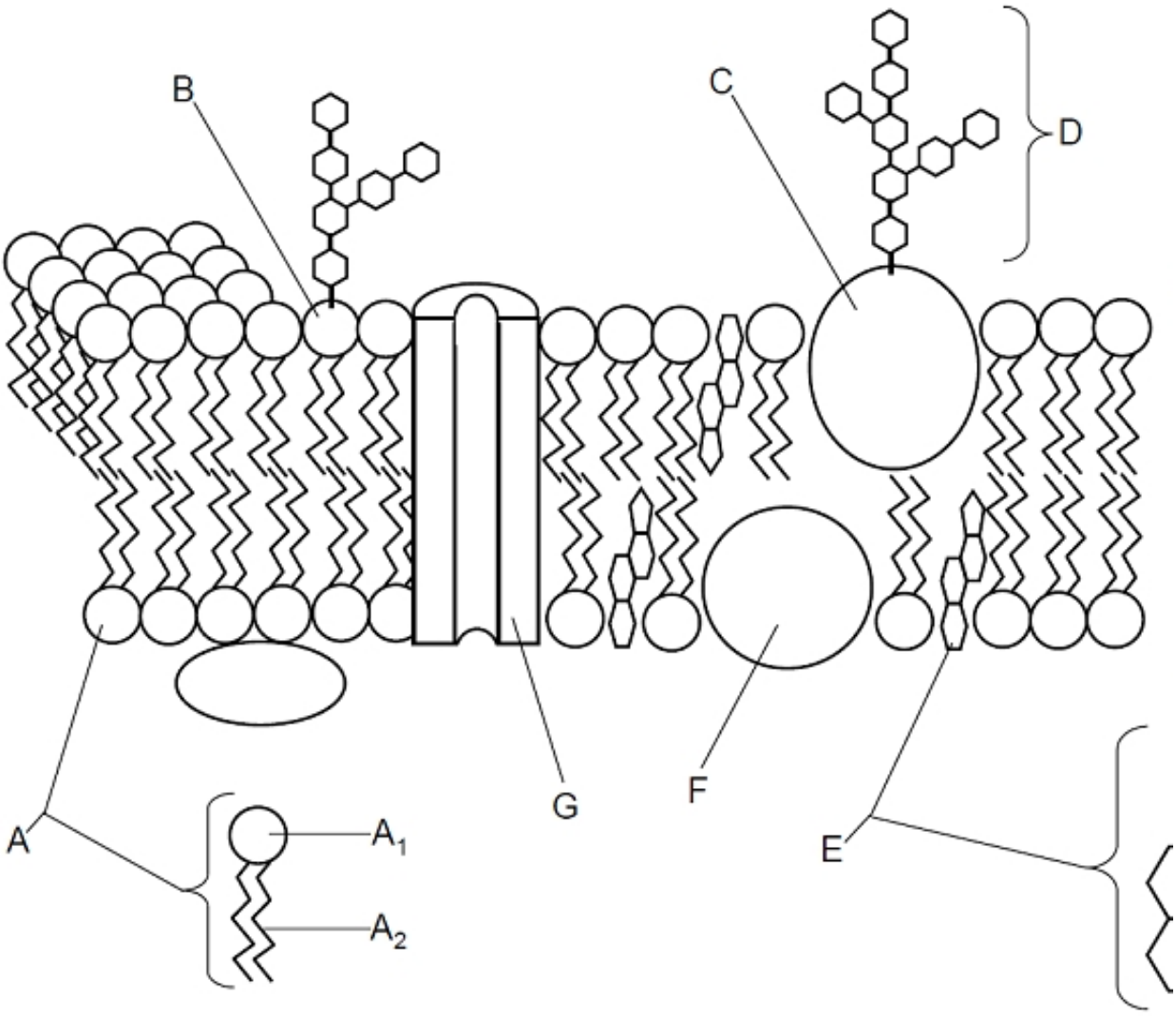
- at the top
- the layer labeled 6
- at the bottom
- at the junction of the layer labeled 9 and the layer labeled 2
- inside the layer labeled 2

Question 16 **0 / 1 point**

The membrane potential at which the electrical and chemical gradients of Na+ are equal in magnitude but opposite in direction is the

- ➡ ◯ equilibrium potential of Na+
- ◯ threshold potential
- ◯ local potential
- ◯ resting potential
- ◯ excitatory post-synaptic potential

Question 17 **0 / 1 point**



The structure labeled A_2 in the image above is a

- carbohydrate
- protein
- ➡ fatty acid
- ATP
- DNA molecule

Question 18 **0 / 1 point**

Molecules in our cells vary in size over several orders of magnitude. A small molecule has a diameter of about

- 1 cm
- ➡ 1 nm
- 1 m
- 1 µm
- 1 mm

Question 19 **0 / 1 point**

Signal amplification is

- ➡ the ability of a single, active second messenger to activate multiple instances of specific signal pathway
- a series of intracellular reactions in response to binding of a first messenger to a receptor that ultimately results in a cellular response
- the transfer of the signal across the plasma membrane; this activates the cellular response

