Copy of Exam 1 for printing - Results

Exit Preview

Attempt 1 of 1

Written Feb 28, 2024 9:58 AM - Feb 28, 2024 9:58 AM

Your quiz has been submitted successfully.

Attempt Score **0 / 53 - 0 %**

Renal

Question 1

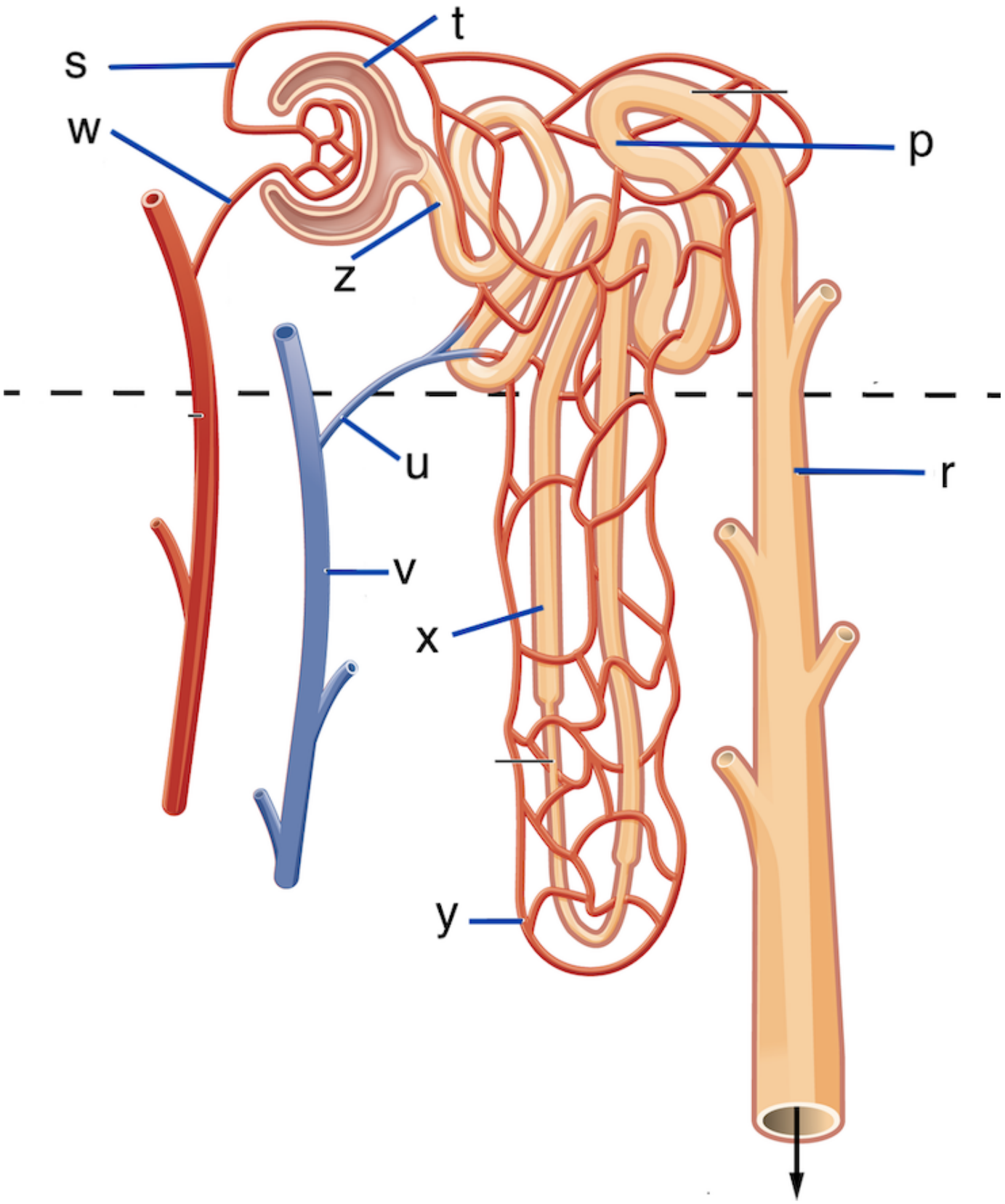
0 / 1 point

The long loops of Henle are the primary site of

- ○ filtration
- ○ water, electrolyte, and organic molecule reabsorption
- ○ hormonally controlled Na+ reabsorption
- ○ hormonally controlled water reabsorption
- ○ the creation of the solute concentration gradient in the IF of the renal pyramid

Question 2

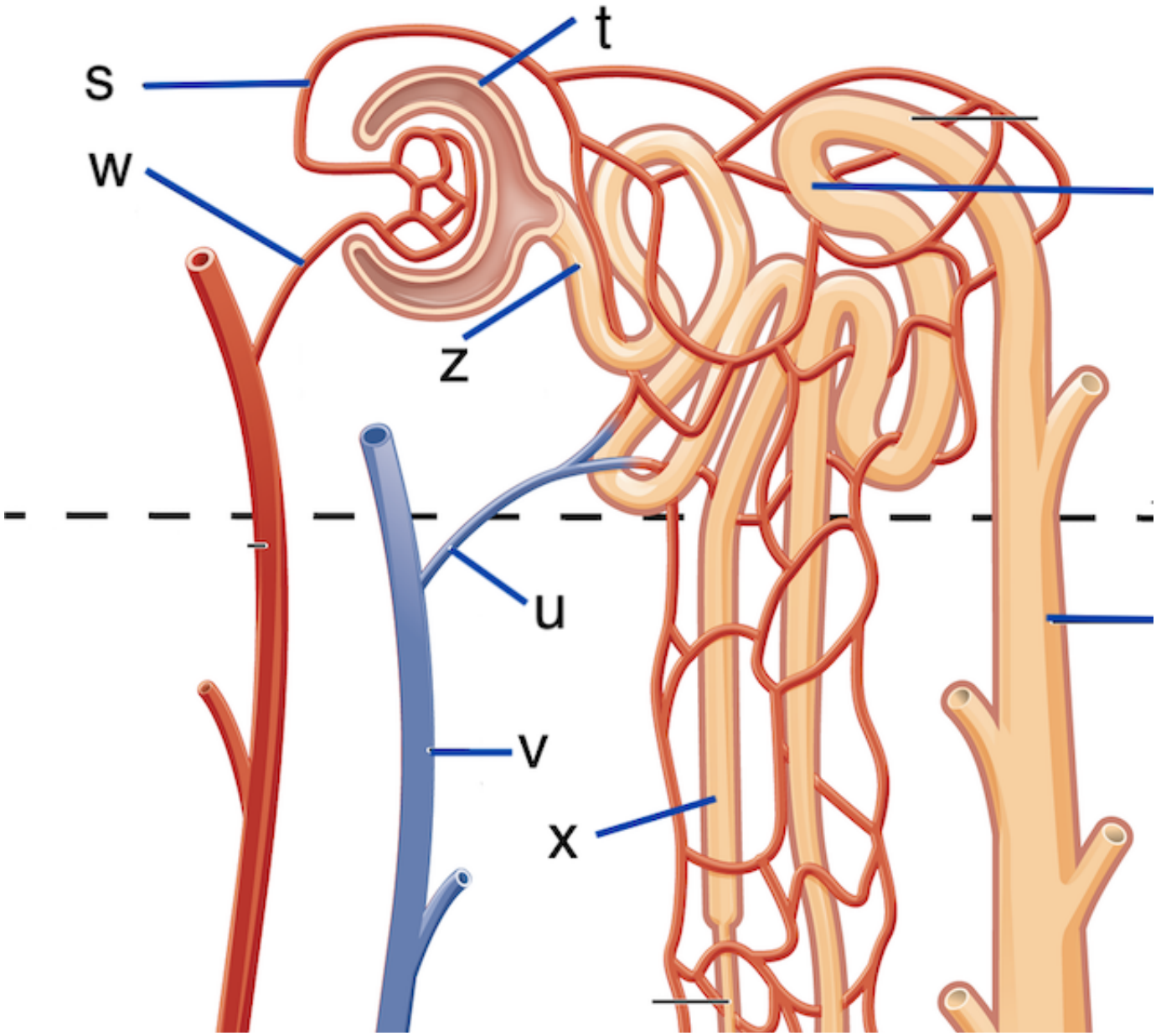
0 / 1 point

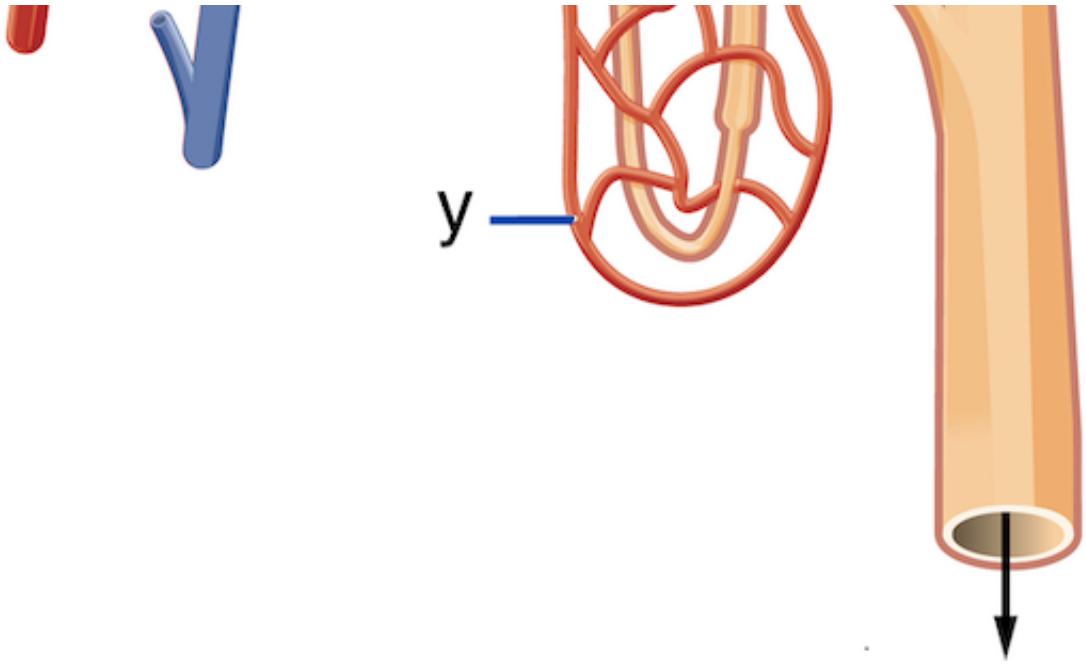


The dashed line labeled q is the border between

- the base and the apex of the renal pyramid
- the cortex and the medulla
- the afferent and efferent cortex
- the renal calyx and renal column
- the cortex and renal pelvis

