

Final Exam!! Most missed questions from Exams 7-12

SEVEN

1. To increase tension in a smooth muscle, we need inactivated myosin light chain phosphatase and closer dense bodies.
3. The increase of intracellular calcium in a smooth muscle is typically caused by opening voltage-gated, ligand-gated or mechanically-gated channels
5. **While at the gym performing deadlifts, you bend over to lift a heavy barbell that is resting on the ground. As you decrease the weight of that barbell, it will take less time to initially move the barbell and less time to move it all the way up.**
7. Gaining even more physiology knowledge, Julie is reading her physiology textbook by holding it in front of her on her upturned right hand. A friend decides she looks tired and sets a large coffee on top of the open text causing Julie's arm to move closer to the ground. But, she quickly recovers and raises the book-coffee combination back up and then closer to her face so she can smell the rich aroma. Starting with the addition of the coffee, Julie's bicep did the series of contractions of eccentric – isometric – isotonic.
9. The number of different metabolic processes a myofiber has to generate ATP via substrate level phosphorylation is three.
11. **During the knee-jerk reflex, the extensor muscle is stimulated and the flexor muscle is no longer stimulated.**
13. **The I band and H zone will remain the same during an isometric contraction because the load is greater than the tension, will decrease during an isotonic contraction because the load is less than the tension, and will increase during an eccentric contraction because the load is greater than the tension.**
15. An increase in myosin light chain phosphatase will lead to smooth muscle relaxation.
17. **A myofiber is characterized by its speed of contraction, its amount of ATPase activity, and its mechanism for synthesizing ATP.**
19. One of your TAs is a high school track coach. During the season, she works with her two-mile runners to develop their slow oxidative (low ATPase) muscles and her 100-meter sprinters to develop their fast glycolytic (high ATPase) muscles.
21. During the off season, a sprinter decides to train for a marathon. After completing the training and marathon, he finds that he is not able to sprint as well. Correct statements about what changes occurred in his leg muscles are that the proportion of red myofibers increased, his crossbridge cycling rate decreased, his tension generation decreased, and his number of mitochondria increased.
23. Correct characteristics of a muscle with a long endurance capacity are that it contains all three types of myofibers, its latency period and response time are both very long, and it contains lots of myoglobin and vascularization.
25. Carmen decides to participate in an arm-wrestling contest. Her initial contest finds her first neither gaining nor losing ground against her opponent, second losing ground to her opponent, then third moving her opponent's arm for the win. The correct order of contracts for these three time points are isometric – eccentric – isotonic.
27. A battle with "pink eye" causes you to awaken in the morning with your eyes crusted shut. You successfully reached for your phone and dialed your doctor (not using voice commands). You were able to accomplish this feat because of your proprioception system, stretch receptors, and Golgi tendon organs.

29. Since Shelby, the silly old dog, is also a little chubby, she sometimes has trouble jumping up onto the couch. It takes her a little longer than it previously did to actually jump. This means that she is experiencing a larger load, a longer latent period, and a longer isometric contraction.

31. People trying to build muscle who take creatine supplements will have a shorter latent period when picking up a weight and have bigger muscles due to more water in the myofibers.

33. Like the knee-jerk reflex, the withdrawal reflex requires both inhibition and stimulation and occurs before the cerebrum can process the stimulus.

35. A correct statement about why smooth muscle is unstriated are that while it does not have actin lying between myosin filaments, its dense bodies are arranged in multiple planes.

EIGHT

1. The endocrines would you expect to bind to a membrane-bound receptor would be the polar ones like corticotropin-releasing hormone (CRH).

3. Correct statements about endocrines are that the nonpolar steroids require a plasma binding protein, insulin is an example of a peptide endocrine, peptide endocrines start off as prohormones and are activated in vesicles, and eliminating certain enzymes can impact the production of specific steroid endocrines.

5. Pairs that share some of the same functions are oxytocin and prolactin (lactation), follicle stimulating hormone (FSH) and luteinizing hormone (LH) (gonads), and vasopressin (aka ADH) and oxytocin (also NTs).