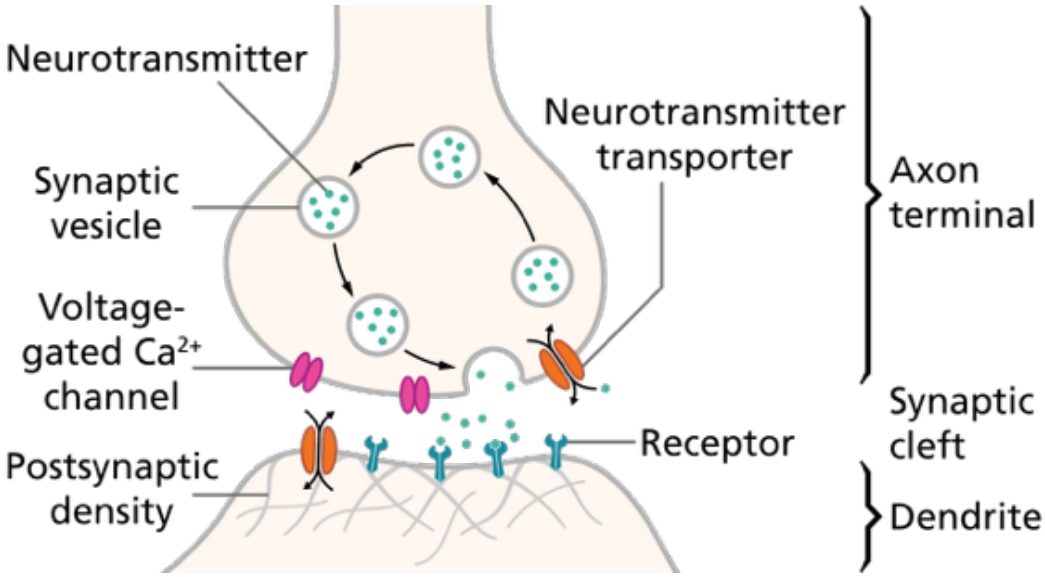
- the binding of a signaling molecule to a receptor; this activates the cellular response
- the transmission of a signal into the nucleus for transcription regulation

Question 20 — 0 / 1 point

The molecule $C_6H_{12}O_6$

- is a lipid
- is carbonated water
- ➡ contains 6 carbons
- contains 12 more protons than electrons
- contains 12 more electrons than protons

Question 21 — 0 / 1 point



The image above illustrates chemical nervous signaling, which is a special case of what kind of signaling?

- autocrine
- exocrine
- endocrine
- ➡ paracrine
- myocrine

Question 22 **0 / 1 point**

What is necessary for a local potential on a post-synaptic membrane?

- voltage-gated ion channels
- ➡ ligand-gated ion channels
- thermally-gated ion channels
- mechanically-gated ion channels
- leak channels

Question 23 **0 / 1 point**

The **MECHANISM OF TRANSPORT** of the purple dye in the beaker is

- dispersion
- ➡ bulk flow
- co-transport
- diffusion
- carrier-mediated transport

Question 24 **0 / 1 point**

A sodium atom has 11 protons. Dissolved sodium

- has lost an electron AND gained a proton
- has gained a proton
- has gained an electron
- has lost a proton
- ➡ has lost an electron

Question 25 **0 / 1 point**

The tissue lining the wall of an artery is

- adipose tissue
- connective tissue
- muscle tissue
- ➡ epithelial tissue
- serous membrane tissue

Question 26 — 0 / 1 point

Hydrophobic molecules

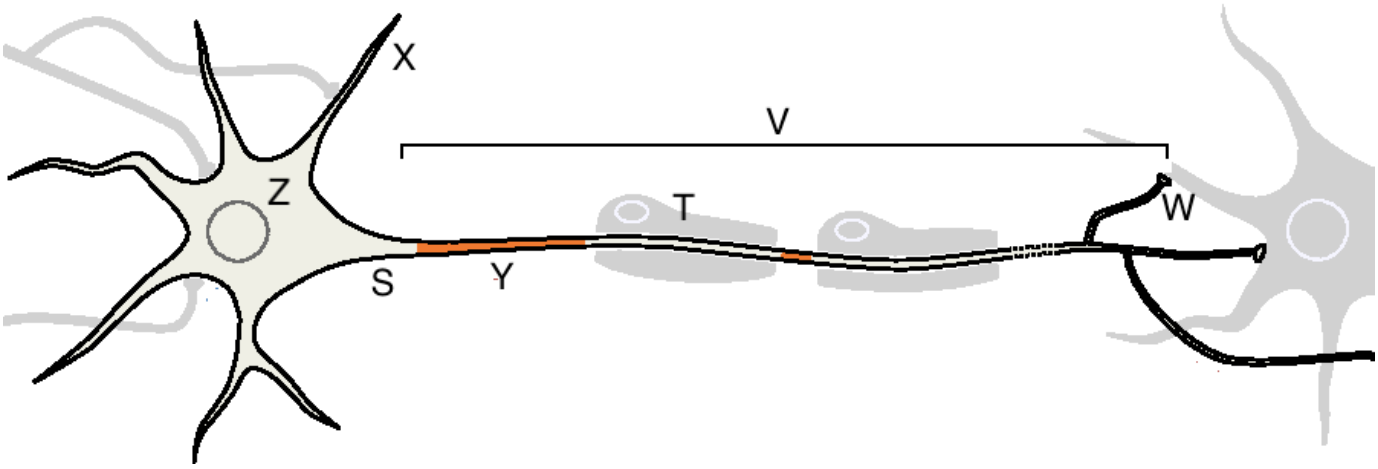
- tend to be very small
- ➡ tend to be insoluble (not dissolve) in water
- have a net charge
- have numerous polar covalent bonds
- tend to have a high oxygen atom content

Question 27 — 0 / 1 point

A water molecule

- has more protons than electrons
- is an ion because of the net separation of positive and negative charge, with one side more positive and one side more negative
- ➡ is electrically neutral, but has a net separation of positive and negative charge, with one side more positive and one side more negative
- has more electrons than protons
- is always in the form $H^+ + OH^-$

