Copy of Exam 2 for printing - Results

Exit Preview

Attempt 1 of 2

Written Feb 28, 2024 10:13 AM - Feb 28, 2024 10:13 AM

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

Question 1

0 / 1 point

which food item is highest in calories from "carbs"

- 1 ounce of lettuce for a salad
- 1 ounce of a whole-whet hamburger bun
- 1 ounce of peanuts
- 1 ounce of a fish fillet
- 1 ounce of bacon

Question 2

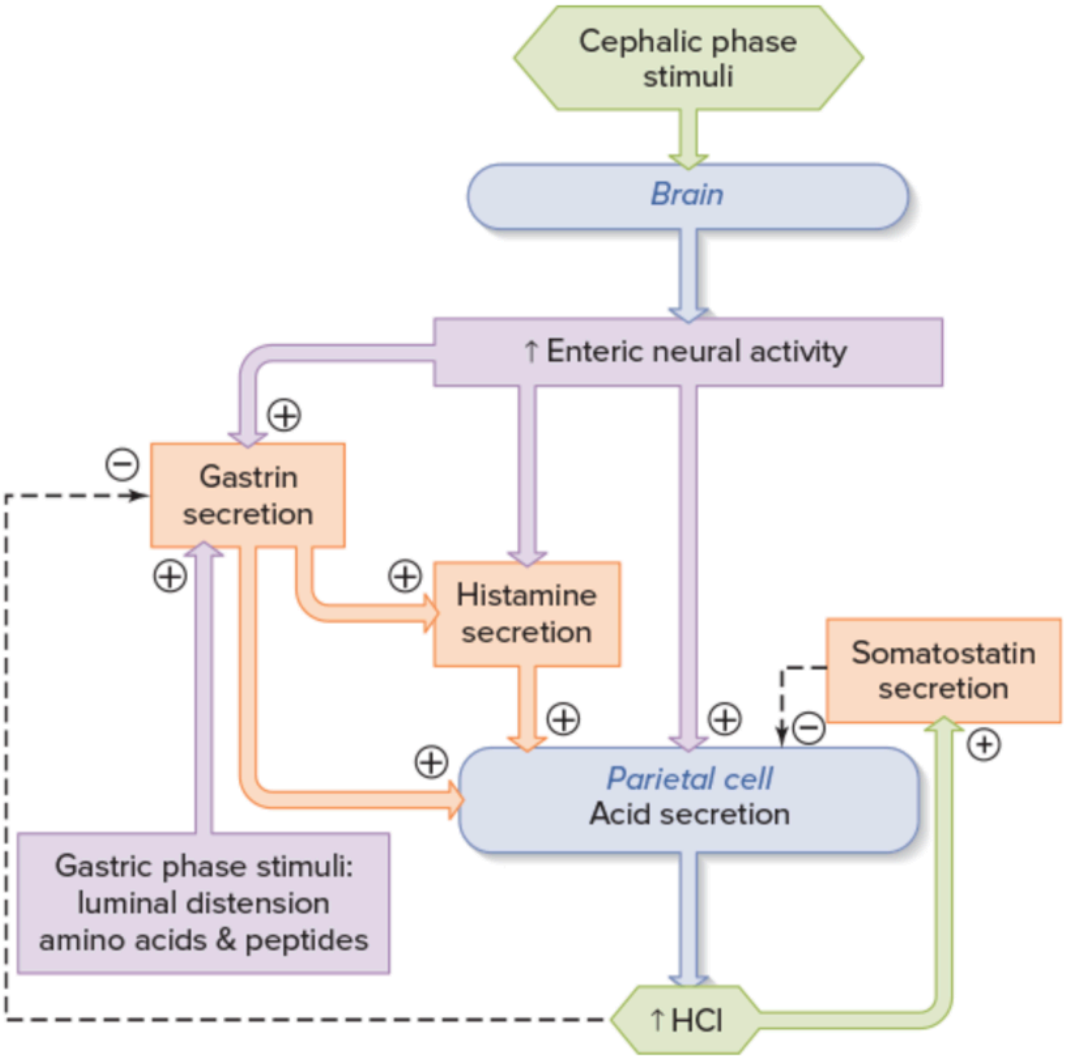
0 / 1 point

In general, cancer is most likely to occur

- in tissues that are constantly under large strain
- in tissues with cells that have no access to immune cells
- in avascular tissues
- in tissues with frequent cell division and turnover
- in tissues with cells that are permanently in the G0 phase of the cell cycle