7. Adrenocorticotrophic hormone (ACTH) is to cortisol as Growth hormone (GH) is to IGF-1.

9. The thyroid produces two amine endocrines that are nonpolar.

11. Oxytocin is an endocrine produced by the hypothalamus.

13. Endocrines from the hypothalamus pass through the nerve axons to allow for their release from the posterior pituitary gland.

15. The hypothalamus sends Somatostatin (SS), a inhibitory endocrine, to the pituitary gland via the infundibulum.

17. The endocrine Somatostatin (SS) is produced in the hypothalamus, Luteinizing hormone (LH) is produced in the pituitary, Cortisol is produced in the adrenal gland, and Vasopressin (aka ADH) is produced in the hypothalamus.

19. Based on the currently identified endocrines covered in lecture, the anterior pituitary gland releases 8 endocrines and the posterior pituitary gland releases 2 endocrines.

21. Using her physiology knowledge and in her free time, Julie determines the method to properly activate the beta endorphin pathway. To cover her medical school tuition, she decides to sell her knowledge to a company working on anesthetics or arthritis remedies.

23. Contributions to the regulation of endocrine levels in the blood can come from an increase in the level of glucose in the plasma, the decrease of an endocrine in the blood, and/or input from the somatosensory system to the central nervous system.

25. At a recent annual checkup, Carmen was told that her routine blood showed that an endocrine issue might be present. The test was not very precise so her doctor could only know that it was a problem with a tyrosine-based endocrine. He ordered more tests. In the

meantime, you correctly explain to Carmen that her test results could be due to a problem in the production of an endocrine produced extracellularly and/or her new ultra relaxed lifestyle which prevented recent activation of her sympathetic nervous system.

27. Correct methods for preventing the effects of a steroid would be, not endocytosing, but catabolizing its receptors and/or blocking its receptor with an antagonist.

29. Benefits of the design of the endocrine system are more opportunity for regulation and fewer initial ligands are required.

31. Correct method to decrease the production of thyroid stimulating hormone (TSH) would be to increase the production of the thyroid hormones.

33. To impact the levels of endocrines being released by the pituitary gland, we could alter the amounts of endocrines being released by the adrenal cortex and/or impact the polarization within the infundibulum.

35. Brutus decides to play a prank on visiting Wolverine fans. He coats his hand with a solution of the newly identified endocrine called Buckeye Pride Factor (BPF) which causes the skin to produce scarlet and gray pigments. He then gives "High 5s" to the visiting true blue fans. Soon they start turning scarlet and gray. Correct statements is correct about BPF are that it most likely is a steroid endocrine and, when in the blood, it would likely need to associate with a plasma binding protein.

NINE

1. You are concerned about a friend being anorexic (underweight due to a lack of eating). You decide to take him to lunch to discuss the potential consequences. At the lunch, he suggests sitting on the patio even though it is still chilly and then ate like the proverbial horse. As a result, you revise your determination because you correctly realize that he has a lower than normal level of thyroid-stimulating hormone (TSH), has thyroid endocrines doing negative feedback on the anterior pituitary gland, has sufficient iodine present, and has an autoimmune disease called Grave's disease.

3. In the heart, action potentials travel through intercalated discs to another cell and desmosomes holds the two cells together.

5. The correct statement about the process of cardiac muscle contraction is that the contraction occurs due to the spread of APs through gap junctions.

7. Rickets is a disease caused by a lack of calcium and often results in a bowing of the legs. This disease has recently been on the rise because of increased sunscreen usage causing vitamin D to not be synthesized.

9. The right atrium is the smallest chamber of the heart because this chamber needs to move blood the shortest distance (i.e., to the ventricle).

11. Insulin will positively impact human height growth when released.

13. Action potentials moving within the Bundles of His through the interventricular septum will not spread to the surrounding ventricular tissue.

15. The adrenal cortex decreases stress by increasing the production of enzymes in the liver.

17. The increase presence of Cortisol – parathyroid hormone (PTH) will lead to a decrease in bone strength?

19. To increase heart rate, our body must increase sympathetic actions at the SA node.

21. The release of cortisol causes an increase in glucose utilization and is produced by a gland near the kidney.