Question 28 — 0 / 1 point



The structure labeled T is

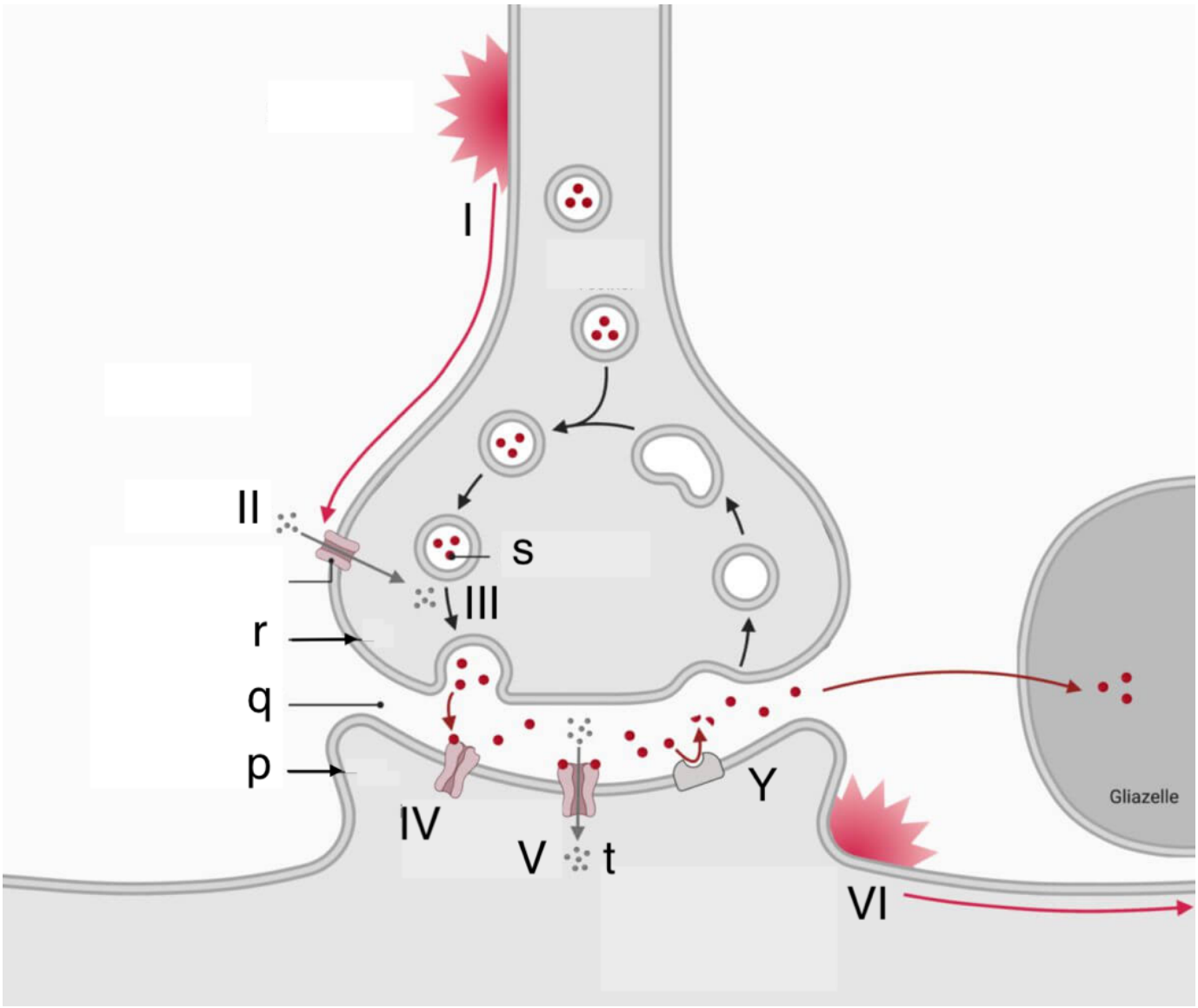
- post-synaptic membrane
- voltage-gated Na+ channel
- axon initial segment
- ➡ glial cell forming part of the myelin
- soma

Question 29 **0 / 1 point**

The nucleus of a cell

- is the site of protein synthesis (translation)
- ➡ controls protein synthesis
- is the major site of ATP synthesis
- breaks down ("digests") proteins and other big organic molecules
- trafficks proteins to their site of function

Question 30 **0 / 1 point**



In the image above, the event labeled by III is

- the secretion of neurotransmitter
- the action potential
- the diffusion of ions through the ligand-gated ion channel
- the diffusion of Ca++ into the axon terminus
- the binding of neurotransmitter to the receptor

Question 31 **0 / 1 point**

The fluid compartment that includes all fluids that are outside of our cells is known as