Question 3

0 / 1 point

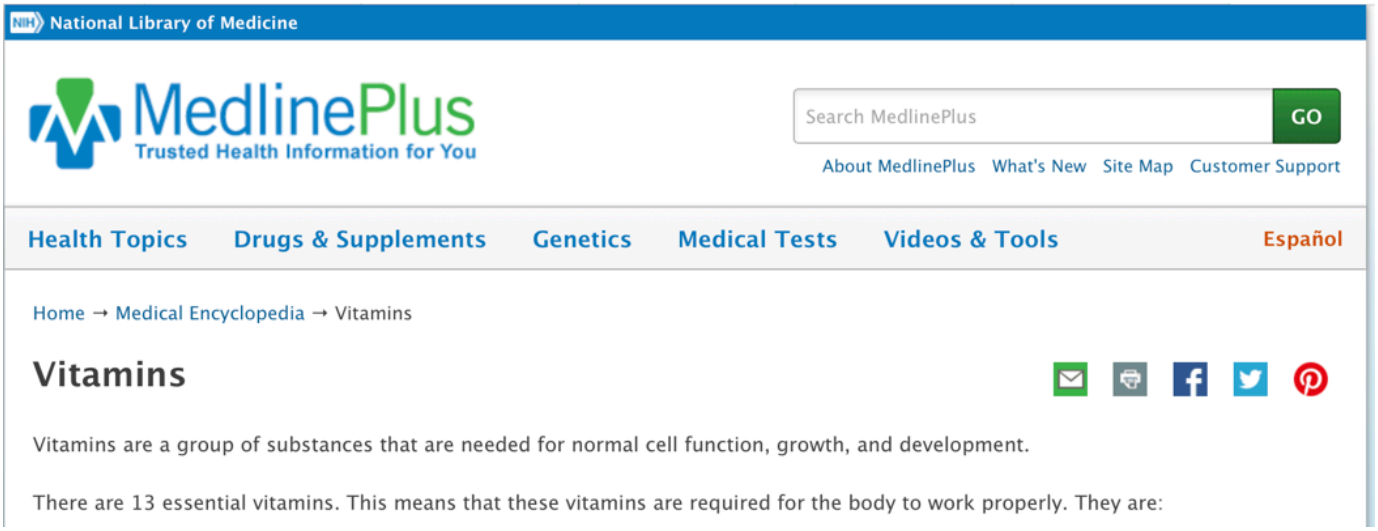


How does the Brain stimulate increased Enteric neural activity?

- enteric motor neurons
- sympathetic neurons
- parasympathetic neurons
- visceral sensory neurons
- somatic motor neurons

Question 4

0 / 1 point



The NIH MedlinePlus encylopaedia defines "essential" as "required for the body to work properly". Is this a good definition of essential?

- No, because when we use "essential" with a nutrient, we should apply the term only to minerals
- No, because when we use "essential" with a nutrient, we mean "essential in our diet" and not "essential for the body to work properly"
- No, because when we use "essential" with a nutrient, we mean "essential for our life -- even if our body is not working properly"
- No, because when we use "essential" with a nutrient, we mean "essential as a source of chemical energy for ATP synthesis", which includes only carbohydrates, amino acids, fatty acids, and alcohol
- Yes, because when we use "essential" with a nutrient, we mean "essential for our cells to function normally", which is equivalent to "the body to work properly"

Question 5 **0 / 1 point**

One important function of bile acids secreted in the bile by the liver is

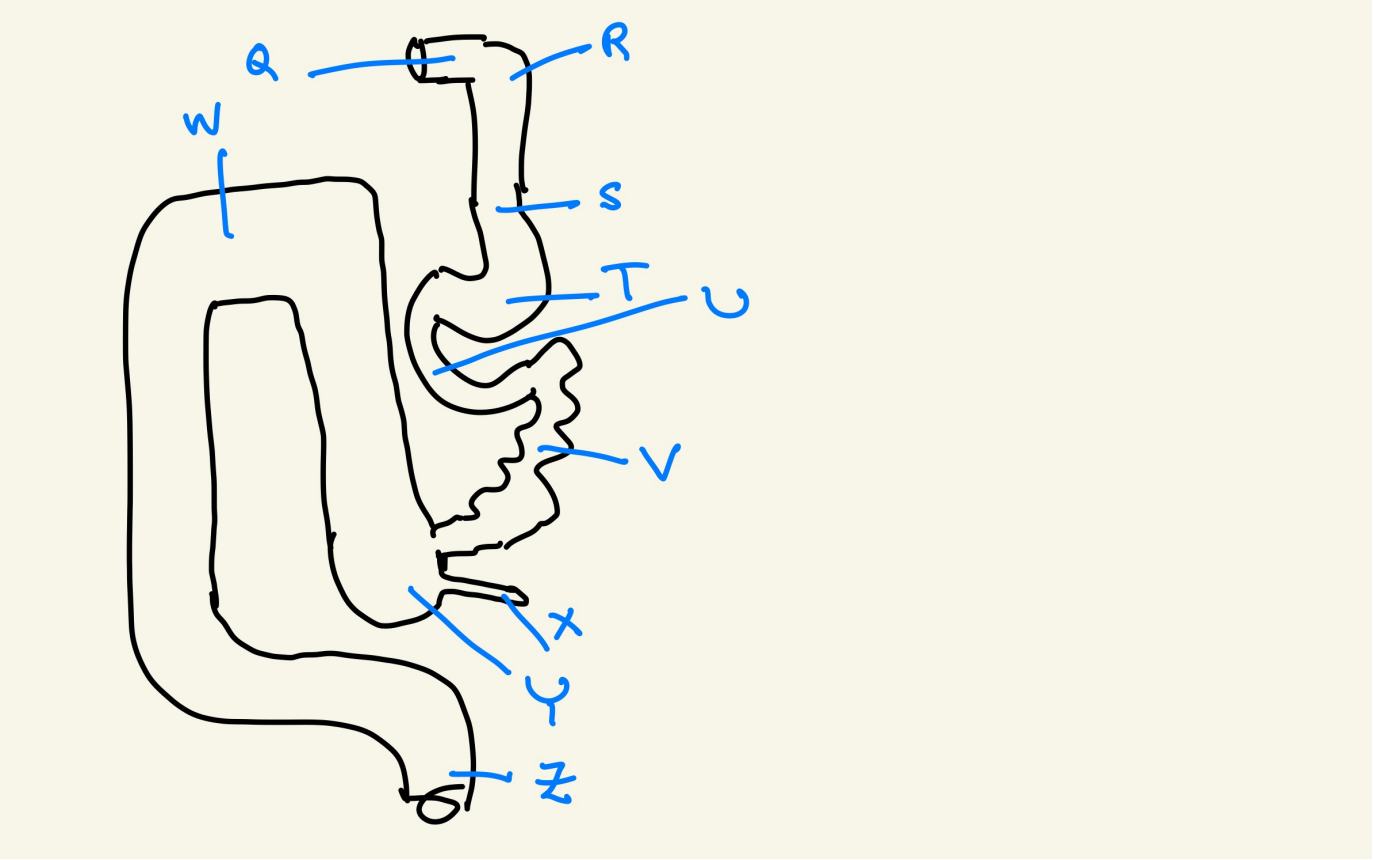
- the bile acids are amphipathic and interact with both lipids and water in a way that maintain lipids as small drops and keeps them from aggregating into large blobs. This increases the surface area for digestion by lipases
- bile acids are small polypeptides that function as enzymes that digest triacylglycerols
- the bile acids greatly decrease the pH of the fluid content of the intestine. The low pH is necessary for the optimal function of the pancreatic enzymes secreted into the small intestine
- bile acids are small fatty acids that function as enzymes that digest triacylglycerols
- the bile acids denature, or unfold, proteins, which exposes more peptide bonds for pancreatic proteases

Question 6 **0 / 1 point**

Which of the following is TRUE?