Question 3 **0 / 1 point**

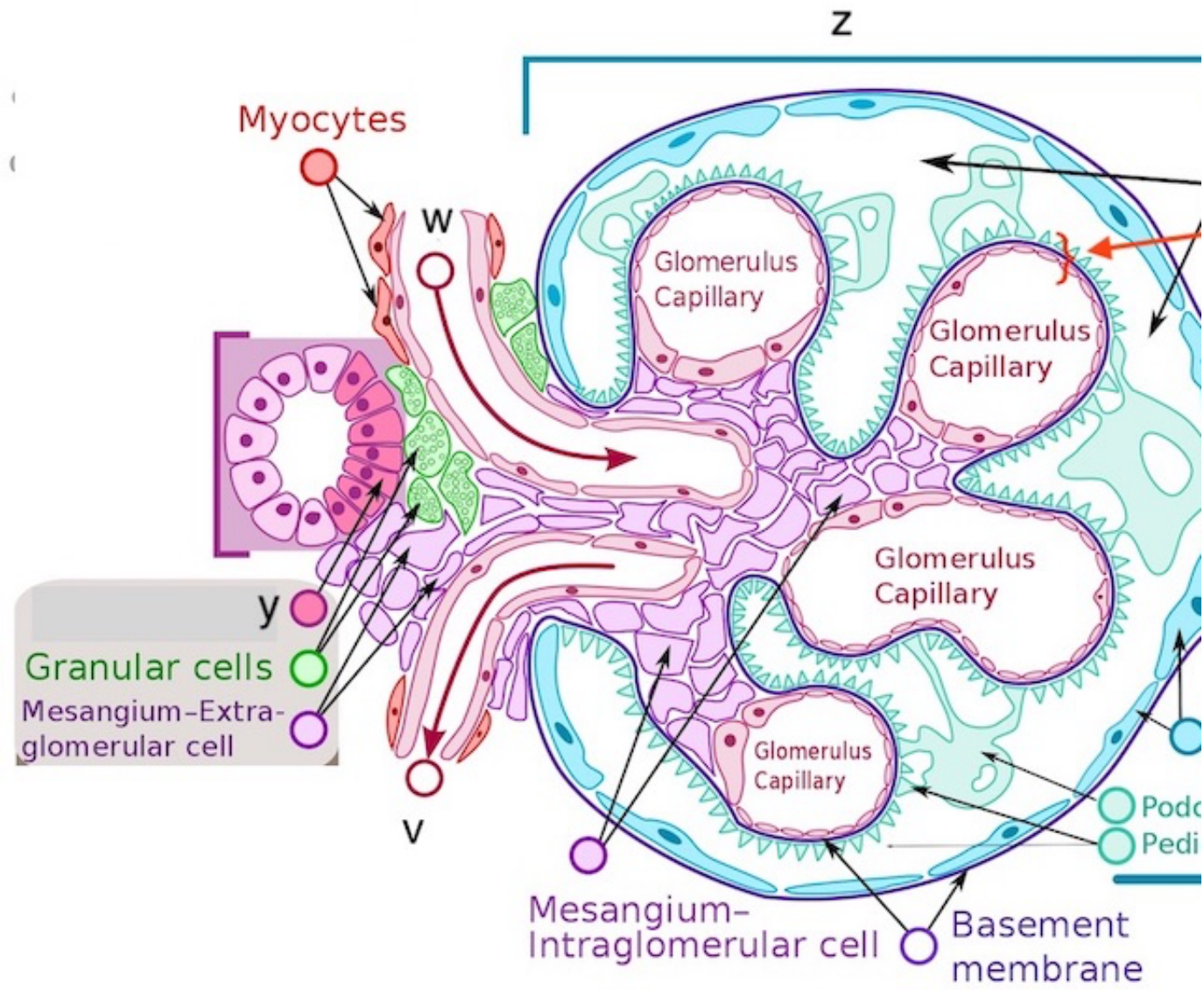




The primary site of reabsorption of organic molecules such as glucose occurs at the site labeled

- x
- r
- t
- z
- p

Question 4 **0 / 1 point**



The fluid in the space marked x is

- ICF
- plasma
- IF
- filtrate
- urine

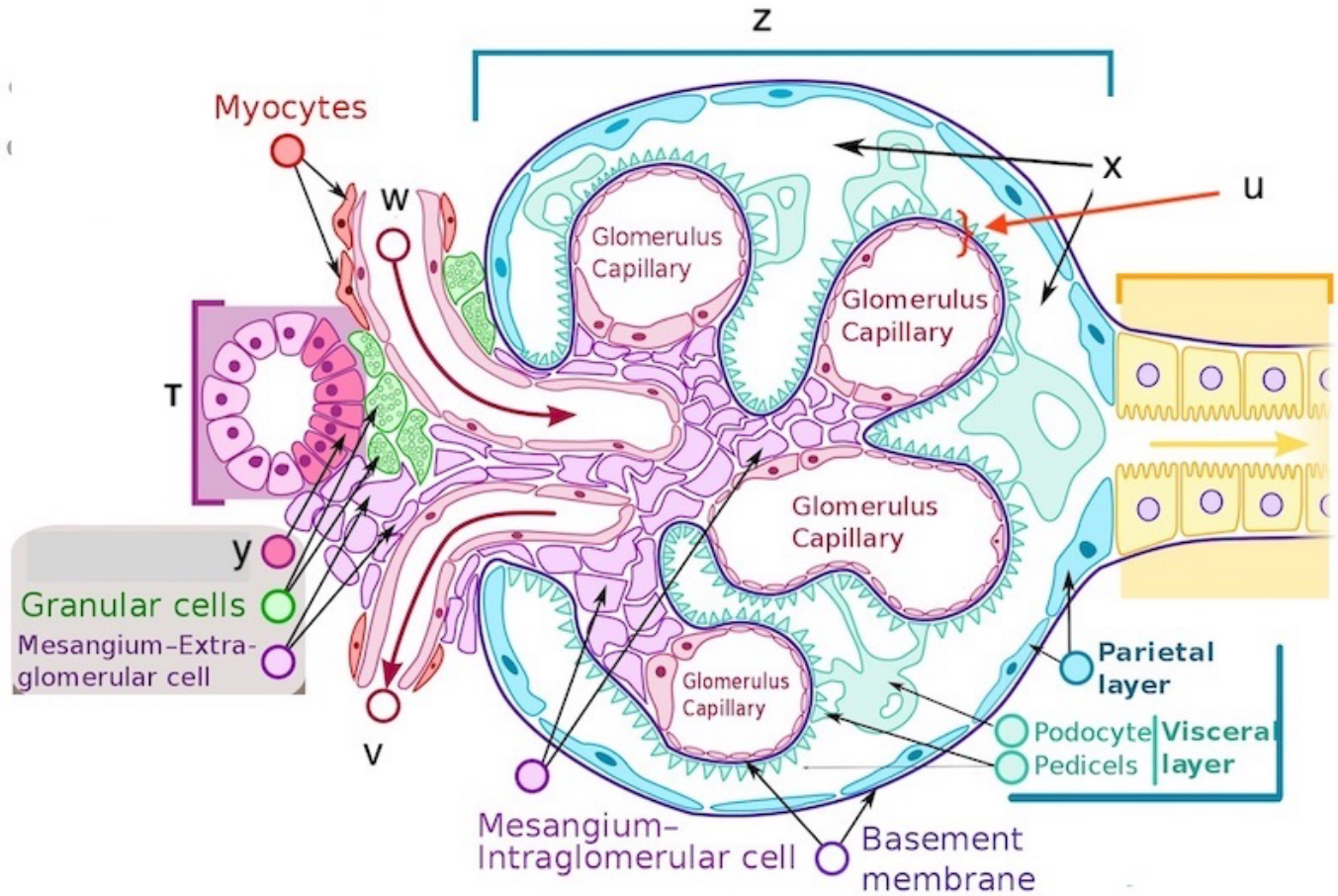
Question 5

0 / 1 point

If the wall of the afferent arteriole is stretched, smooth muscle in the arteriole wall contracts, which maintains GFR. This mechanism of GFR regulation is known as the

- myogenic response
- tubuloglomerular feedback
- renal clearance
- renin-angiotensin-aldosterone system
- juxtaglomerular apparatus

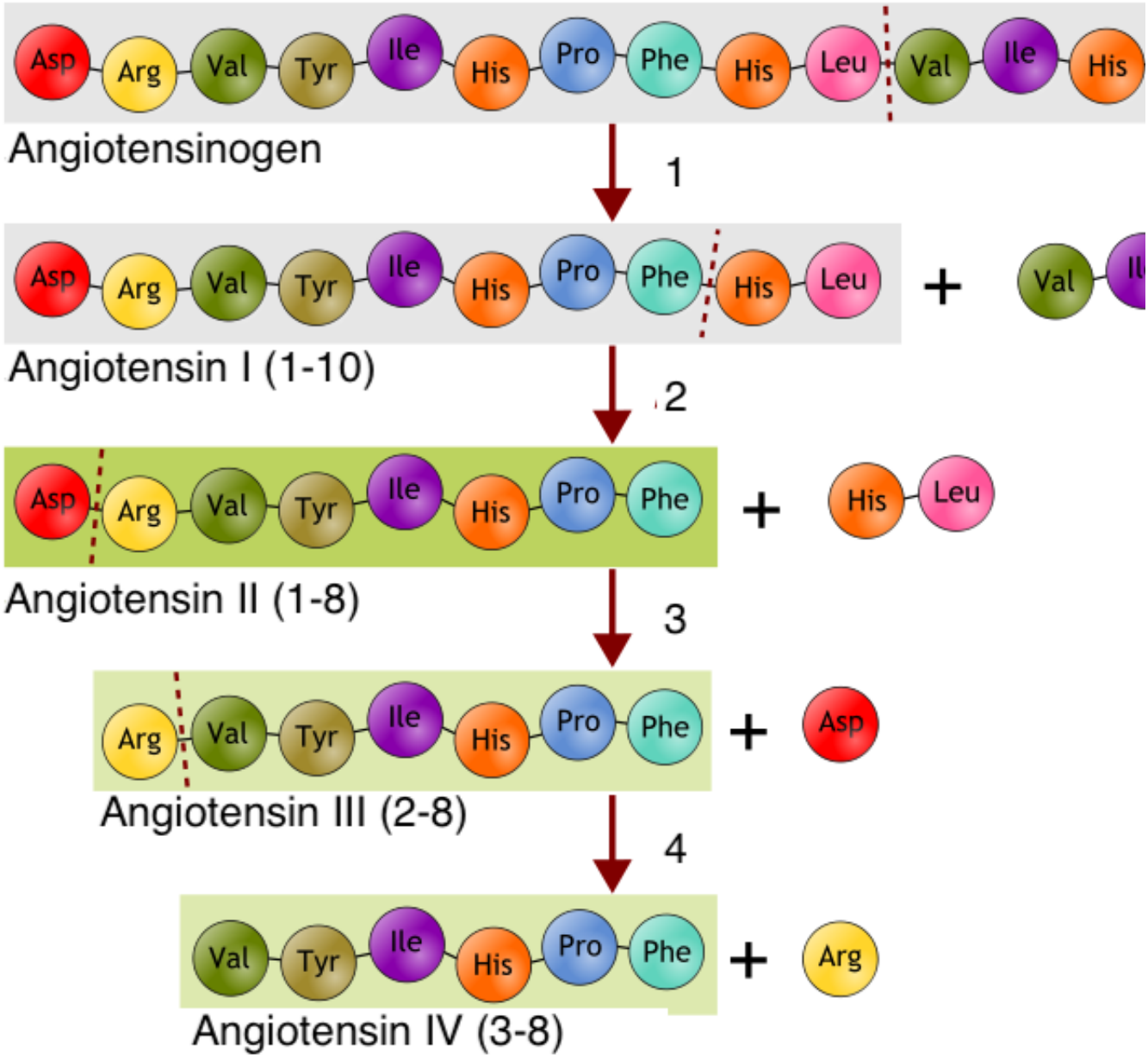
Question 6 **0 / 1 point**



the cells marked "granular cells" are also known as juxtaglomerular cells. These secrete

- H+
- aldosterone
- renin
- ADH
- K+

Question 7 **0 / 1 point**



A drug used to block step 2 is called a

- ACE inhibitor
- angiotensin II blocker
- beta blocker
- renin inhibitor
- angiotensin I inhibitor