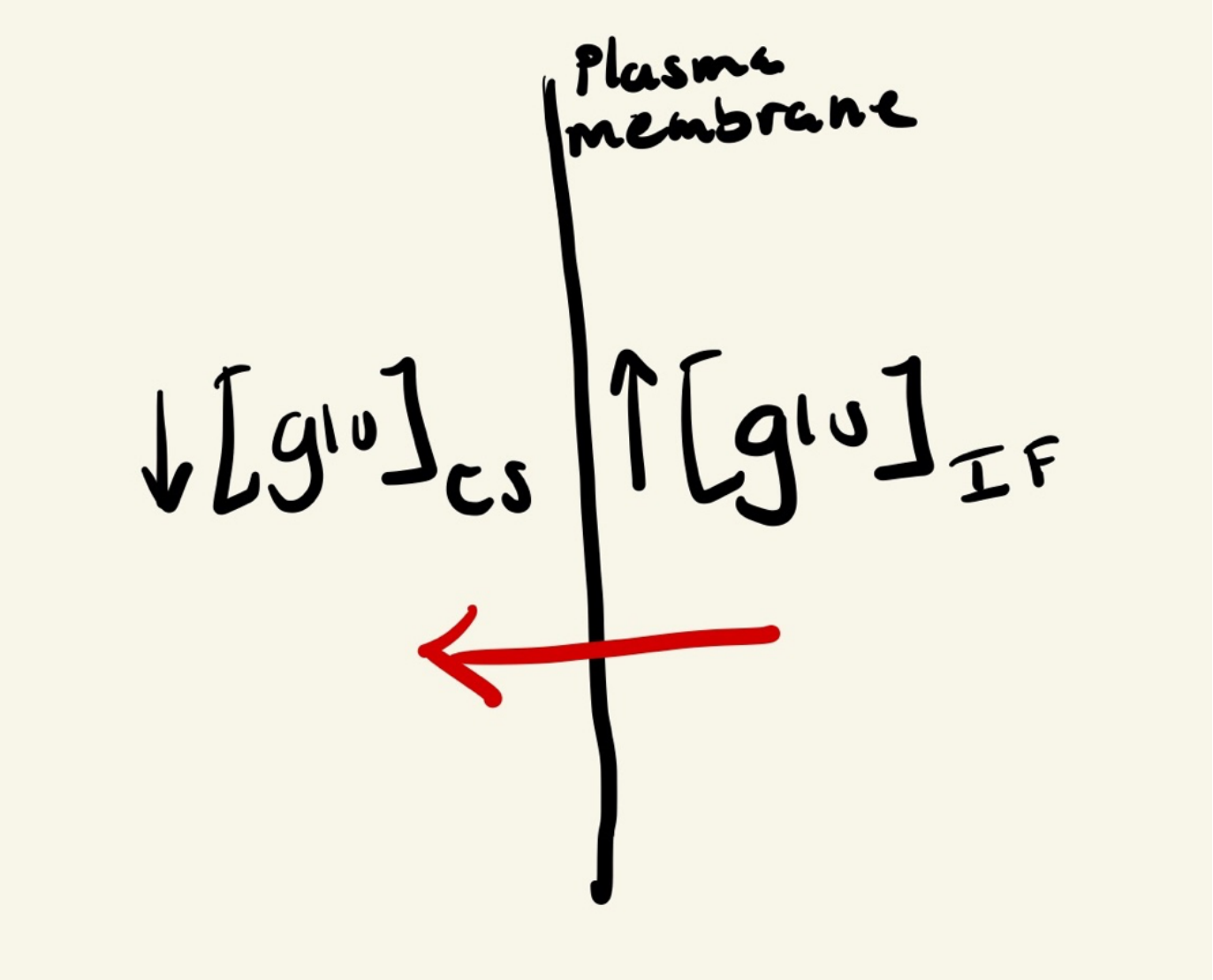
- lymph
- chyme
- plasma
- cytosol
- ➡ extracellular fluid

Question 32 **0 / 1 point**

A protein is a polymer composed of what subunit?

- H+
- ➡ amino acids
- carbohydrates
- nucleic acids

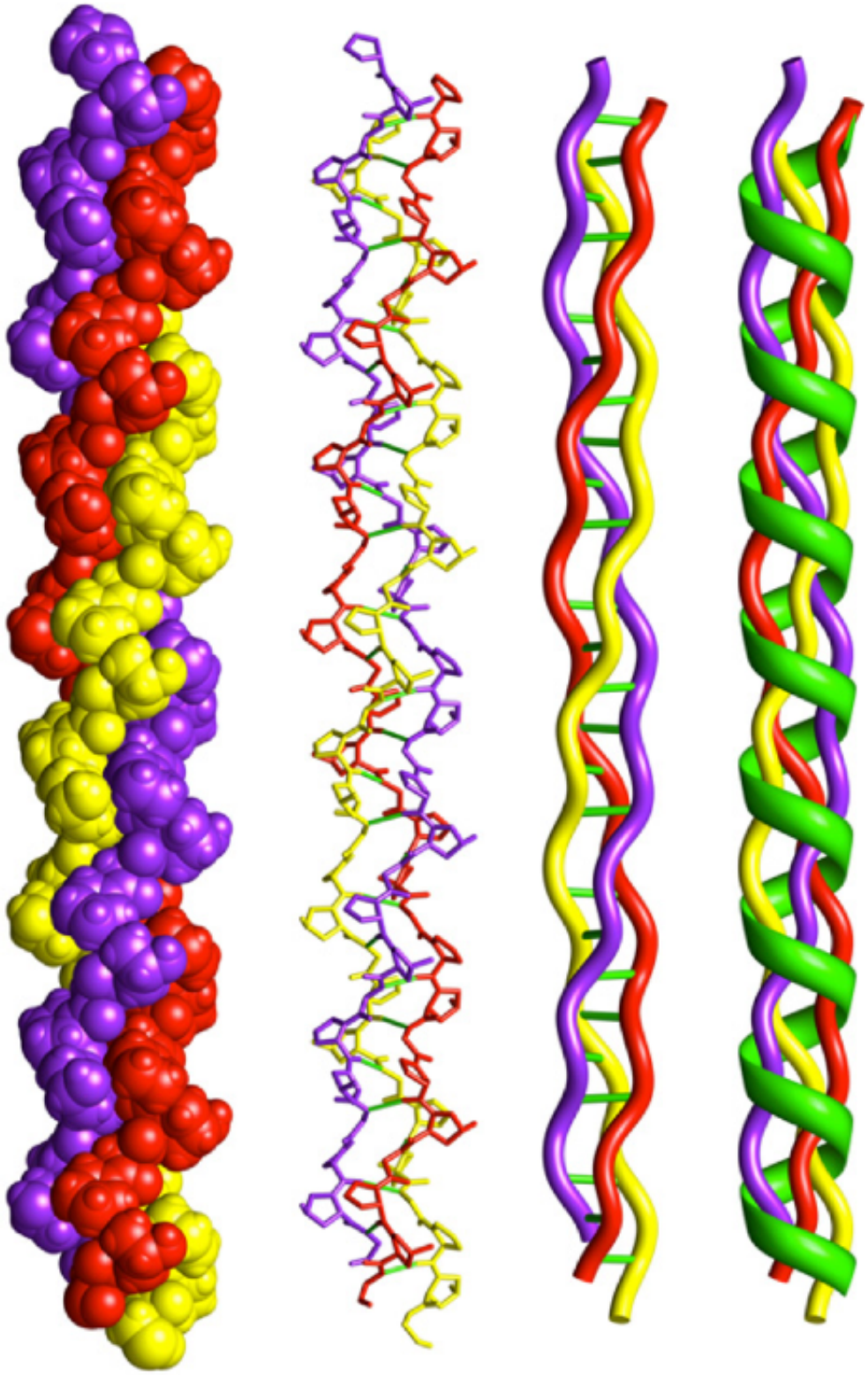
Question 33 **0 / 1 point**



in the image above, the square bracket notation [glu] means

- the weight of glucose
- the concentration gradient of glucose
- the mass of glucose
- ➡ the concentration of glucose
- the total number of glucose molecules