- a solution with a neutral pH has a pH of 1.0
- a solution with a low pH has more protons in solution than a solution with a high pH
- a solution with a high pH is called hypertonic
- a solution with a neutral pH has an equal number of H+ and H2O
- a solution with a high pH is more acidic than a solution with a low pH

Question 7 **0 / 1 point**



Secretions from the liver drain into the part of the gut labeled

- U
- V
- Y
- T
- X

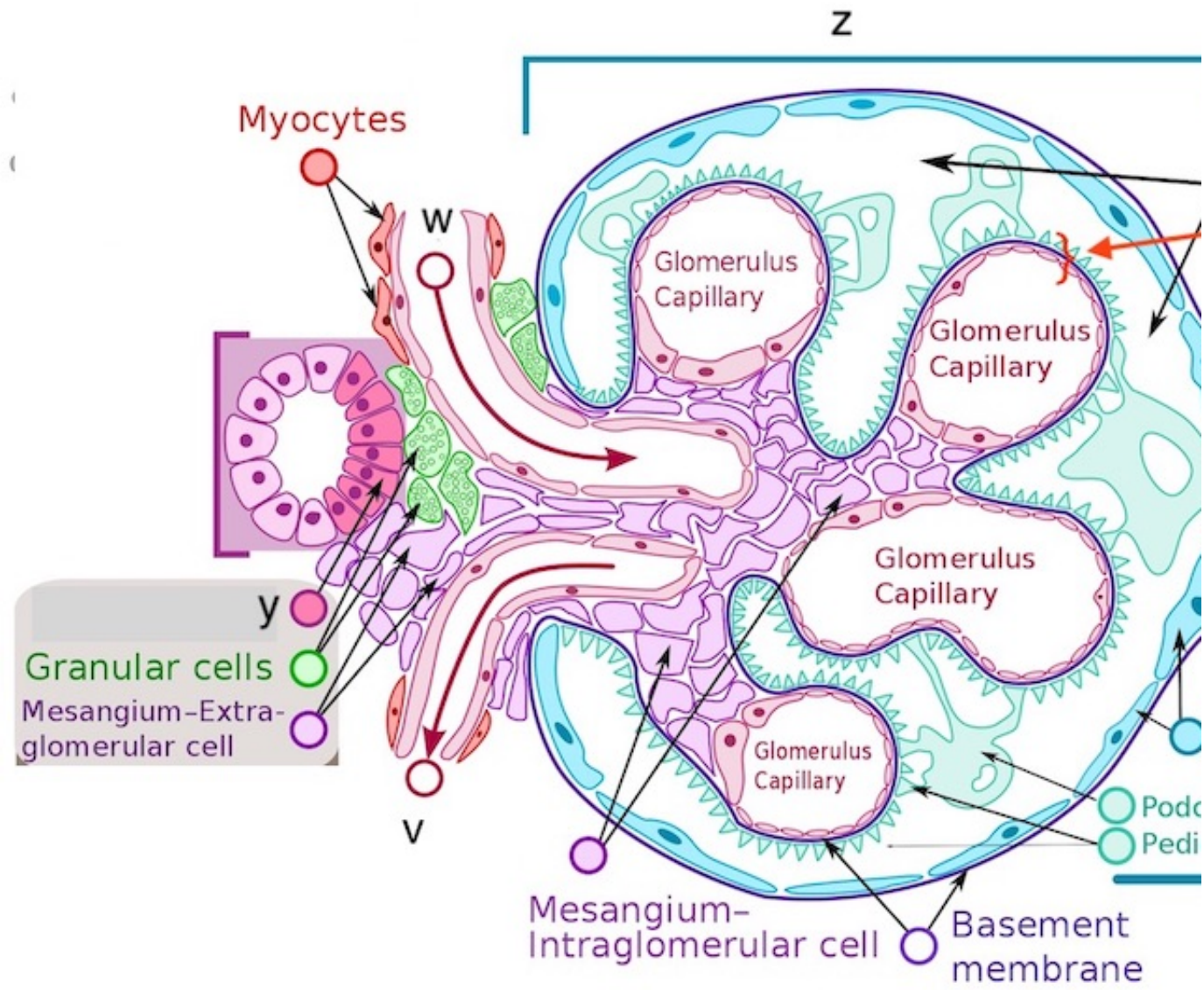
Question 8 0 / 1 point

The northern European variant of lactase persistence is due to a substitution of T for C at a site 13,910 base pairs upstream of the lactase gene (LCT). This mutation doesn't change the protein product (since the mutation is not in the coding region) but the pattern of expression. What

does **expression** mean here?

- to synthesize the protein encoded by the gene
- to secrete the protein encoded by the gene
- to post-translationally modify the protein encoded by the gene
- to break-down the protein encoded by the gene
- to fold the protein encoded by the gene into its 3D shape