Question 8 **0 / 1 point**

Renin

- is a tropic hormone that stimulates secretion of angiotensin by liver hepatocytes
- is an enzyme that converts angiotensin to aldosterone
- is a tropic hormone that stimulates secretion of aldosterone by the adrenal cortex
- is an enzyme that converts angiotensinogen to angiotensin-1
- is a tropic hormone that stimulates secretion of ADH by the posterior pituitary

Question 9 **0 / 1 point**

urea is a nitrogen waste resulting from the breakdown of

- fatty acids
- cholesterol
- carbohydrates
- e
- amino acids

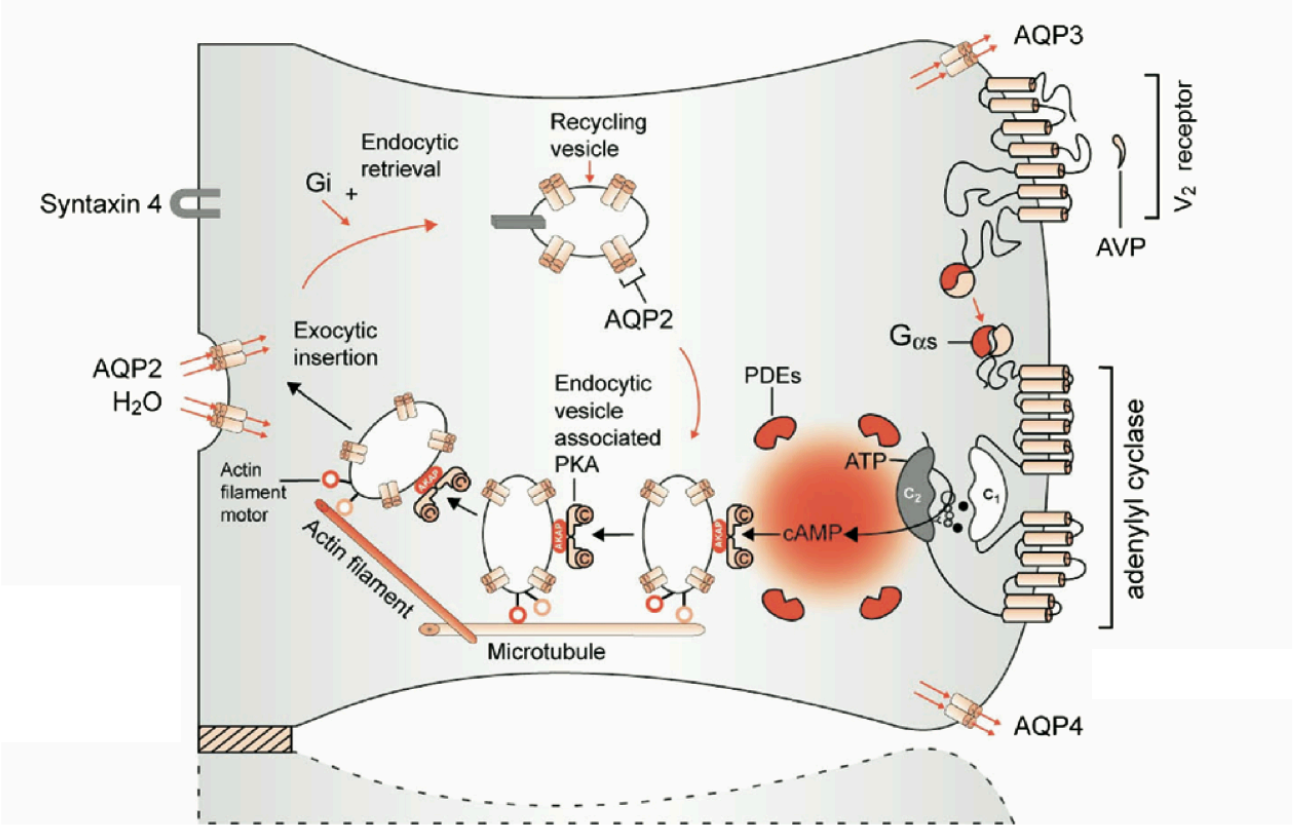
Question 10 **0 / 1 point**

what "concentrates urine"?

- solute secretion into the Loop of Henle
- increased GFR and movement of solute into the filtrate
- water reabsorption from the collecting duct into the interstitial fluid
- solute secretion into the collecting duct
- solute reabsorption from the Loop of Henle into the IF

Question 11

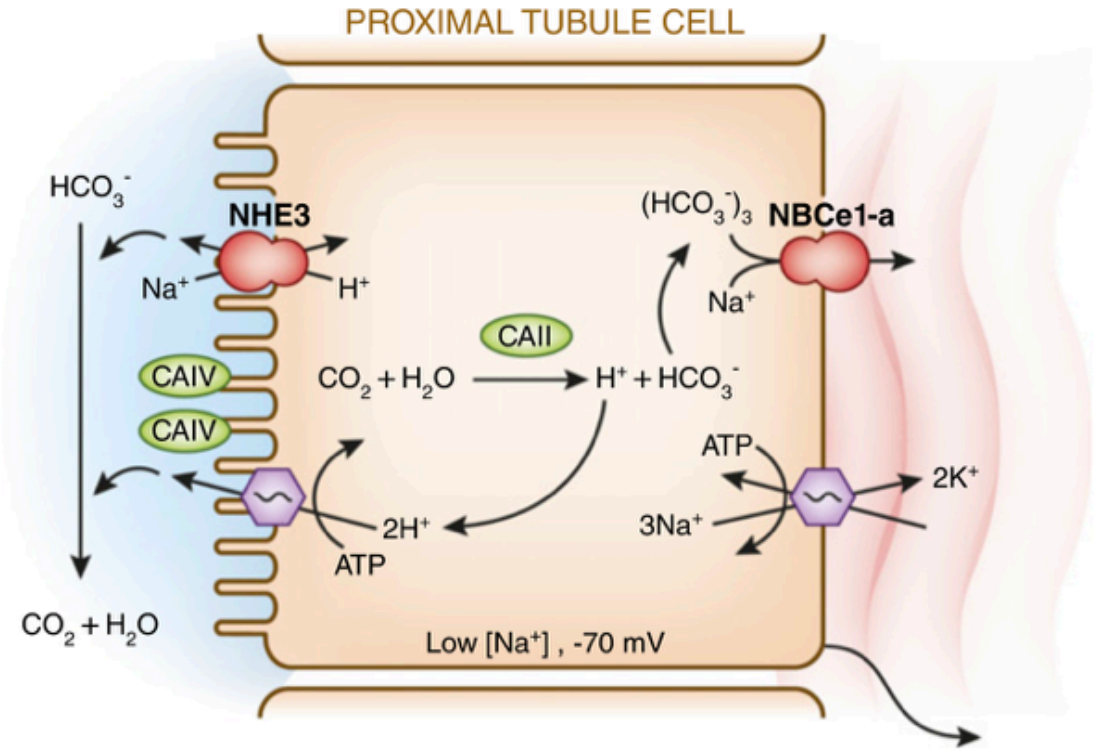
0 / 1 point



The image above shows the mechanism of

- regulation of Na+ reabsorption by the kidney
- hormal control of urea cycling by the kidney
- regulation of H+ balance by the kidney
- regulation of AQP balance by the kidney
- hormonal control of water reabsorption by the kidney

Question 12 **0 / 1 point**



Lots of stuff going on in this image but all of these are components of the important renal mechanism illustrated here. What is this important renal mechanism?

- active transport of Na+ and K+
- The action of carbonic anhydrase
- ATP hydrolysis
- the conversion of bicarbonate ion to CO2 + H2O in the filtrate
- HCO3- reabsorption from the filtrate

Question 13 **0 / 1 point**

In sweating, water is lost at a faster rate than Na+. One consequence of this is

- a decrease in plasma [Na+]. Hypothalamic osmosensors decrease vasopressin secretion, which increases water reabsorption at the collecting duct
- an decrease in plasma [Na+]. Hypothalamic osmosensors increase vasopressin secretion and increased water reabsorption at the collecting duct
- a decrease in plasma [Na+]. Hypothalamic osmosensors decrease vasopressin secretion, which decreases water reabsorption at the collecting duct
- an increase in plasma [Na+]. Hypothalamic osmosensors decrease vasopressin secretion, which increases water reabsorption at the collecting duct
- an increase in plasma [Na+]. Hypothalamic osmosensors increase vasopressin secretion and increased water reabsorption at the collecting duct

Question 14 **0 / 1 point**

Which path to renin secretion is correct?

- low body fluid levels increase GFR. Increased GFR decreases Na+ delivery to the macula densa. decreased Na+ at macula densa signals JG cells to secrete renin.
- high body fluid levels increase GFR. Increase GFR decreases Na+ delivery to the macula densa. Decreased Na+ at macula densa signals JG cells to secrete renin.
- high body fluid levels increase GFR. Increase GFR increases Na+ delivery to the macula densa. Increased Na+ at macula densa signals JG cells to secrete renin.
- low body fluid levels decrease GFR. Decreased GFR increases Na+ delivery to the macula densa. Increased Na+ at macula densa signals JG cells to secrete renin.
- low body fluid levels decrease GFR. Decreased GFR decreases Na+ delivery to the macula densa. Decreased Na+ at macula densa signals JG cells to secrete renin.

Question 15 **0 / 1 point**

In systemic capillaries, why is there O2 transport from the blood to the tissue cells?

- there is too much O2 in the blood and not enough in the tissues so some of it exits into the tissues
- this is the diffusion gradient created by the consumption of O2 by the mitochondria in the cells
- the autonomic nervous system signals the gated channels to transport O2 in this direction
- O2 is attracted to myoglobin in the cells
- high blood pressure drives dissolved O2 from the blood to the cell

Question 16 **0 / 1 point**

blood exiting systemic capillaries is deoxygenated. What does deoxygenated mean?

- there is no dissolved O2 but there is still O2 bound to hemoglobin
- all the O2 has transformed to CO2
- there is no O2
- there is no O2 bound to hemoglobin but there is still dissolved O2
- there has been a drop in O2 levels in the blood

Question 17 **0 / 1 point**

What is lung compliance?

- a measure of the maximum volume of air that can be used to ventillate the lungs
- a measure of how much O2 the lung can load into pulmonary blood
- a measure of the maximum volume of air that can be expired
- a measure of the ability to control ventillation via sympathetic and parasympathetic output
- a measure of how easily the lung expands

Question 18 **0 / 1 point**

surfactants secreted by alveolar type II pneumocytes

- cause the alveoli to collapse
- are a special component of mucus to facilitate capture of dust, pollen, and microbial pathogens for movement out of the lungs
- signal the alveolus to expand
- bind to O2 to facilitate transport across the respiratory membrane
- decreases surface tension and make the lungs more compliant

Question 19 **0 / 1 point**

Each lung is surrounded by a completly closed, fluid filled space called the

- pleural cavity
- dead air space
- alveoli
- peritoneal cavity
- thoraccic cavity

Question 20 **0 / 1 point**

Hemoglobin transports O2

- from the alveolar epithelial cells to the blood plasma
- in the blood plasma
- in the cytoplasm of red blood cells
- across the plasma membrane of red blood cells
- into tissue cells to deliver O2

Question 21 **0 / 1 point**

Air flows in and out of lungs due to pressure differences along the respiratory tract. What is the main driver of this pressure difference for *expiration*?