Question 34 **0 / 1 point**



The image above shows four different depictions of a collagen protein. Collagen is secreted in all connective tissues. We'll talk about collagen during the skeleton unit. From the image, it is easy to see that collagen is

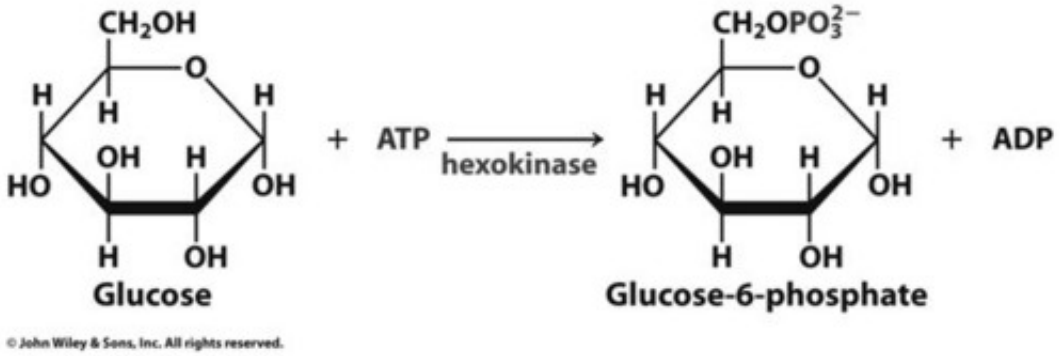
- filamentous
- a DNA molecule
- an amino acid
- an enzyme
- globular

Question 35 **0 / 1 point**

A bacterium is about 1 micron in diameter. A glucose molecule is about 1 nanometer in diameter. We could say that a bacterium is _____ orders of magnitude bigger than a glucose molecule

- 0.001
- 1,000,000
- 6
- 3
- 1000

Question 36 **0 / 1 point**



In the image above, hexokinase is

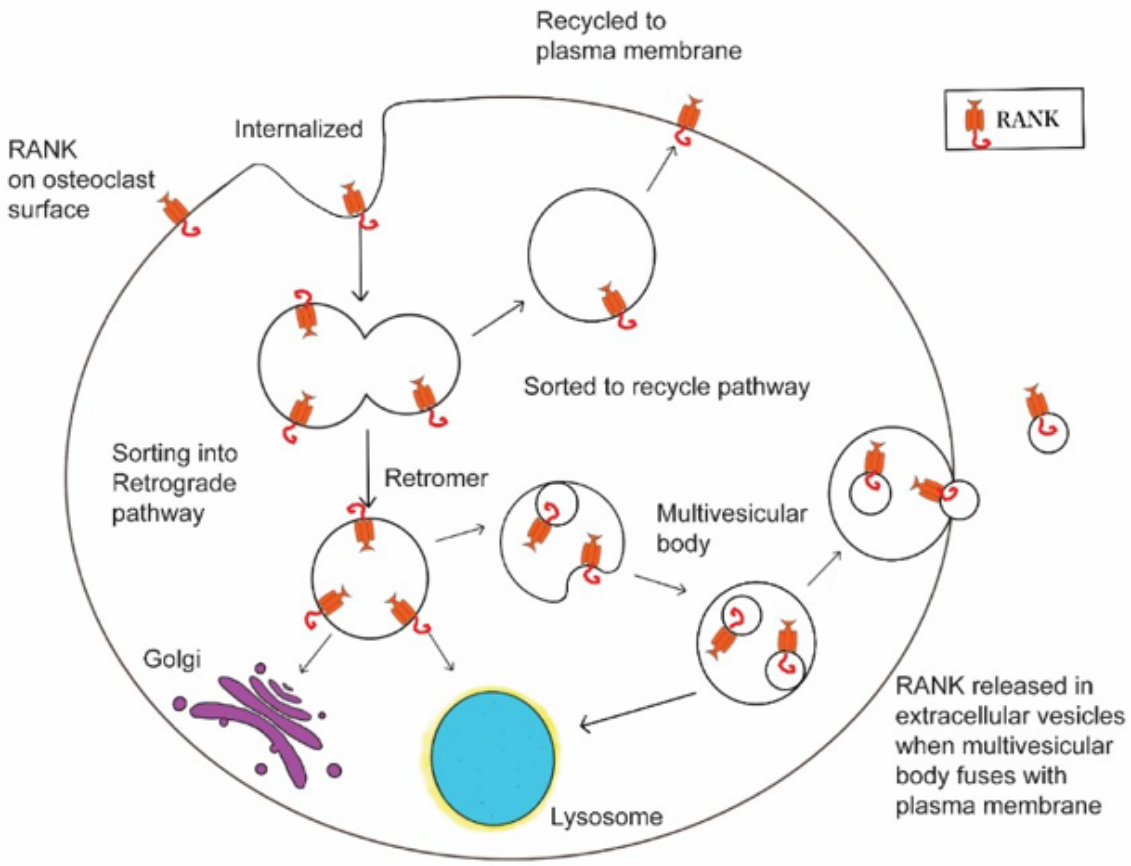
- an enzyme
- a transporter
- a product
- a substrate
- a pump

Question 37 **0 / 1 point**

Which of the following processes occurs by bulk flow?