Question 9 **0 / 1 point**



The fluid in the space marked x is

- IF
- plasma
- filtrate
- ICF
- urine

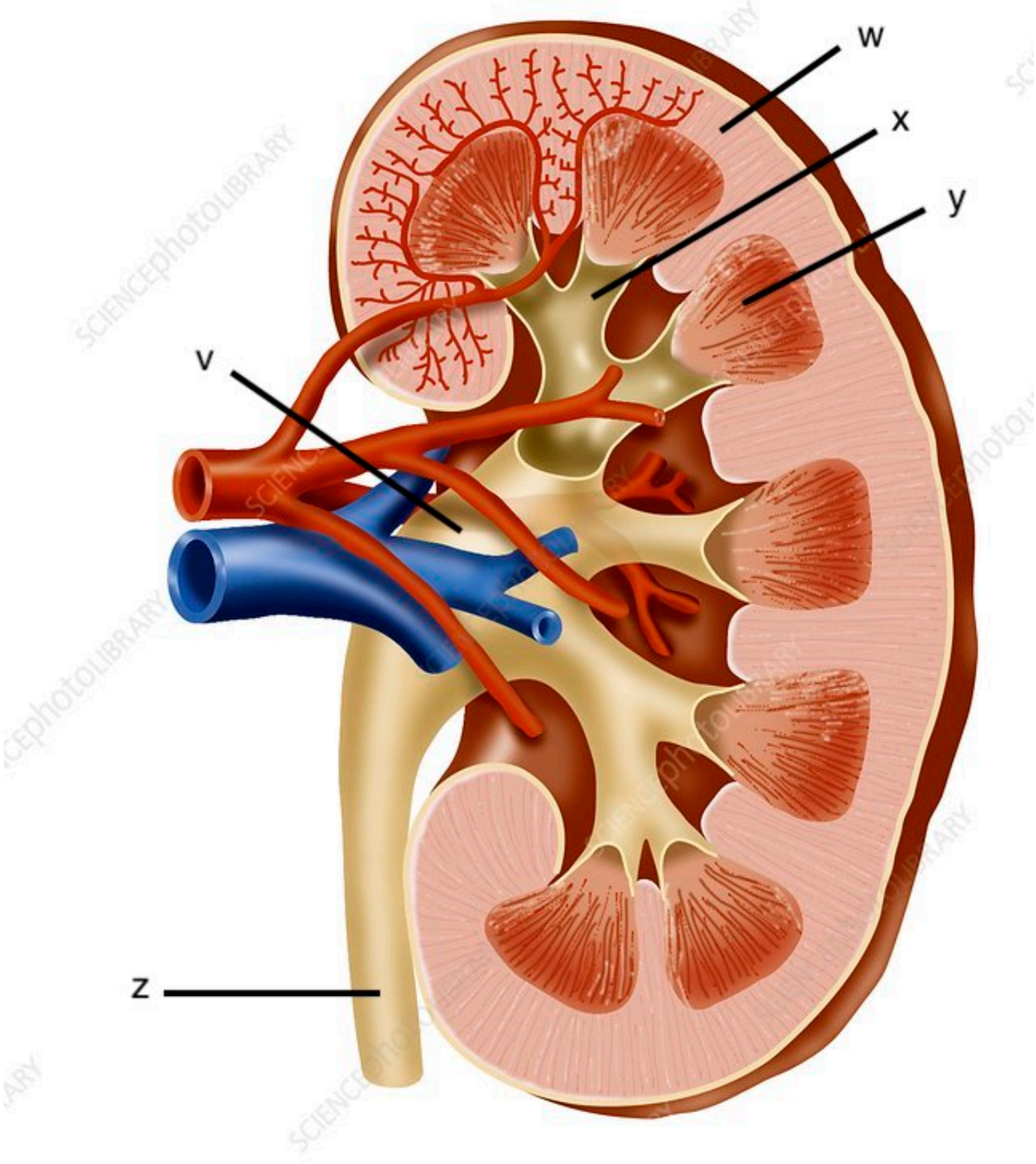
Question 10 **0 / 1 point**

Glucose-dependent Insulinotropic Peptide (GIP), secreted by small intestine cells, is more commonly* called what?

*a Google Scholar search showed 2X as many uses of this alternative name since 2018

- ◯ Gastric Inhibitory Peptide
- ◯ Gastrin
- ◯ Ghrelin
- ◯ Secretin
- ◯ CCK

Question 11 **0 / 1 point**



The structure marked y is part of the

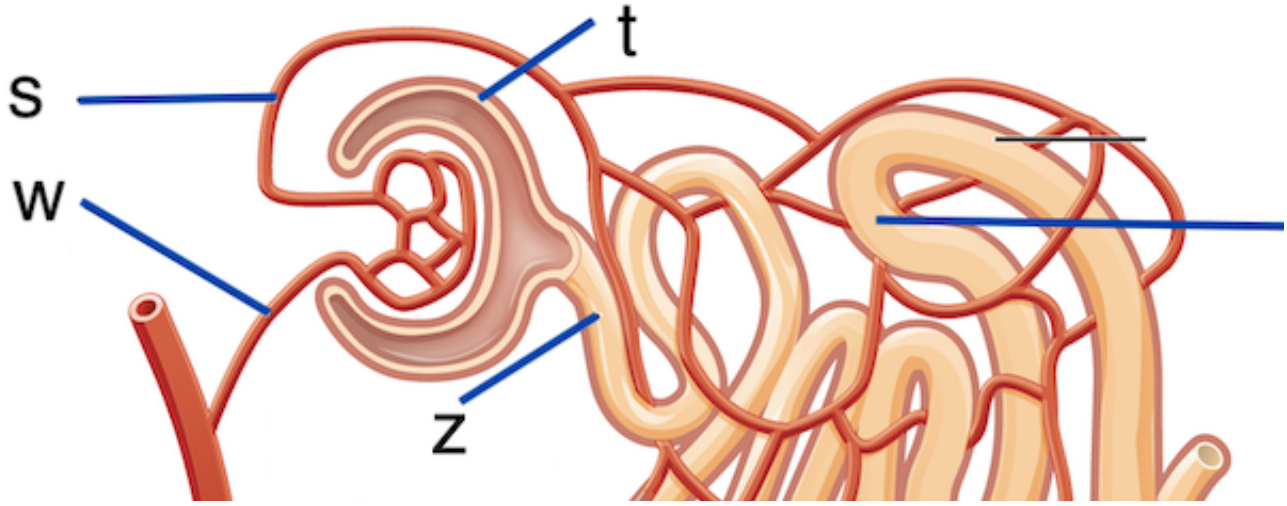
- vasa recta
- adrenal gland
- renal medulla
- renal corpuscle
- renal cortex