- stored elastic strain energy in the diaphragm
- contraction of the diaphragm muscle
- contraction of the external intercostal muscles
- stored elastic strain energy in the skeleton of the thorax and lung
- contraction of abdominal wall muscles

Question 22 **0 / 1 point**

As blood flows through a systemic capillary

- O2 saturation decreases because capillary PO2 decreases
- O2 saturation increases because capillary PO2 increases
- O2 saturation increases because capillary PO2 decreases
- O2 saturation decreases because capillary PO2 increases
- O2 saturation increases because a right shift in the oxyhemoglobin dissociation curve

Question 23 **0 / 1 point**

The partial pressure of O2 in the blood is

- a measured of the total O2 in the blood
- the component of blood osmotic pressure due to O2
- the percent saturation of O2 on hemoglobin
- the component of blood pressure due to O2 colliding against the wall of the vessel
- a measure of the concentration of dissolved O2 in the plasma

Endocrine

Question 24 **0 / 1 point**

The major stimulator of hormone secretion from the anterior pituitary is

- neural signaling by the hypothalamus
- positive feedback from cells downstream of the anterior pituitary
- sensory cells in the anterior pituitary
- hormones secreted by the hypothalamus
- hormones secreted by the posterior pituitary

Question 25 **0 / 1 point**

The major hormone signaling skeletal muscle and adipose cells to uptake glucose from the blood is

- vasopressin
- fibrin
- insulin
- glucagon
- parathyroid hormone

Question 26 **0 / 1 point**

antidiuretic hormone is secreted by the

- pancreas
- parathyroid glands
- kidney
- adrenal cortex
- posterior pituitary

Question 27 **0 / 1 point**

the major effect of increasing blood parathyroid hormone levels is

- increased urine frequency and volume
- increased blood pressure
- decreased metabolic rate
- increased plasma Ca++
- decreased plasma Na+

Question 28 **0 / 1 point**

The major site of glucocortacoid and mineralocortacoid secretion is the

- pancreas
- posterior pituitary
- stomach
- adrenal cortex
- anterior pituitary

Question 29 **0 / 1 point**

epinephrine secretion by the adrenal medulla makes sense if we know the embyronic origin of the cells of the adrenal medula, which are modified

- postganglionic sympathetic neurons
- epithelial cells of the midgut
- connective tissue fibroblasts of the mesentery
- somatic motor neurons
- epithelial cells of the nephron of the kidney

Question 30 **0 / 1 point**

adrenal cortical hormones are

- eicosanoids; they are derived from fatty acids
- peptide hormones; they are proteins
- steroid hormones; they are synthesized from cholesterol
- catecholamines; they are derived from the amino acid tyrosine
- neurohormones; they are secreted by modified post-ganglionic neurons

ANS

Question 31 **0 / 1 point**

The autonomic nervous system is the visceral motor component of the nervous system. "Visceral" refers to

- any motor structure within an organ within the body cavities
- any motor structure that is not within the body wall
- any motor structure in the wall of a tube
- any motor structure that is not striated muscle
- any motor structure that is not skeletal muscle

Question 32 **0 / 1 point**

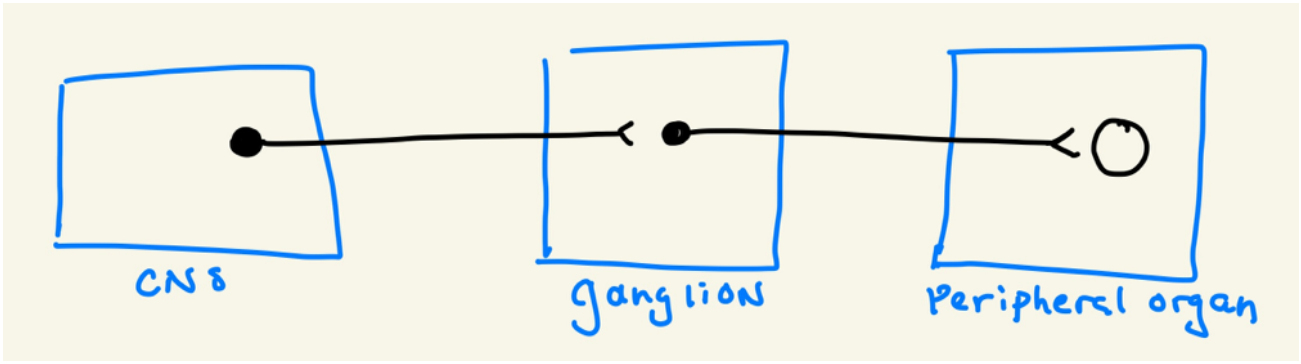
Increased sympathetic activation stimulates

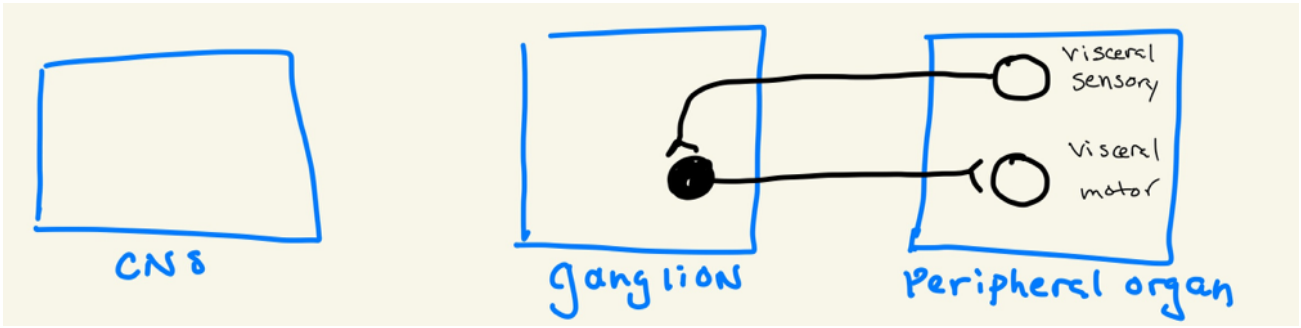
- increased energy (glucose and fatty acid) storage
- increased heart rate and force of contraction
- increased smooth muscle activity of the stomach and intestine
- increased exocrine activity of the pancreas
- increased secretion of HCl in the stomach

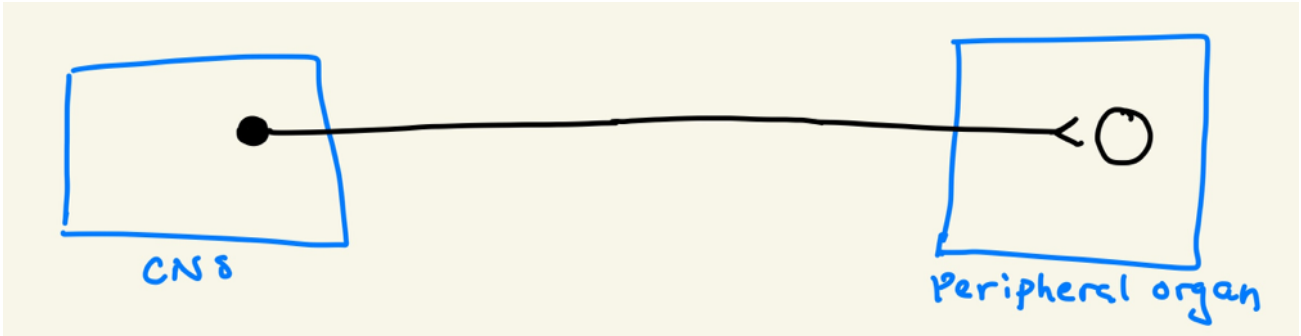
Question 33

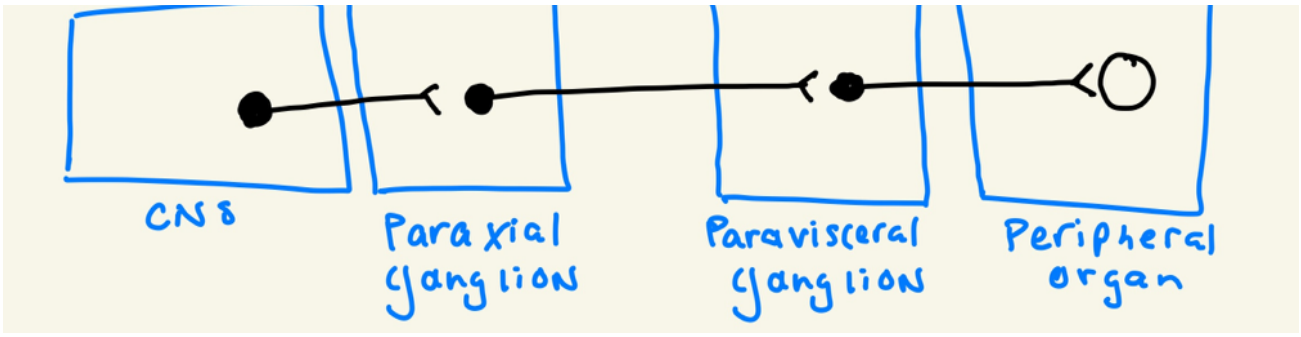
0 / 1 point

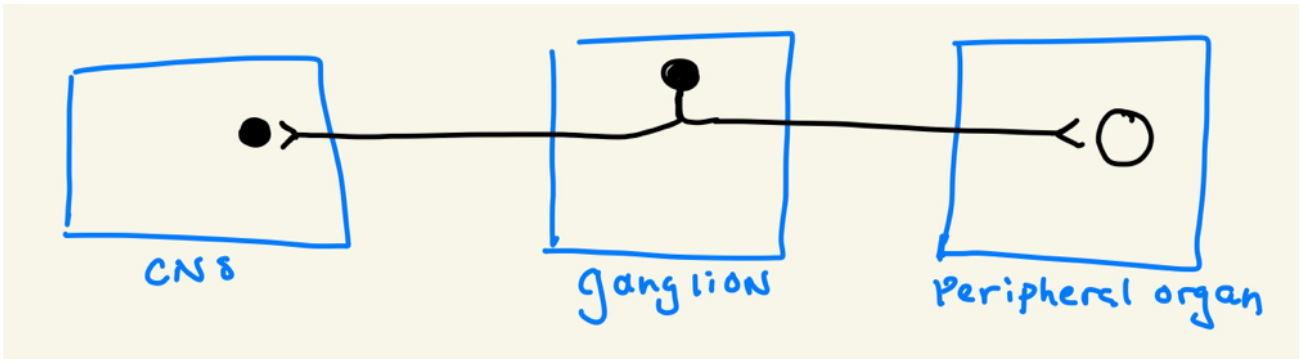
What is the correct anatomy of autonomic motor system?











Question 34 **0 / 1 point**

Receptors on cardiac muscle that increase heart contractility (the strength of contraction) are

- cholinergic
- nicotinic
- dopaminergic
- adrenergic
- muscarinic

Question 35 **0 / 1 point**

The major neurotransmitter of sympathetic signaling at the target organ is

- acetylcholine
- vasopressin
- oxytocin
- norepinephrine
- dopamine

Question 36 **0 / 1 point**

hematocrit is

- $$hematocrit = \frac{\texttt{number of red blood cells}}{\texttt{number of all blood cells}} \times 100$$
- $$hematocrit = \frac{\texttt{volume of red blood cell fraction}}{\texttt{volume of plasma fraction}} \times 100$$
- $$hematocrit = \frac{\texttt{volume of red blood cell fraction}}{\texttt{volume of whole blood}} \times 100$$
- $$hematocrit = \frac{\texttt{volume of plasma fraction}}{\texttt{volume of red blood cell fraction}} \times 100$$
- $$hematocrit = \frac{\texttt{number of red blood cells}}{\texttt{volume of whole blood}} \times 100$$

Question 37 **0 / 1 point**

Fibrin is

- a membrane protein expressed by endothelial cells at a site of injury. The protein binds the endothelial cells, closing up the gap in the vessel wall.
- An enzyme that activates collagen in the wall of a blood vessel. The activated collagen fibers glue together a damaged vessel wall.
- an insoluble protein generated from its soluble precursor that circulates in the blood. The protein forms a sticky, gooey gel, which is called a thrombus, or blood clot.
- a soluble protein secreted by fibroblast cells that lie deep to the endothelium. The protein glues together a damaged vessel wall.
- An enzyme that activates thrombin, which is the protein that forms a sticky, gooey gel, which is called a thrombus, or blood clot.