- transport of O2 from the nasal cavity to the microscopic air sacs in the lung (about 0.5 m)
- transport of O2 from the plasma membrane to an interiror mitochondrion (about 5 µm)
- transport of a neurotransmitter across a synaptic cleft (the space between a neuron and a target cell -- about 10 nm)
- transport of glucose across an intestinal epithelial cell, from apical to basal side (about 50 µm)
- transort of O2 across the respiratory membrane -- from a lung air sac into the blood (about 0.5 µm)

Question 38 **0 / 1 point**



The multivesicular body in the image above contains RANK membrane receptors attached to small bits of membrane. These multivesicular bodies are used to transport RANK into the interstitial fluid via

- phagocytosis
- endocytosis
- ➡ exocytosis
- secondary active transport
- primary active transport

Question 39 0 / 1 point

A major factor creating the resting membrane potential is a high density of **what** in the plasma membrane?

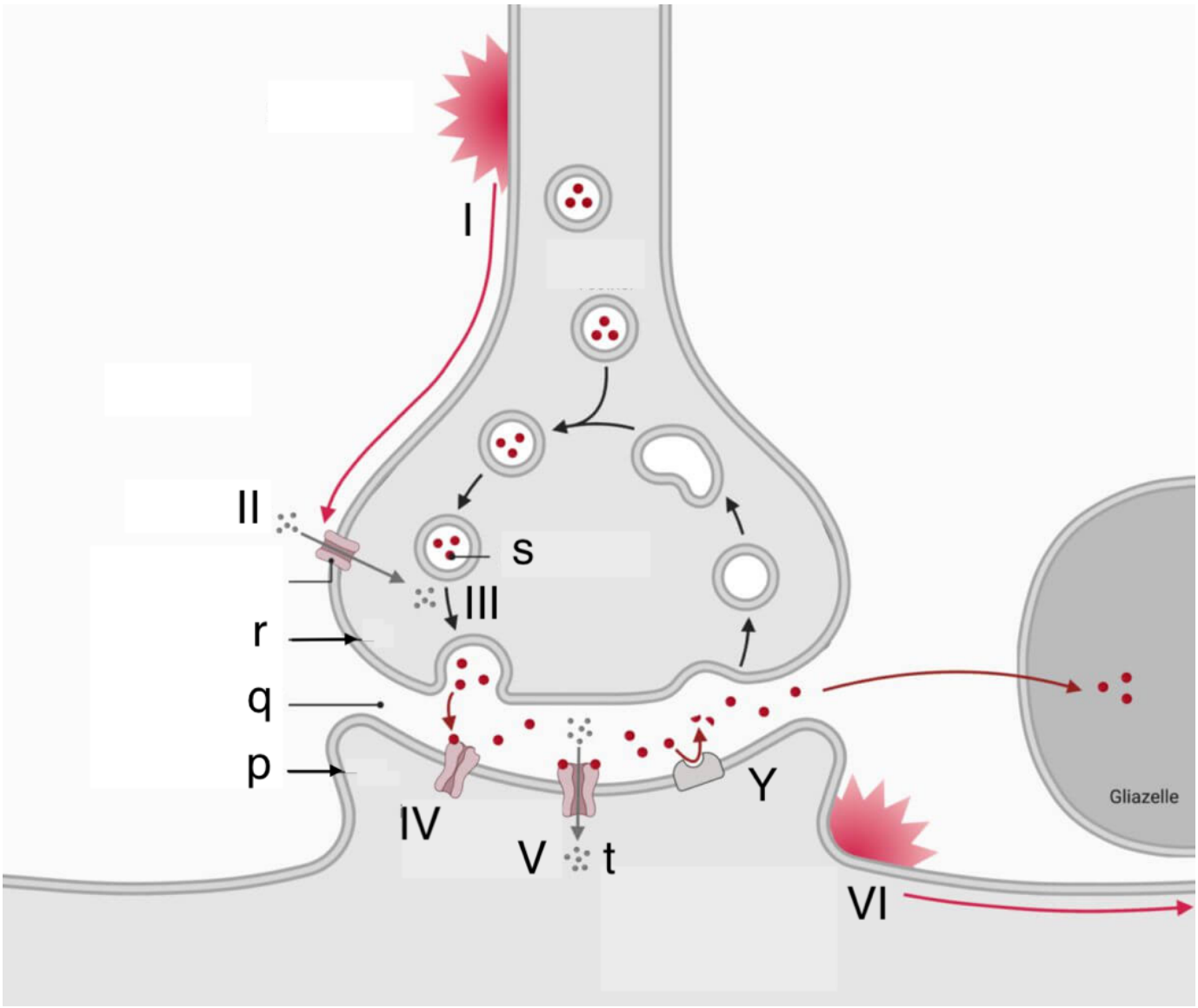
- ➡ ◯ Na+/K+ pumps
- ◯ Na+ leak channels
- ◯ ligand-gated Na+ channels
- ◯ voltage-gated Na+ channels
- ◯ Ca++ leak channels

Question 40 **0 / 1 point**

What class of organic molecule is glucose transporter 4 (GLUT4), which is used to transport glucose across the plasma membrane of muscle and adipose cells?