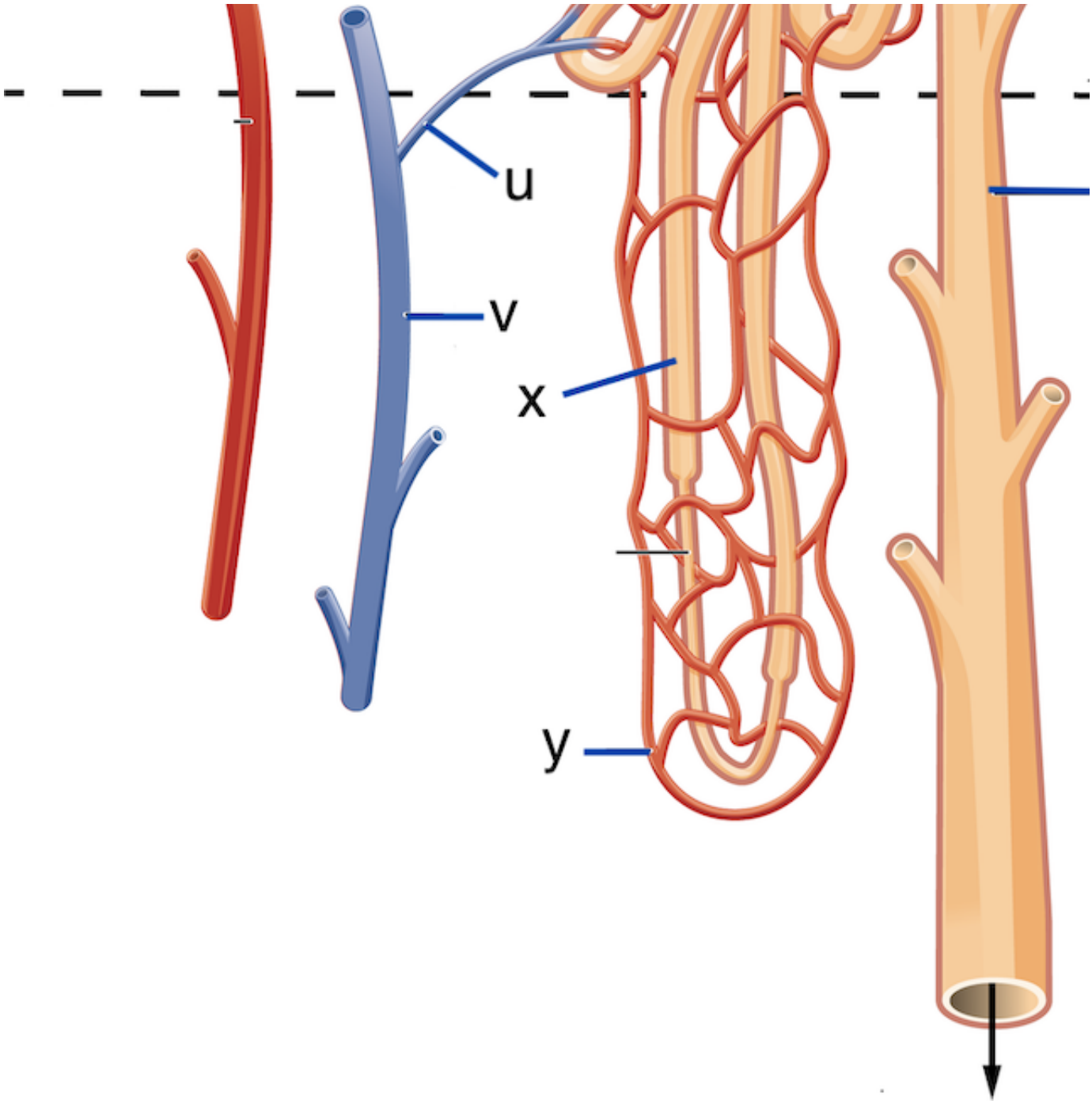
Question 12 **0 / 1 point**

There is abundant sympathetic innervation of the kidney; the textbook outlines some of this. Sympathetic innervation of the afferent arteriole

- increases water loss
- decreases systemic blood pressure
- increases Na+ secretion in the PCT
- increases Na+ secretion in the DCT
- decreases GFR

Question 13 **0 / 1 point**





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

- t
- x
- r
- z
- p

Question 14 **0 / 1 point**

Anaerobic **respiration** is a misnomer because it is not respiration. Why is it not respiration?

- because it does not involve the exchange of gases
- because it doesn't occur in the mitochondria
- because it produces lactate
- because it does not involve the movement of air in and out of the lungs
- because no ATP is synthesized

Question 15 **0 / 1 point**

This quote is from the pathophysiology textbook that you will use when you take pathophysiology: "[Urea]recycling contributes to the osmotic gradient within the medulla and is necessary for the concentration and dilution of urine".

The phrase "concentration and dilution of urine" emphasizes the wrong aspect of what is going on, which is

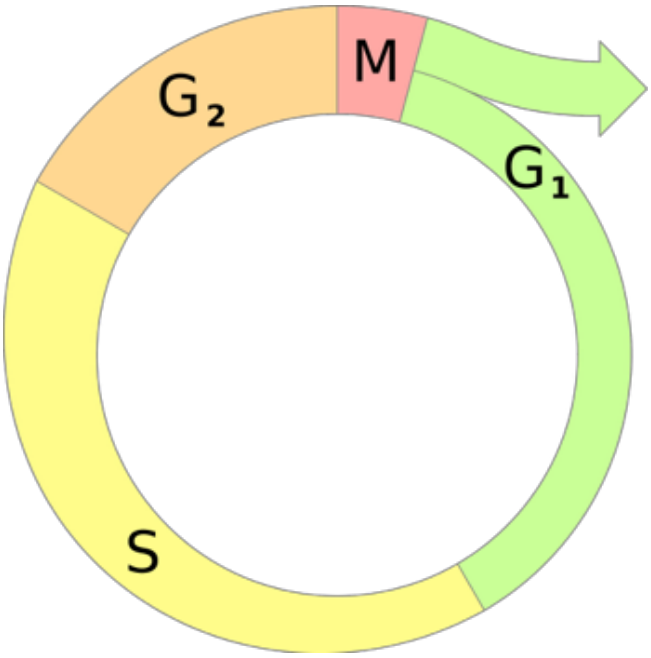
- the regulation of Na+ secretion
- the regulation of glucose secretion
- the regulation of water reabsorption
- the regulation of GFR
- the regulation Na+ reabsorption