Question 38 **0 / 1 point**

hypoalbuminemia

- can result in edema because of increased oncotic pressure
- can result in increased blood volume due to a shift of IF into the plasma because of increased oncotic pressure
- can result in edema because of reduced oncotic pressure
- can result in increased blood volume due to a shift of IF into the plasma because of reduced oncotic pressure

Question 39 **0 / 1 point**

In a term like hypercholesterolemia, what does "-emia" mean?

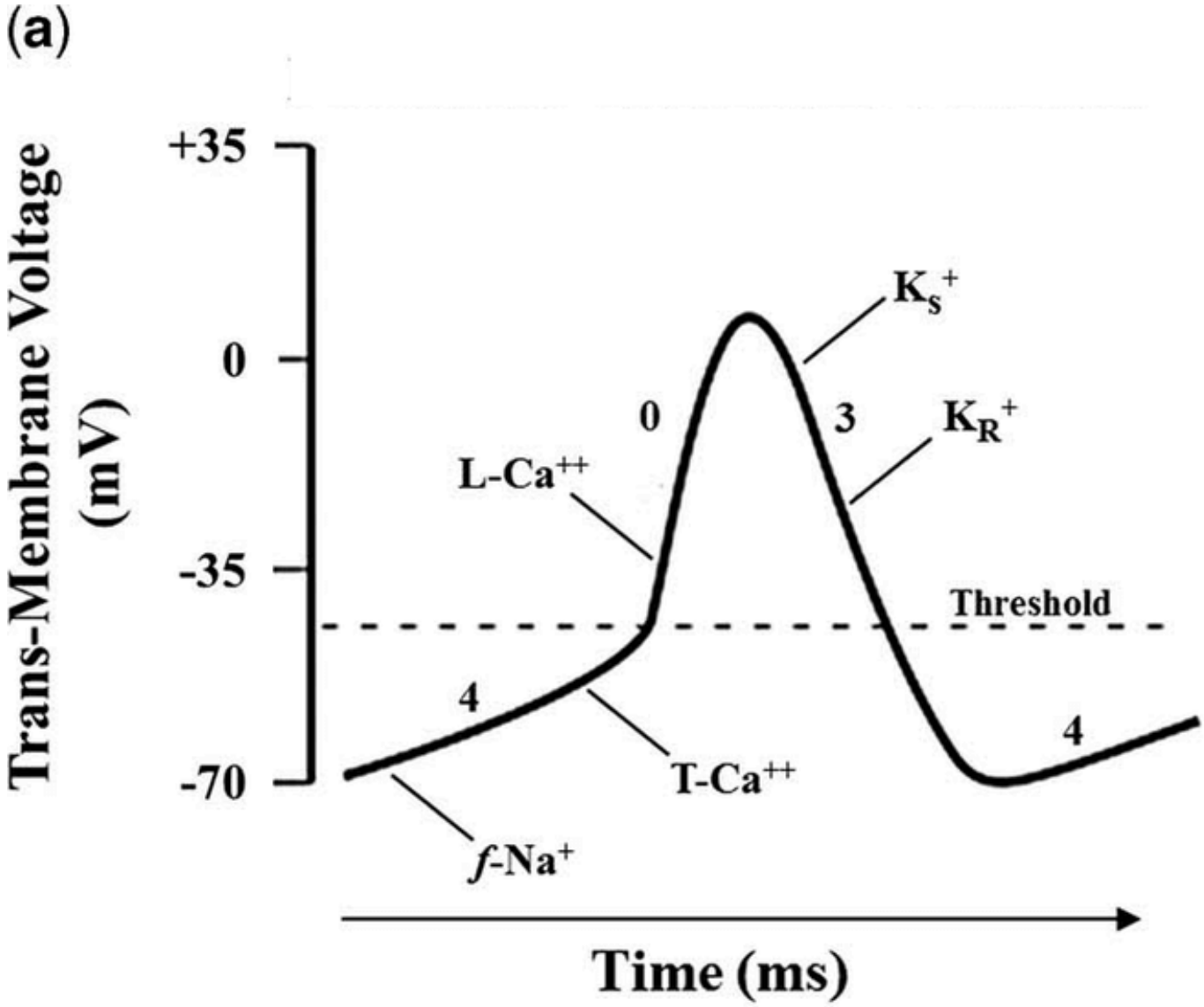
- in the urine
- in the body
- systemic
- in the blood
- absent

Question 40 **0 / 1 point**

the hematocrit of a patient with a plasma volume of 3 L and total blood volume of 5 L is

- 60%
- 3 L
- 40%
- 66.6%
- 2 L

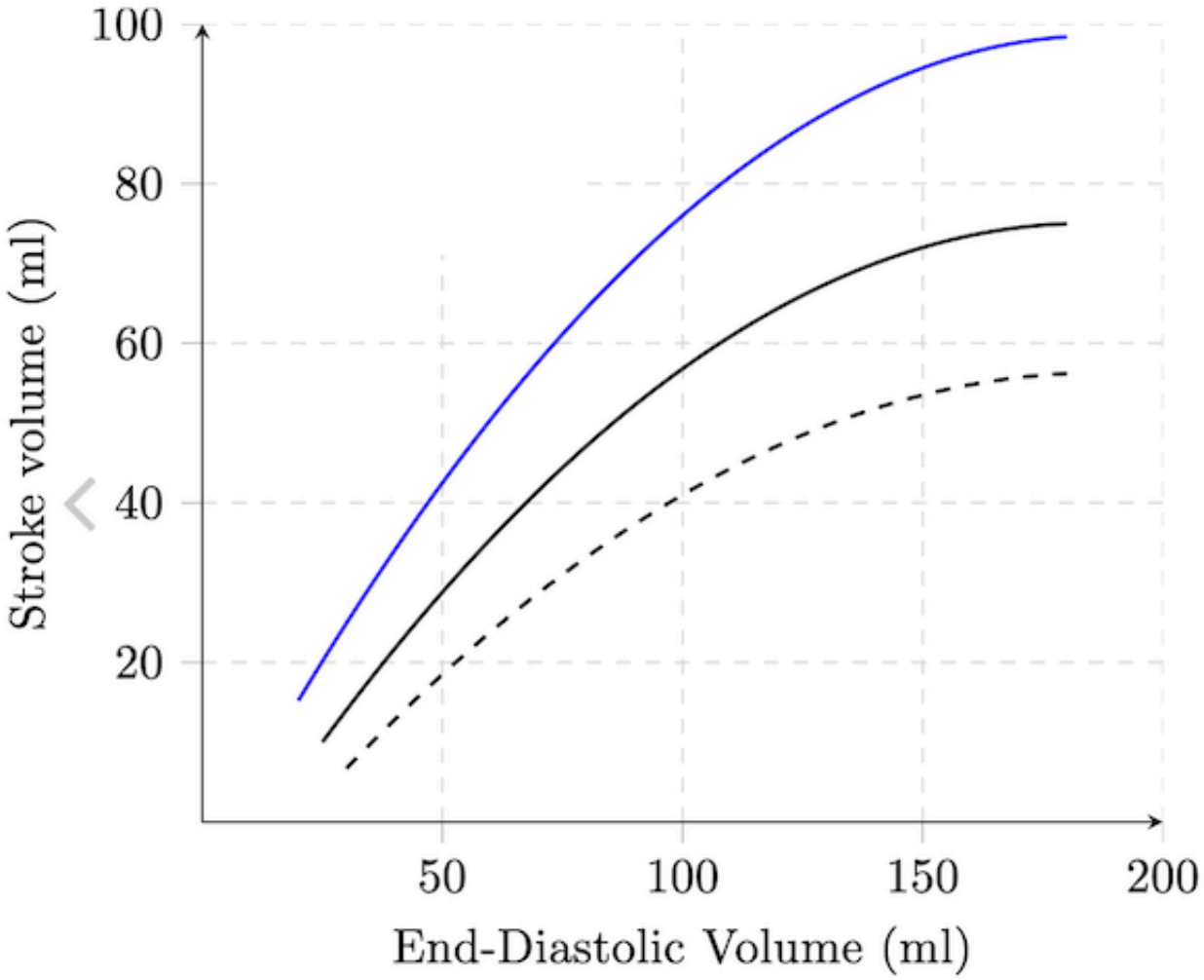
Question 41 **0 / 1 point**



The significance of this action potential, compared to the typical action potential of a skeletal muscle or CNS neuron is

- The action potential is a standing wave. That is, it doesn't travel along the membrane.
- there is no resting potential. Instead, following repolarization, the membrane spontaneously depolarizes to threshold
- there is an extended plateau phase, which keeps the muscle from tetanic contractions
- this action potential is graded. The magnitude of the depolarization is dependent on the size of the stimulus.
- There is a large hyperpolarization phase which extends the length of the relative refractory period