- ◯ nucleic acid
- ◯ lipid
- ◯ carbohydrate
- ➡ ◯ protein
- ◯ amino acid

Question 41 **0 / 1 point**

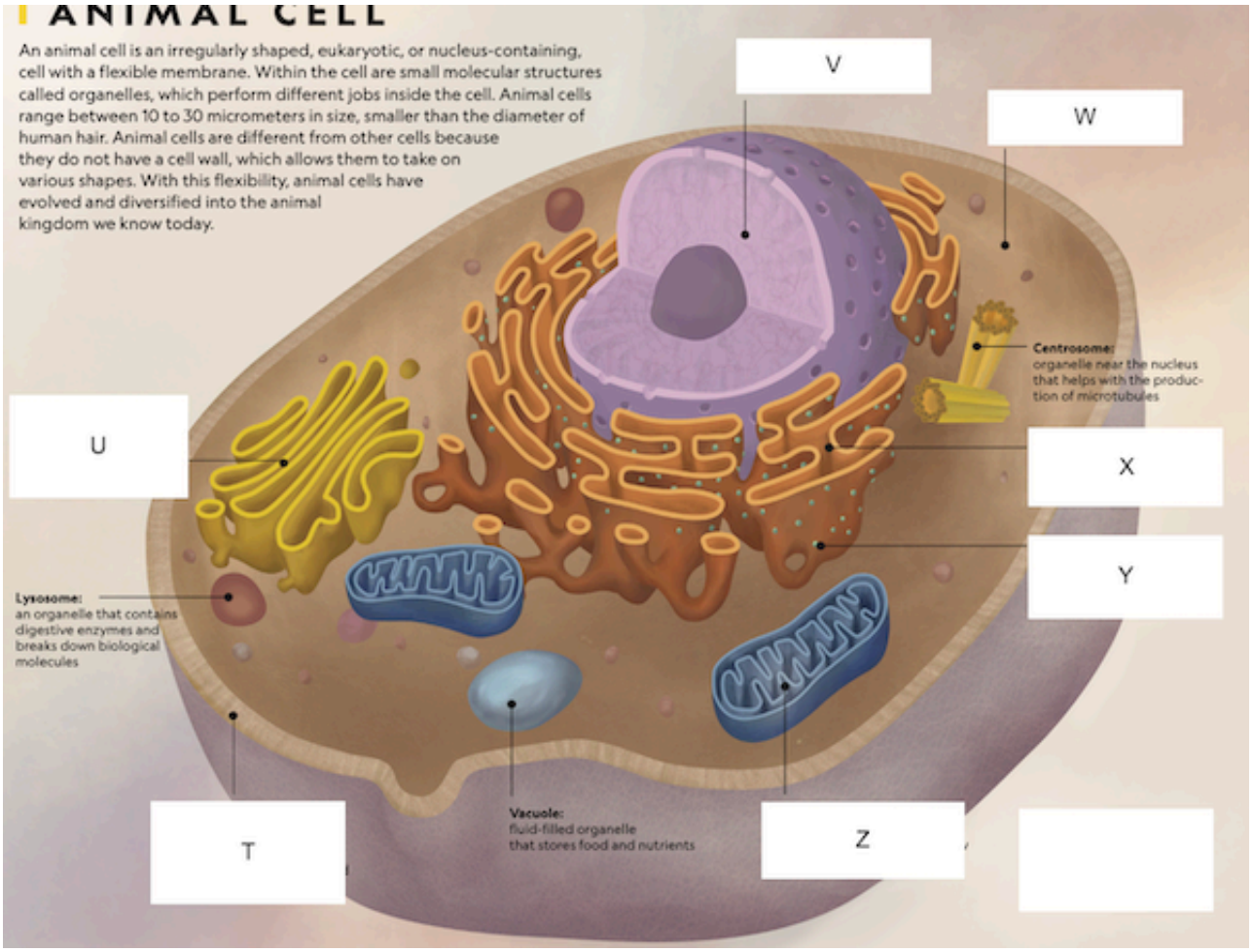


In the image above, s labels

- ion channel
- Ca++
- receptor
- neurotransmitter
- Na+

Question 42

0 / 1 point



The structure labelled "U" is

- cytoskeleton
- mitochondrion
- vessicle
- ribosome
- golgi

Question 43 0 / 1 point

The reaction

$CO_2 + H_2O$ <---> $H^+ + HCO_3^-$

is super important and we'll come back to it in the respiratory and urinary systems. If this reaction is moving to the right, CO2 is

- a product
- the enzyme
- a pharmacological agonist
- ➡ a substrate
- a competitive inhibitor