Question 16 **0 / 1 point**

if systemic blood pressure is low

- smooth muscle of the afferent arteriole contracts, reducing pressure in the glomerular capillary and decreasing GFR
- smooth muscle of the afferent arteriole contracts, increasing pressure in the glomerular capillary and decreasing GFR
- smooth muscle of the afferent arteriole relaxes, increasing pressure in the glomerular capillary and increasing GFR
- smooth muscle of the afferent arteriole contracts, increasing pressure in the glomerular capillary and increasing GFR
- smooth muscle of the afferent arteriole relaxes, reducing pressure in the glomerular capillary and decreasing GFR

Question 17 **0 / 1 point**



Cyclin-dependent kinase signaling paths activated in G1 promote progression into S. Mutations can switch these kinases into permanently active states. The mutated genes encoding these cyclin-dependent kinases are known as

- oncogenes
- apoptotic factors
- growth factors
- tumor suppressor genes
- death factors

Question 18 **0 / 1 point**

Most beta cell growth (mitosis and cell division) in the pancreas occurs before age 2 or 3 but there is some growth until about age 40. At age 20, a point mutation in the gene that encodes insulin occurred during mitosis of a beta-cell in Jane. The mutation results in a non-functional insulin

molecule. Because of this mutation, which statement is most likely?

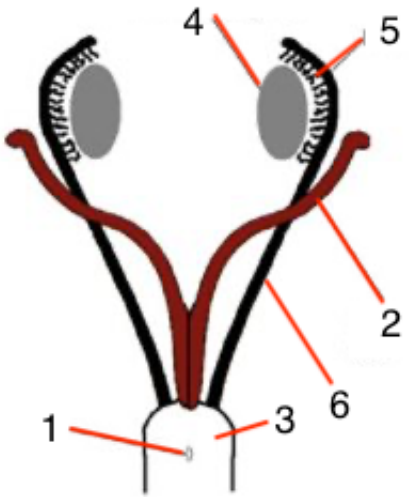
- Jane will likely acquire type II diabetes
- Jane is at a higher risk for pancreatic cancer
- Jane will likely have no adverse physiological/health consequence
- Jane's children are at a much higher risk of inheriting diabetes
- Jane will likely acquire type I diabetes

Question 19 **0 / 1 point**

Without functional SRY signaling

- the paramesonephric duct grows and forms the epididymus and ductus deferens
- There is no growth of the paramesonephric duct into the uterine tubes, uterus, and vagina
- the paramesonephric duct grows and forms the uterine tubes, uterus, and vagina
- There is no growth of the mesonephros into the "final" kidney
- the mesonephric duct grows and forms the uterine tubes, uterus, and vagina

Question 20 **0 / 1 point**



The structure labeled 2 is a/the

- mesonephros
- paramesonephric duct
- mesonephric duct
- urogenital sinus
- gonad

Question 21 **0 / 1 point**

The primary site of hormonally controlled water reabsorption is

- the descending limb of the loop of Henle
- Bowman's capsule
- the glomerular capillary
- the proximal convoluted tubule
- the collecting duct

Question 22 0 / 1 point

In the chart, + is the allele that makes a functional product and - is the allele that makes a dysfunctional product.

A	B	C	D
+/+	100% functional protein	watery	no disease
+/-	50% functional protein	intermediate	no disease
-/-	0% functional protein	thick	disease

The mapping of column A to the trait in column C is an example of

- polygenic inheritance
- Mendelian inheritance
- incomplete dominance
- pleiotropy
- co-dominance

Question 23 0 / 1 point

the fiber component of our diet

- is the plant component
- is the component coming from protein fibers such as collagen
- is any dietary polysaccharide
- includes the (mostly carbohydrate) molecules that we do not digest because we do not make the enzymes to break these down
- includes the lipid soluble vitamins

Question 24 **0 / 1 point**

the synthesis of fatty acids and the synthesis of triglycerides are the two parts of