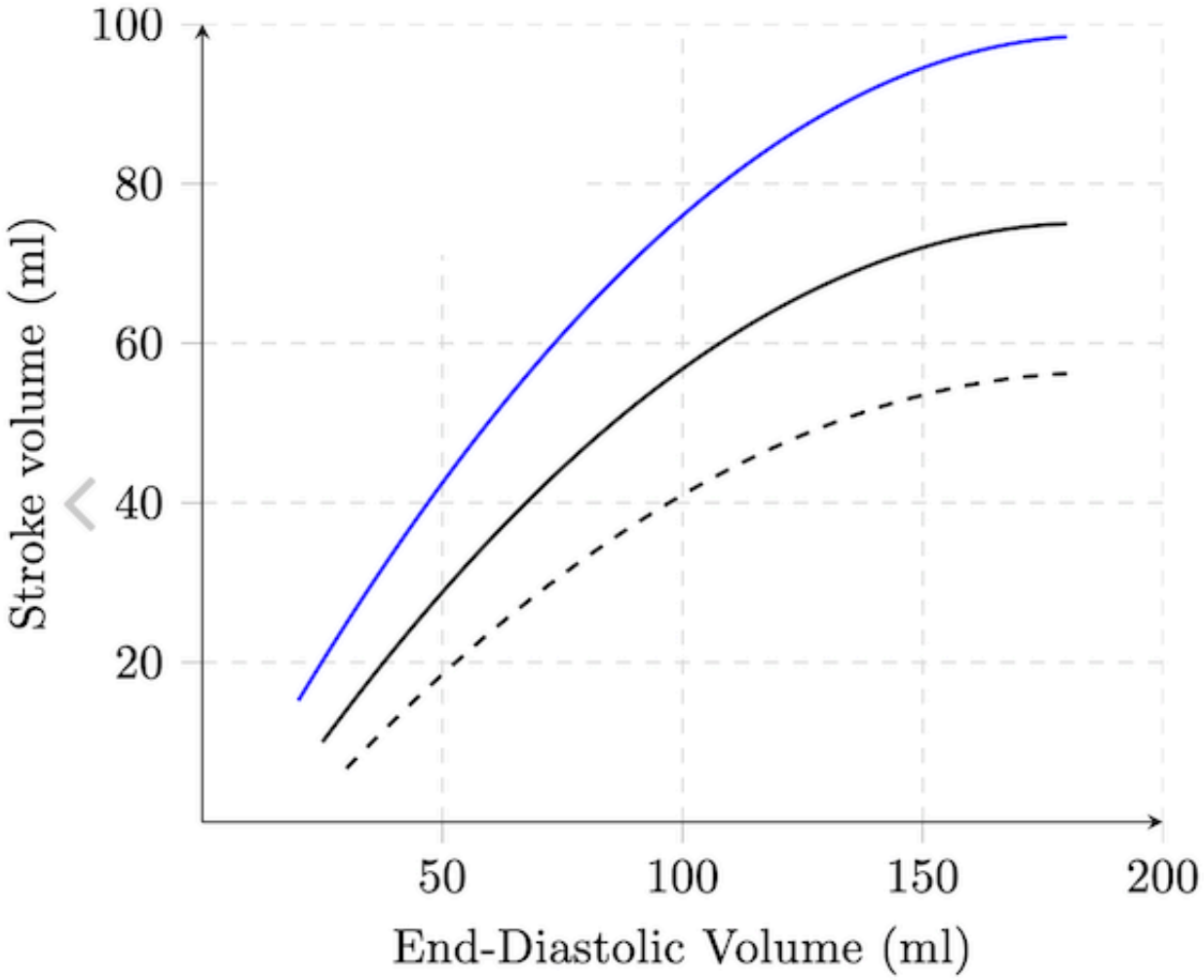
Question 42 **0 / 1 point**



using the image above, we can describe increased **preload** by

- moving up on the y-axis (increased stroke volume)
- moving from the solid black line to the dashed blue line at a specific value of the x-axis (end diastolic volume)
- moving to the left on the x-axis (decreased end-diastolic volume)
- moving to the right on the x-axis (increased end diastolic volume)
- moving from the solid black line to the solid blue line at a specific value of the x-axis (end diastolic volume)

Question 43 **0 / 1 point**



using the image above, we can describe **positive inotropy** by

- moving along the solid blue line to the left and down
- moving from the solid black line to the solid blue line at a specific value of end diastolic volume
- moving from the solid black line to the dashed line at a specific value of end diastolic volume
- moving along the solid black line to the right and up
- moving along the solid blue line to the right and up

Question 44 **0 / 1 point**

It is really important to understand how units multiply and divide to understand quantitative concepts like cardiac ouput, which is a measure of flow. Which of the equations correctly specifies the units of cardiac output?

- $$Flow = \frac{Volume}{beats/Time}$$
- $$Flow = \frac{Volume/beat}{beats/Time}$$
- $$Flow = \frac{Volume}{beat} \times \frac{beats}{Time}$$
- $$Flow = \frac{beats/Time}{Volume/beat}$$
- $$Flow = Volume \times Time$$

Question 45 **0 / 1 point**

Cardiac Output is increased by

- increased parasympathetic activity causing increased heart rate
- increased parasympathetic activity causing increased contractility, which increases stroke volume
- increased sympathetic activity causing increased contractility, which increases stroke volume
- decreased sympathetic activity causing increased heart rate
- increased parasympathetic activity causing increased contractility, which increases heart rate

Question 46 **0 / 1 point**

The aortic and pulmonary semilunar valve close because

- sympathetic nerves contract muscles in the wall of the aorta/pulmonary trunk, which closes the valves
- pressure in the ventricles falls below the pressure in the aorta/pulmonary trunk
- pressure in the ventricles rises above the pressure in the aorta
- the papillary muscles in the ventricles contract and pull on the chordae tendonae, which pull the valves closed
- the filled ventricles push the valve closed

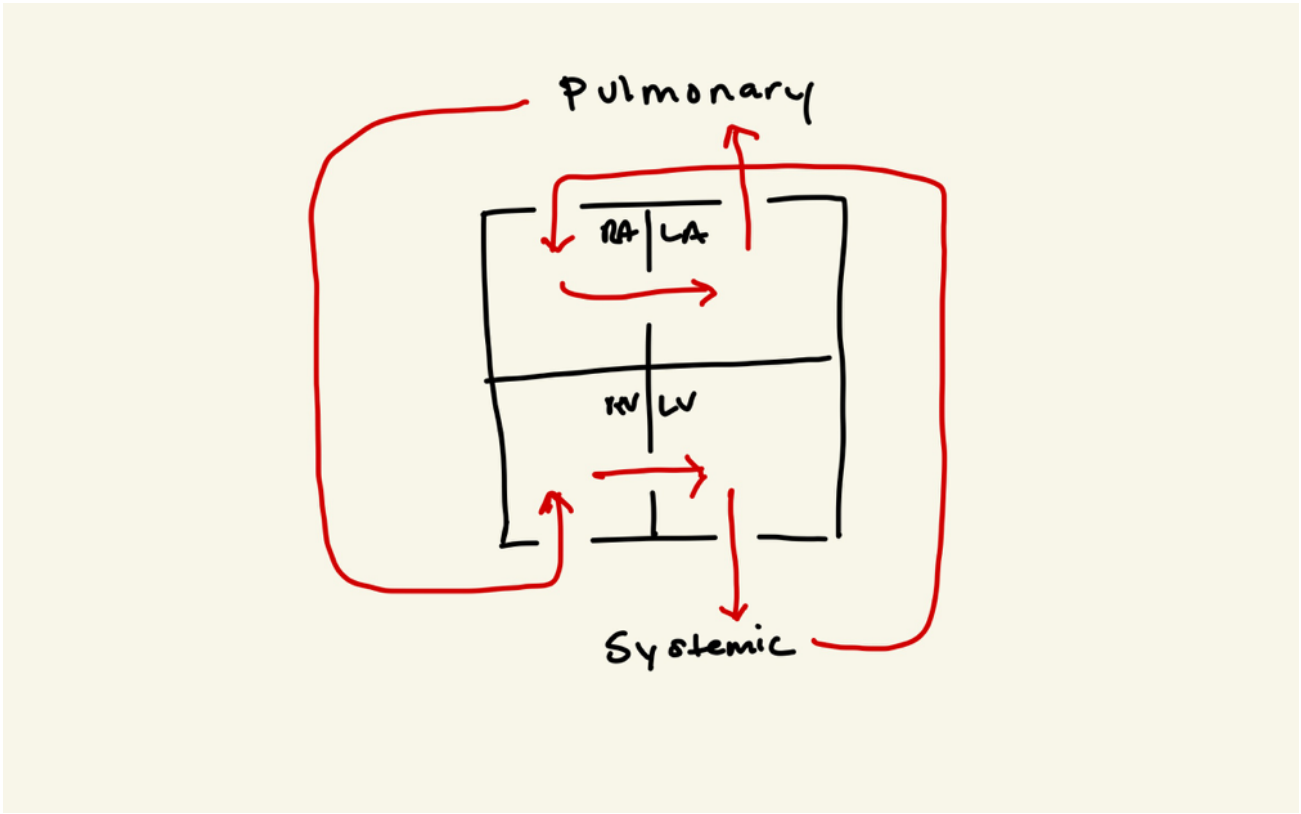
Question 47 **0 / 1 point**

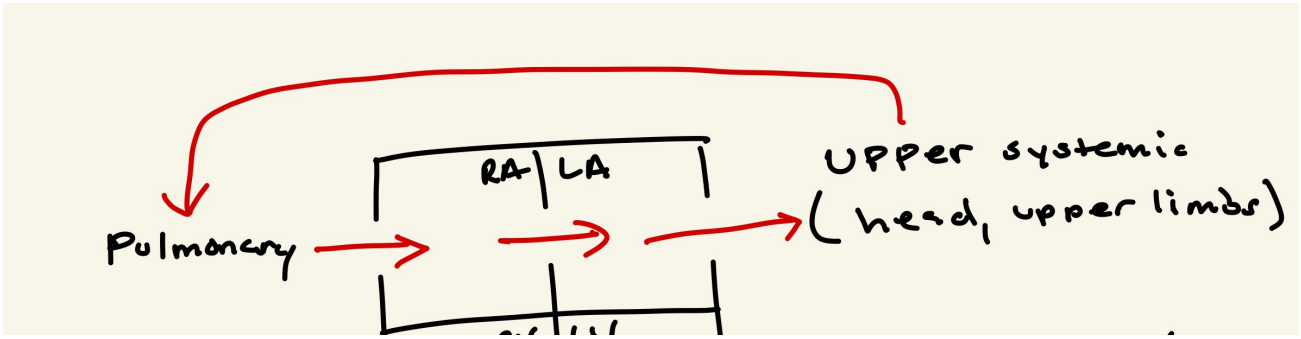
All of the signaling molecules below increase mean arterial pressure EXCEPT

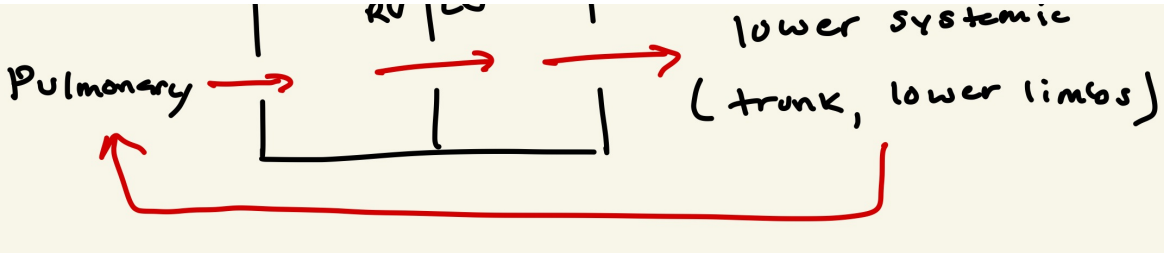
- atrial natriuretic peptide
- norepinephrine
- vasopressin
- angiotensin II