Question 44 **0 / 1 point**

A membrane that can generate an action potential is

- ➡ excitable
- synaptic
- stimulatable
- electrical
- transmissable

Question 45 **0 / 1 point**

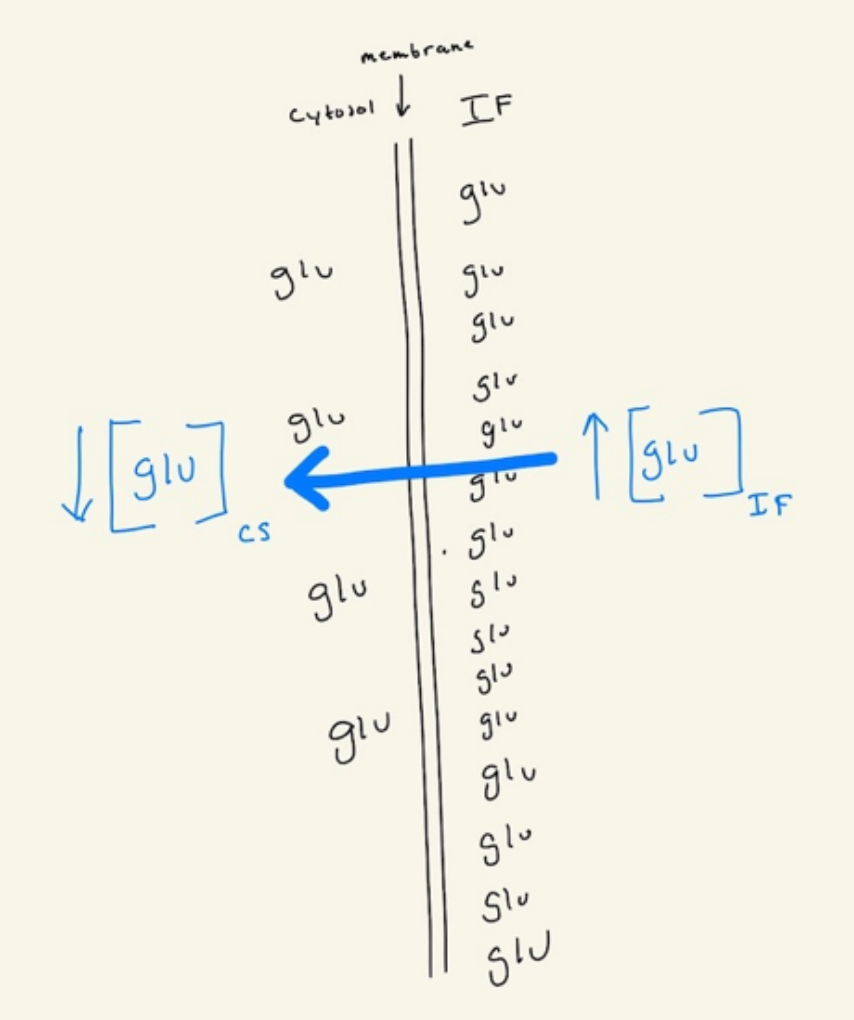
proteins are made

- in the interstitial fluid
- in the plasma membrane
- in the nucleus

- on a ribosome
- in the cytosol

Question 46

0 / 1 point



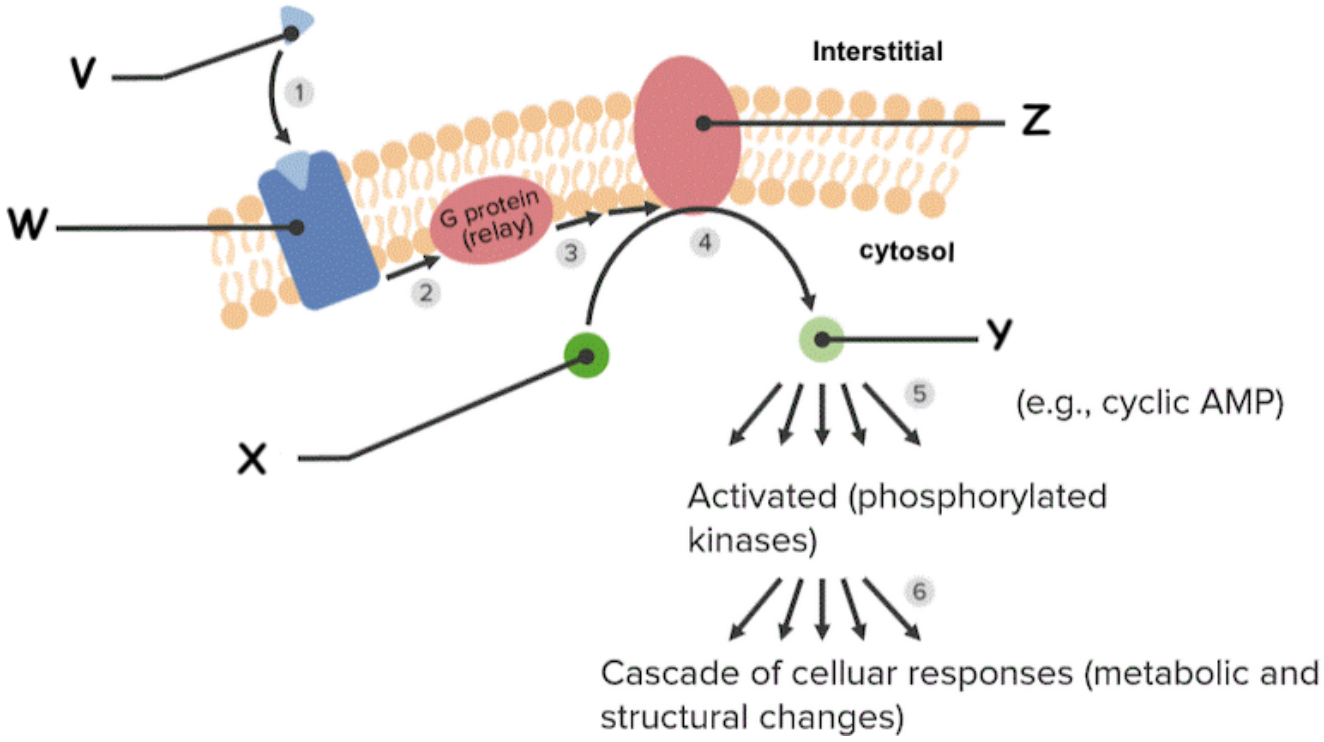
Given the system above, which statement is TRUE?

- more glucose moves into the cell than out of the cell because of simple statistics - each glucose has 50% probability of moving across the membrane and 50% of the glucose outside the cell (that fraction moving in) is greater than 50% of the glucose inside the cell (that fraction moving out).
- more glucose moves into the cell than out of the cell because there

are too many molecules crowded into the area outside the cell, therefore they move to the side of the cell with more room

- more glucose moves into the cell than out of the cell because glucose is attracted to the area of low glucose concentration
- more glucose moves into the cell than out of the cell because the system needs to achieve equilibrium
- more glucose moves into the cell than out of the cell because there is an external force moving glucose into the cell

Question 47 **0 / 1 point**



Let's say this is an image of norepinephrine (NE) signaling. NE binds to a beta-adrenergic receptor on cardiac muscle. The class of drugs call beta-blockers bind to the NE receptor and inhibit NE binding. This is an example of

- pharmacological (or receptor) antagonism

- pharmacological (or receptor) agonism
- physiological antagonism
- physiological agonism

Question 48 **0 / 1 point**

In a typical neuron, what part of the cell secrete neurotransmitter?

- axon hillock
- dendrite
- soma
- ➡ axon terminals
- dendrite and soma, but not the axon

Question 49 **0 / 1 point**

The equilibrium potential of K+ is -90 mV.

The membrane potential is -70 mV.

If the membrane is suddenly permeable to K+ then

- Initial K+ diffusion will be rapid, because the membrane is far from the K+ equilibrium potential
- ➡ Initial K+ diffusion will be slow, because the membrane is close to the K+ equilibrium potential
- Initial K+ diffusion will be rapid, because the membrane potential is negative
- There is not enough information to answer this question
- Initial K+ diffusion will be slow, because the membrane potential is

- ◯ negative

Question 50 0 / 1 point

What do we call "the material located between the plasma membrane and the membrane surrounding the nucleus."

- ◯ cytoskeleton
- ◯ intracellular matrix
- ◯ ribosome
- ◯ organelles
- ➡ ◯ cytoplasm

Done