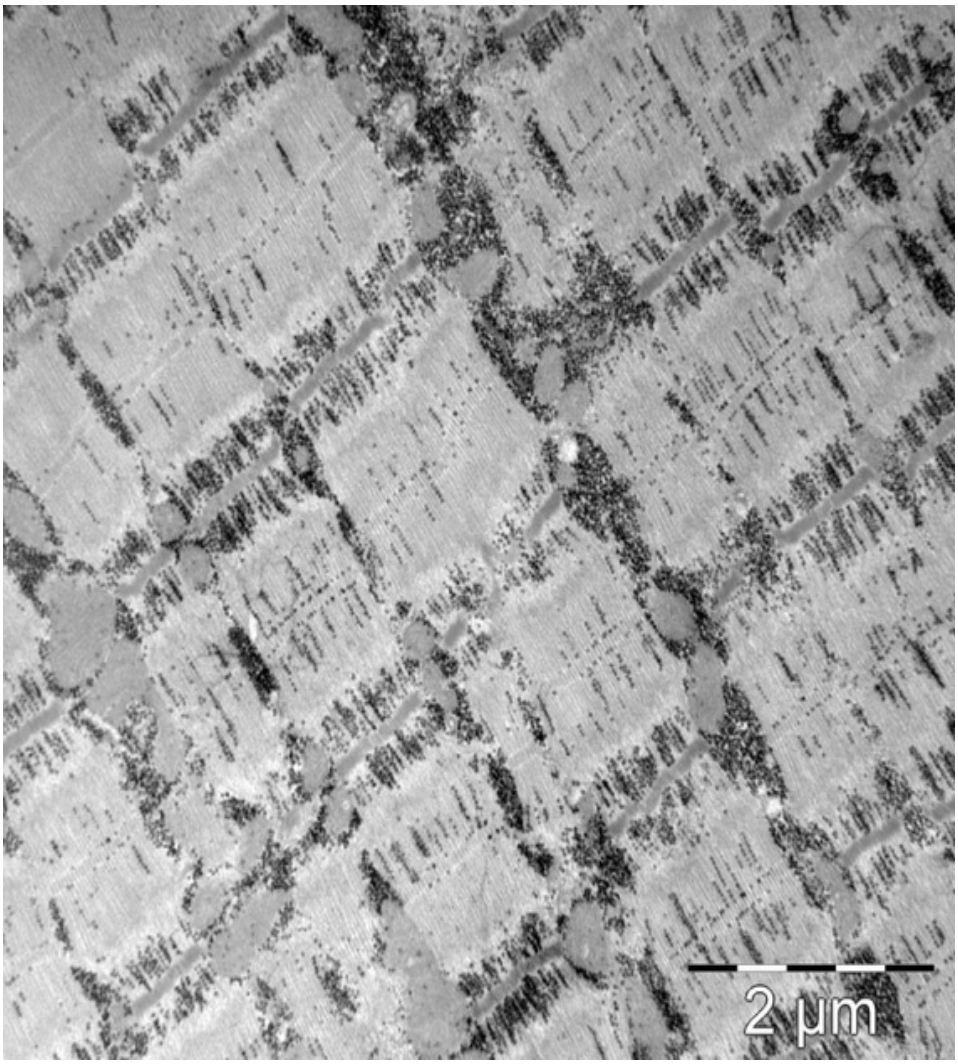
- lipogenesis
- lipolysis
- hyperlipidemia
- beta oxidation
- lipoprotein metabolism

Question 25 **0 / 1 point**

the labia majora in the female is homologous to what in the male?

- testes
- prostate
- ductus deferens
- scrotum
- penis

Question 26 **0 / 1 point**



This electron micrograph of skeletal muscle shows lots of black dots, which are particles of a large, branched polysaccharide of glucose. These particles are

- cellulose
- maltose
- glycerol
- glycogen
- starch

Question 27 0 / 1 point

The substrate that links carbohydrate, fatty acid, and protein catabolism to the aerobic path for ATP synthesis is

- pyruvate
- acetyl co-A
- lactate
- phosphoenolpyruvate (PEP)
- citrate

Question 28 0 / 1 point

In the chart, + is the allele that makes a functional product and - is the allele that makes a dysfunctional product.

A	B	C	D
+/+	100% functional protein	watery	no disease
+/-	50% functional protein	intermediate	no disease
-/-	0% functional protein	thick	disease

What does column B contain?

- different loci
- different proteins
- different genotypes
- different phenotypes
- different genes

Question 29

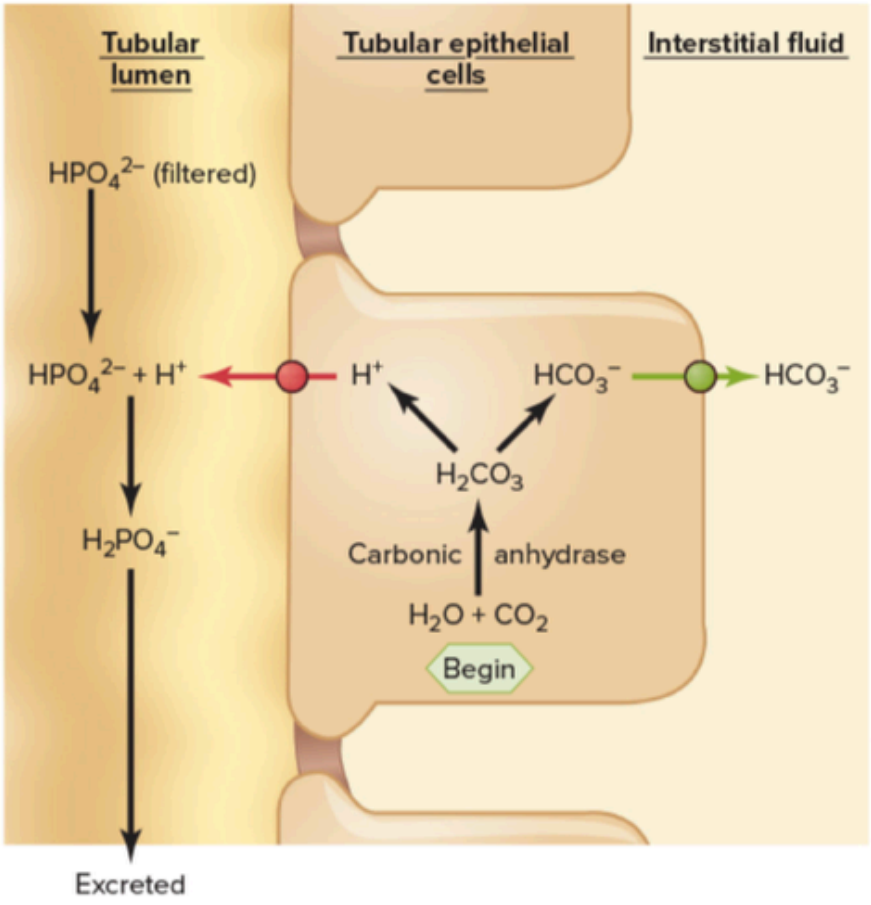
0 / 1 point

The three stimulators of renin secretion are all of these EXCEPT

- ACTH signaling of macula densa cells
- sympathetic input to JG cells
- low electrolyte delivery to macula densa cells of DCT
- low stretch of renal baroreceptor in afferent arteriole

Question 30

0 / 1 point



The mechanism shown here is the renal response to

- dehydration
- hyponatremia
- metabolic acidosis
- metabolic alkalosis
- hypernatremia