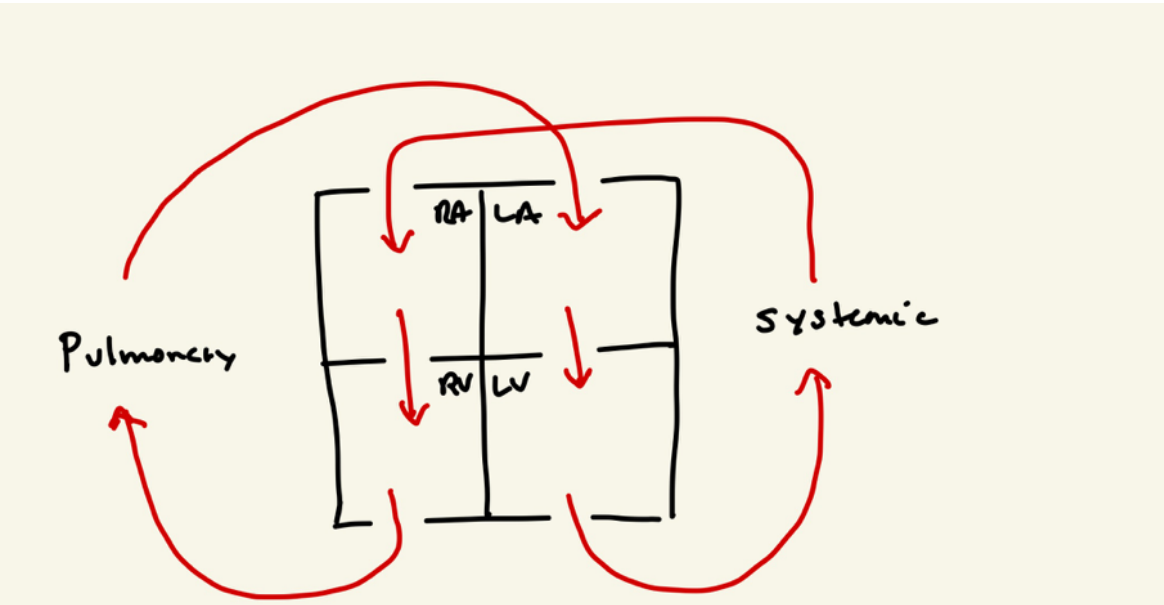
Question 48 **0 / 1 point**

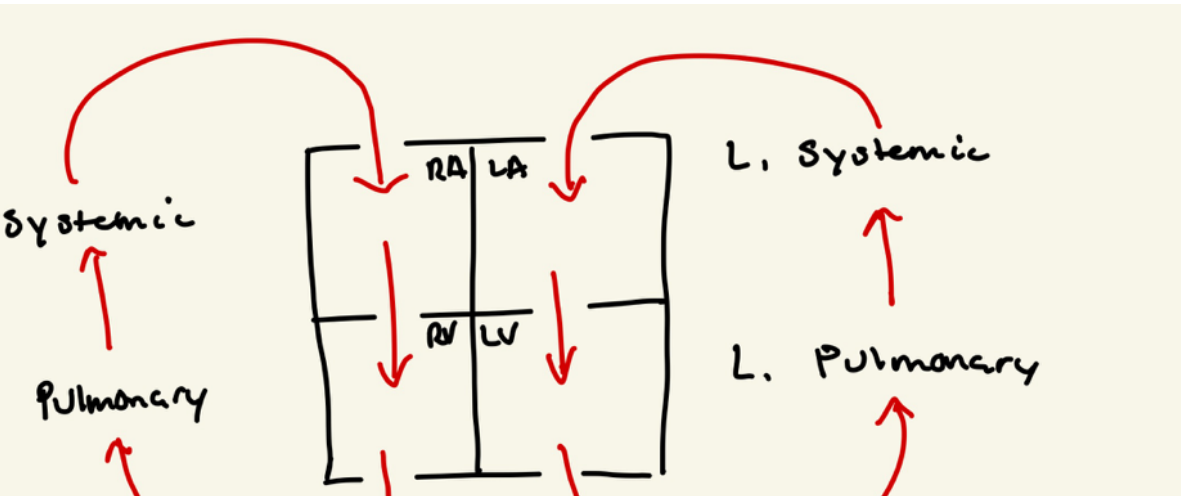
Which of the images below is the correct path of blood through the heart and anatomy of the pulmonary and systemic circuits?

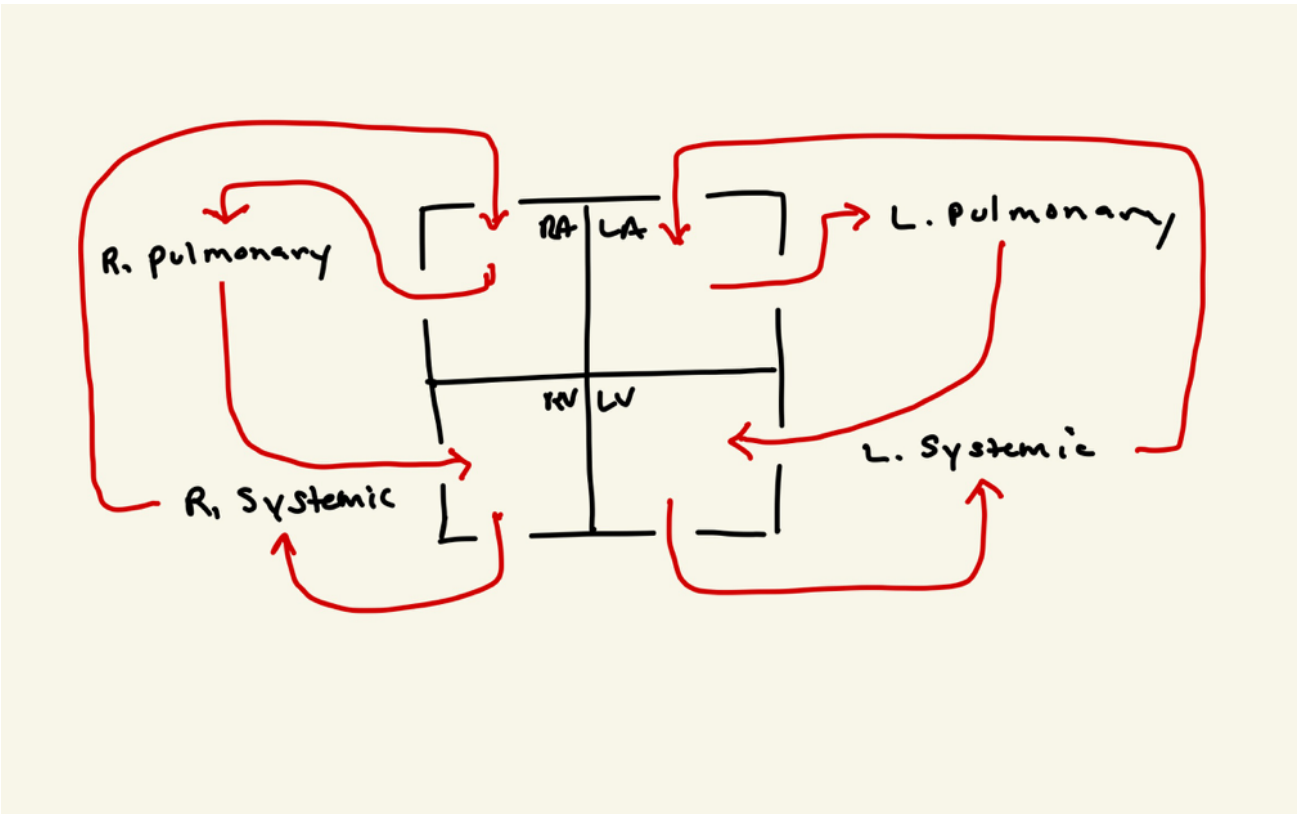





Pulmonary
lower systemic
(trunk, lower limbs)

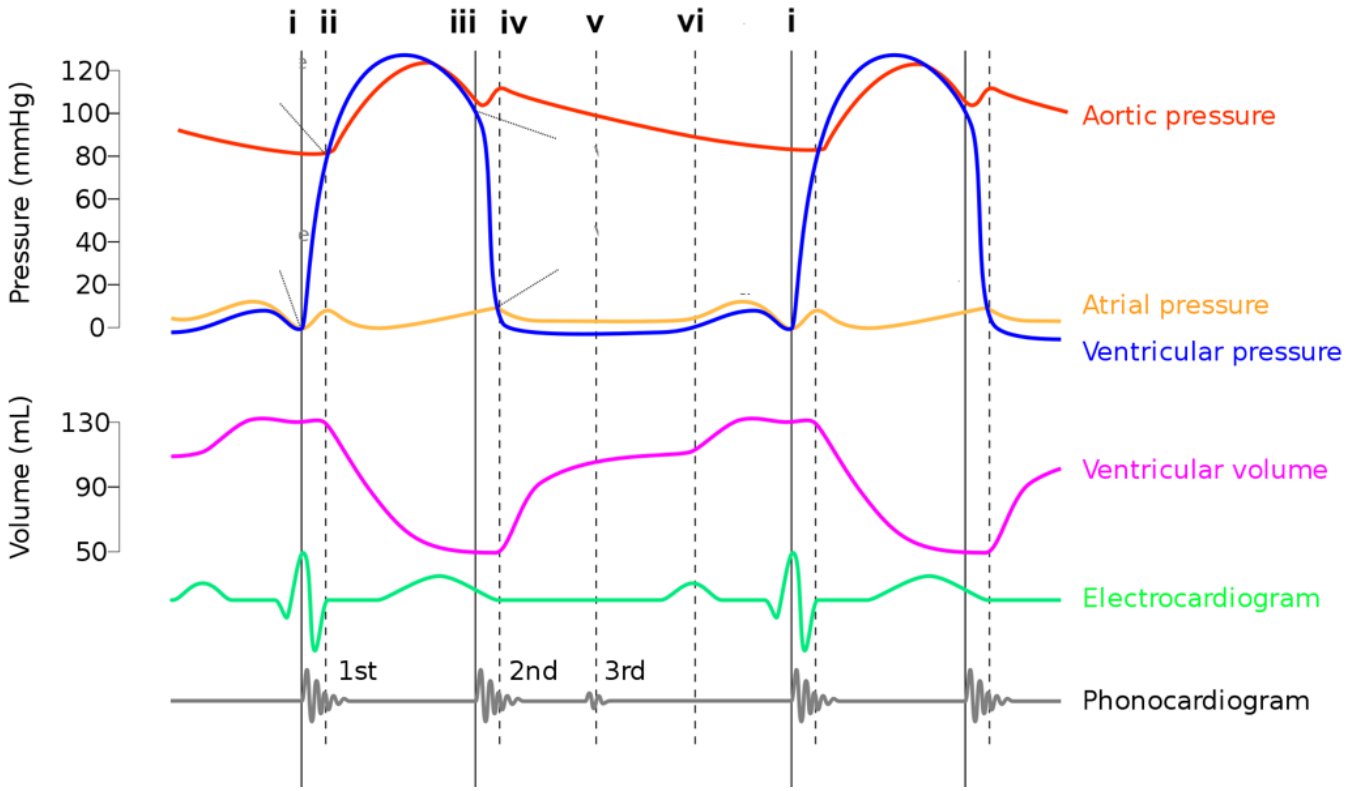

RA
LA
RV
LV
Pulmonary
Systemic


RA
LA
RV
LV
R. Systemic
R. Pulmonary
L. Systemic
L. Pulmonary



Question 49

0 / 1 point

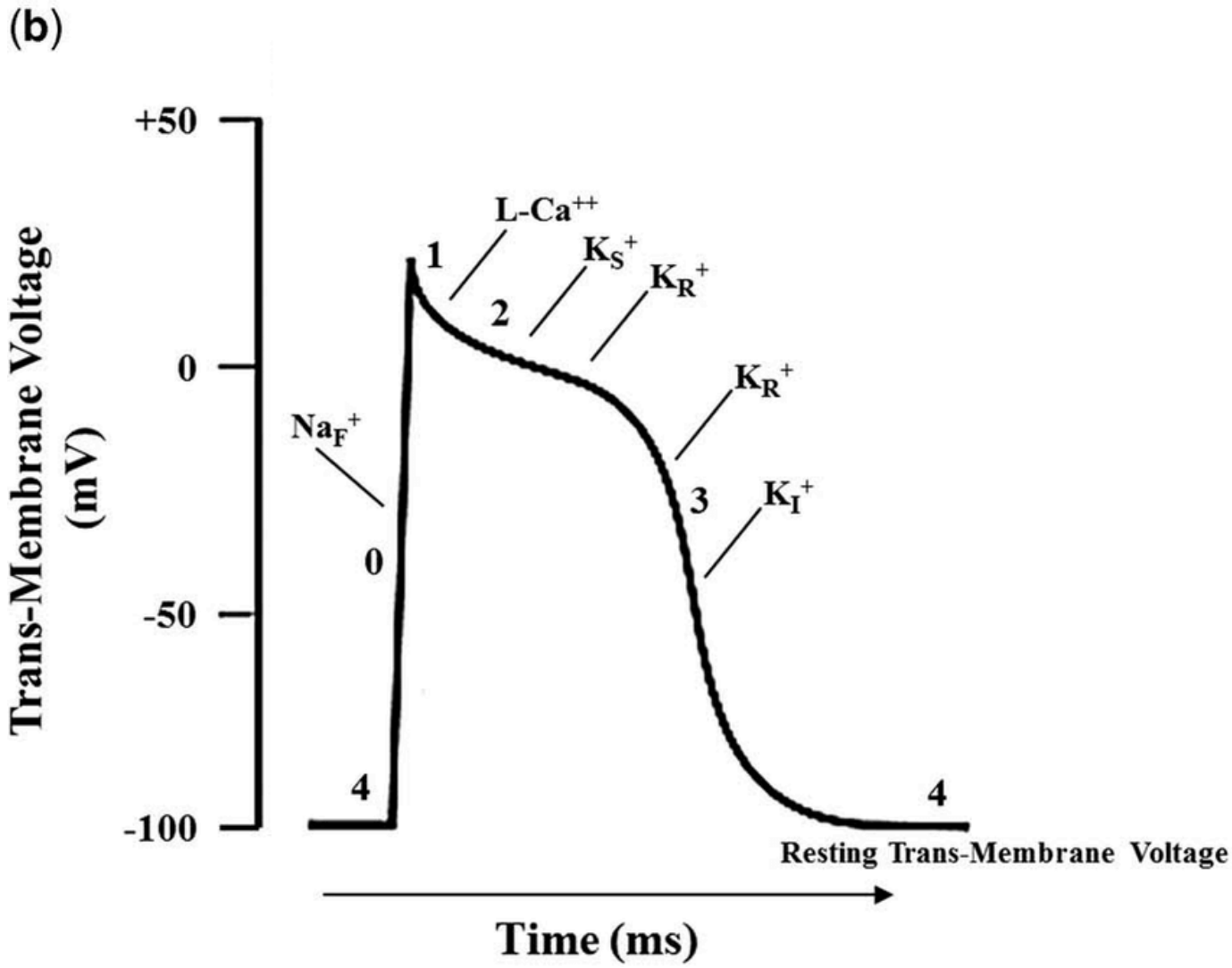


The image above marks important time points for understanding the cardiac cycle. One cycle starts at the label i to the left and ends at the label i to the right.

Using these labeled marks, increased afterload shifts which line to the right?

- iii
- vi
- i
- ii
- iv

Question 50 **0 / 1 point**



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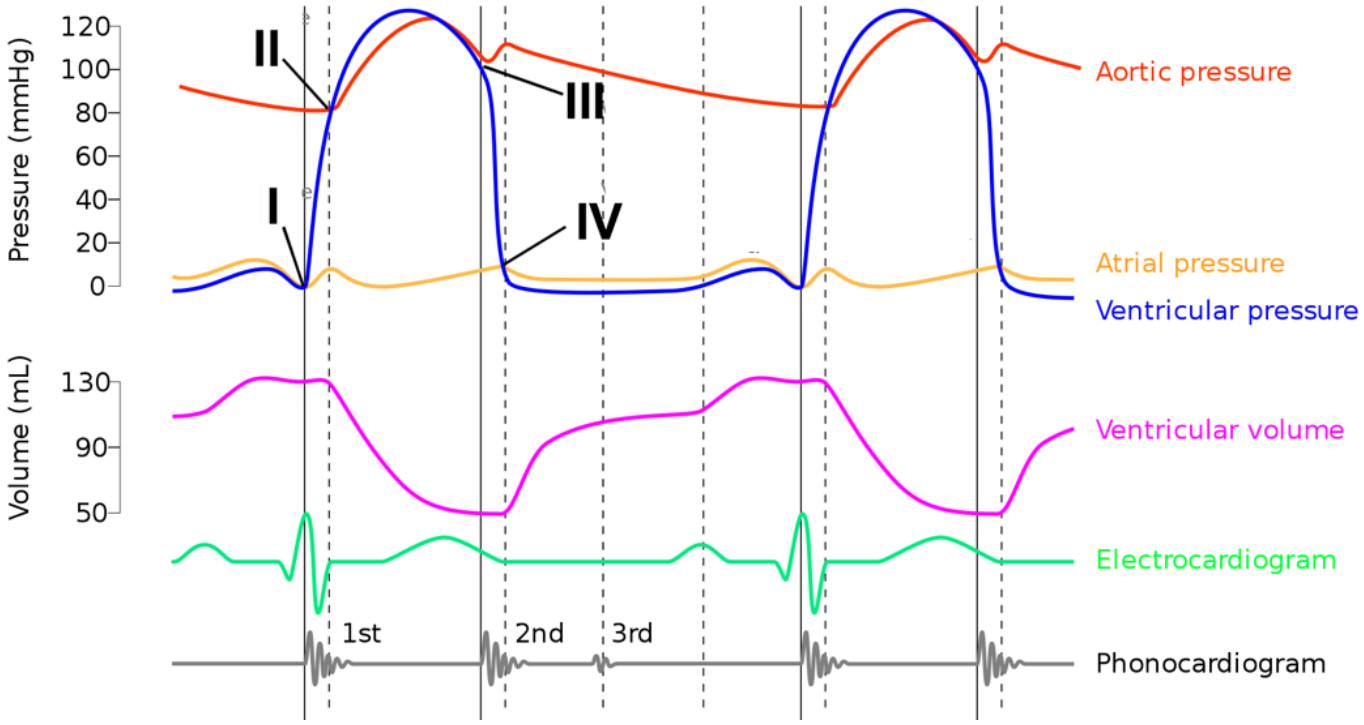
- there is an extended plateau phase, which keeps the muscle from tetanic contractions
- There is a large hyperpolarization phase which extends the length of the relative refractory period
- there is no resting potential. Instead, following repolarization, the membrane spontaneously depolarizes to threshold
- this action potential is graded. The magnitude of the depolarization is dependent on the size of the stimulus.

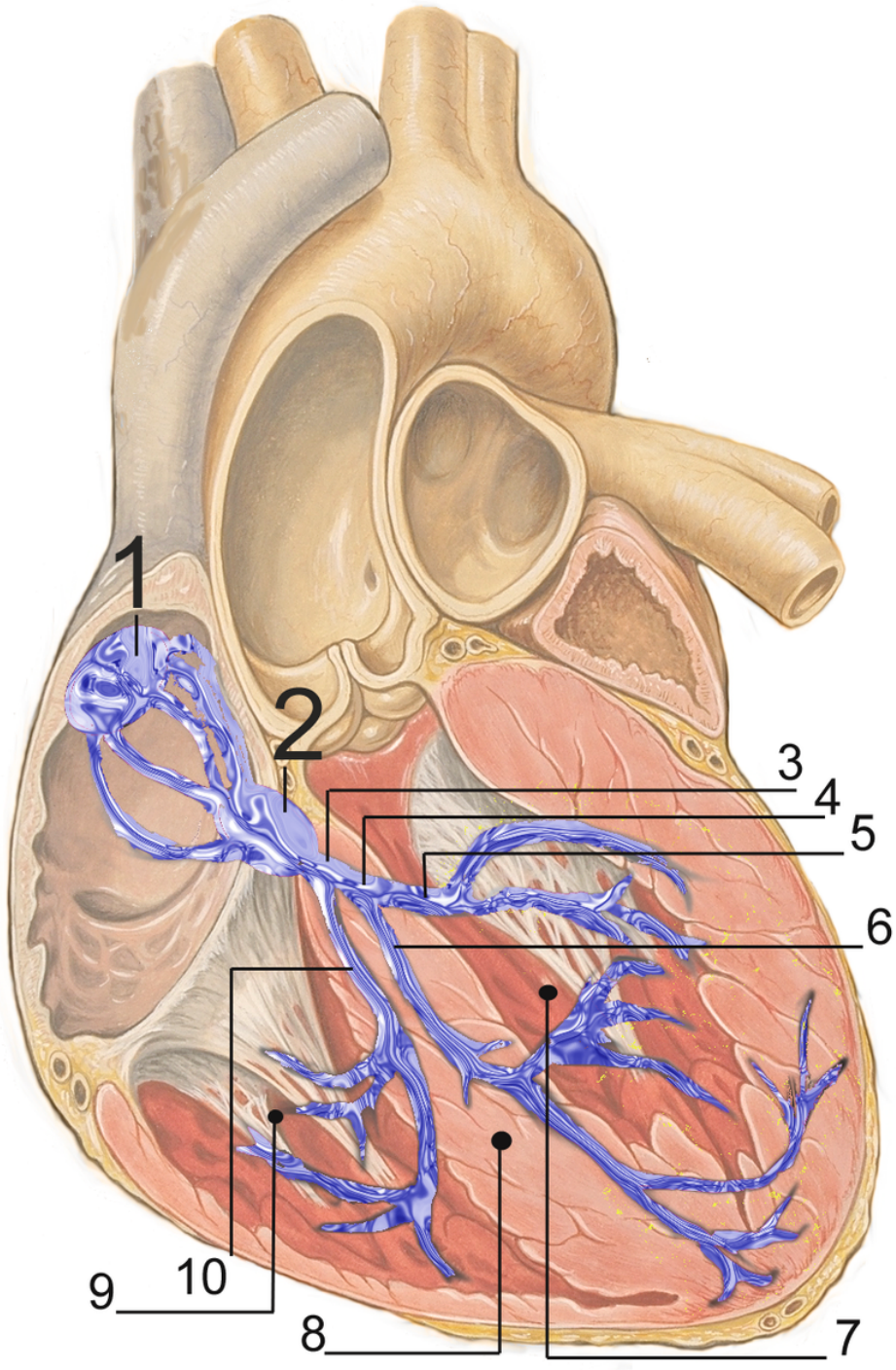
Question 51 0 / 1 point



The events labeled above are

- I. Semilunar valves close; II. Semilunar valves open; III. AV valves close; IV. AV valves open
- I. AV valves open; II. Semilunar valves close; III. AV valves close; IV. Semilunar valves open
- I. AV valves close; II. AV valves open; III, Semilunar valves close; IV. Semilunar valves open
- I. AV and semilunar valves close; II. AV and semilunar valves open; III. AV and Semilunar valves close; IV. AV and Semilunar valves open
- I. AV valves close; II. Semilunar valves open; III. Semilunar valves close; IV. AV valves open

Question 52 **0 / 1 point**



The structure labeled 1 is the

- a ganglion that regulates the strength of contraction during systole
- pacemaker of the heart
- the site of venous return from the body
- the site of venous return from the lungs
- the site where venous blood is filtered to create the fluid of the cardiac ventricular system

Question 53 **0 / 1 point**

What is the correct relationship between arteries and capillaries in an organ?

- the arterial system branches, with one branch going to each organ. Within an organ, the arterial blood enters a single capillary system located near the center of the organ
- the arterial system branches, with many, many branches going to each organ. Within an organ, each branch enters its own capillary system. That is, there are thousands of capillary systems in parallel.
- the arterial system branches, with one branch going to each organ. Within an organ, the blood travels from one capillary system, to the next, to the next. That is, the blood travels through thousands of capillary systems in series.
- the arterial system branches, with one branch going to each organ. Within an organ, the arterial blood enters a single, large capillary system that is spread throughout the organ
- the arterial system branches, with one branch going to each organ. Within an organ, the artery branches into thousands of small branches, each entering its own capillary system. That is, there are thousands of capillary systems in parallel.

Done