Question 31 **0 / 1 point**

ketogenesis is

- the oxidation of fatty acids to acetyl coA
- the oxidation of keto acids to make ATP
- the conversion of acetyl coA to ketone bodies
- the conversion of amino acids to keto acids
- the conversion of amino acids to acetyl coA

Question 32 **0 / 1 point**

The discovery of the different vitamins is one of the major success stories in science. Many vitamins, such as Vitamin C, function as

- alternative fuel for ATP synthesis
- co-enzymes
- inorganic co-factors
- transporters
- enzymes

Question 33 **0 / 1 point**

The + allele at CFTR encodes a functional protein. The - allele at CFTR encodes a dysfunctional protein. Dad is +/+ at the CFTR locus. Mom is -/- at the CFTR locus. CFTR is on chromosome 7. Cystic fibrosis is an autosomal recessive disease. What percentage of the children of dad and mom are expected to be **carriers** for cystic fibrosis?

- 0%
- 50%
- 75%
- 25%
- 100%

Question 34 **0 / 1 point**

Cystic fibrosis is a

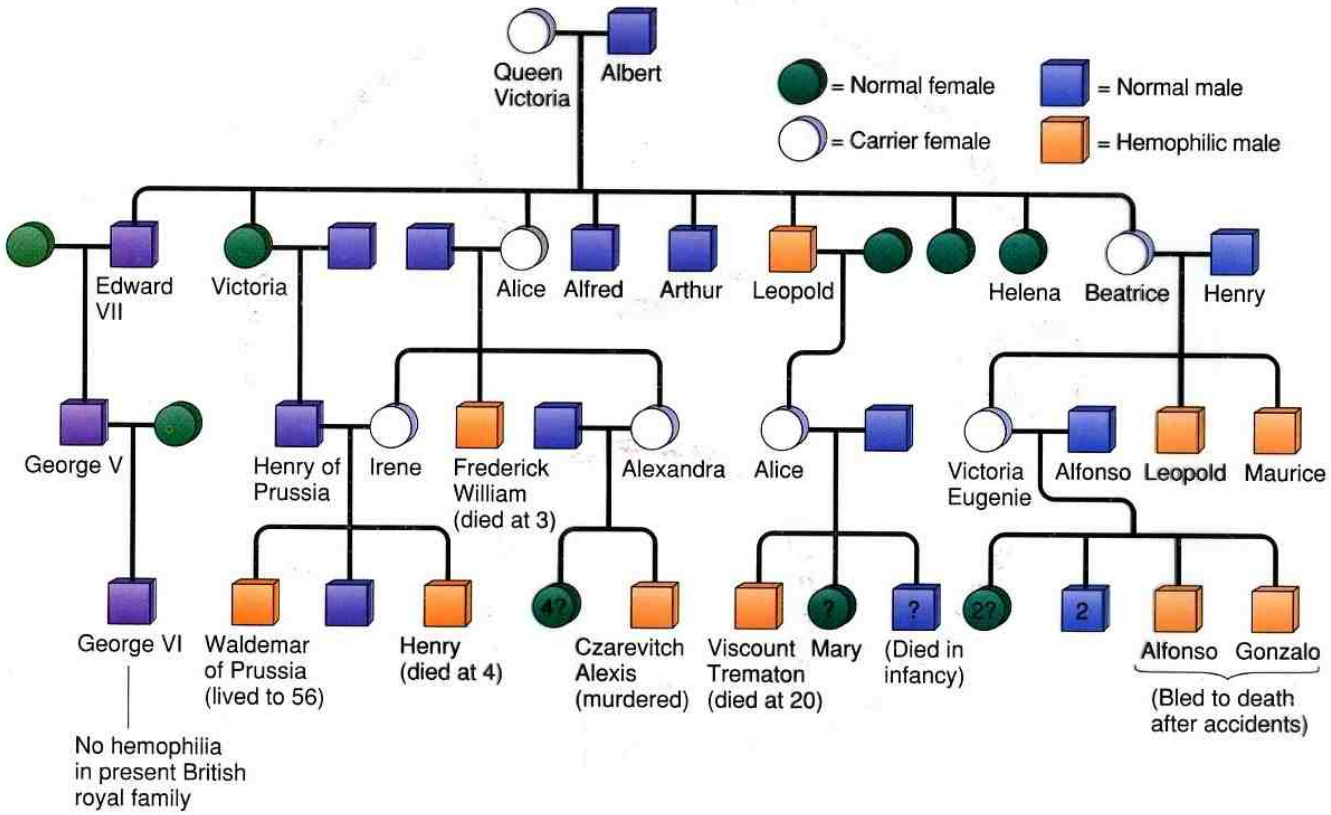
- monogenic disease, because inheritance at a single gene is sufficient to cause the disease
- monogenic disease, because inheritance at a single dysfunctional allele is sufficient to cause the disease
- multifactorial disease, because both multiple genes and environments contribute to the development of the disease
- polygenic disease, because inheritance of two dysfunctional alleles (one from each parent) is necessary to cause the disease
- polygenic disease, because thousands of gene variants of the CFTR gene result in a dysfunctional protein

Question 35 **0 / 1 point**

Fatty acids are stored by both plants and animals as what molecule?

- cholesterol
- triacylglycerol
- starch
- low density lipoprotein
- glycogen

Question 36 **0 / 1 point**



The image above shows the inheritance of Factor VIII hemophila among multiple descendents of Queen Victoria of Great Britain. The gene F8 encodes the factor viii protein. The + allele of F8 encodes a functional protein. The - allele of F8 encodes a dysfunctional protein. A person need inherit only a single + allele to **NOT** have hemophilia. **What is the genotype of of Queen Victoria?**

(In the choices below, X and y refer to the sex chromosomes and the + or - after the chromosome indicates the F8 allele on that chromosome.)

- X-/X-
- X-/y
- X+/X-
- X+/y-
- X-/y+

Question 37 **0 / 1 point**

The major hormone of the postabsorptive state that is secreted by the pancreas is

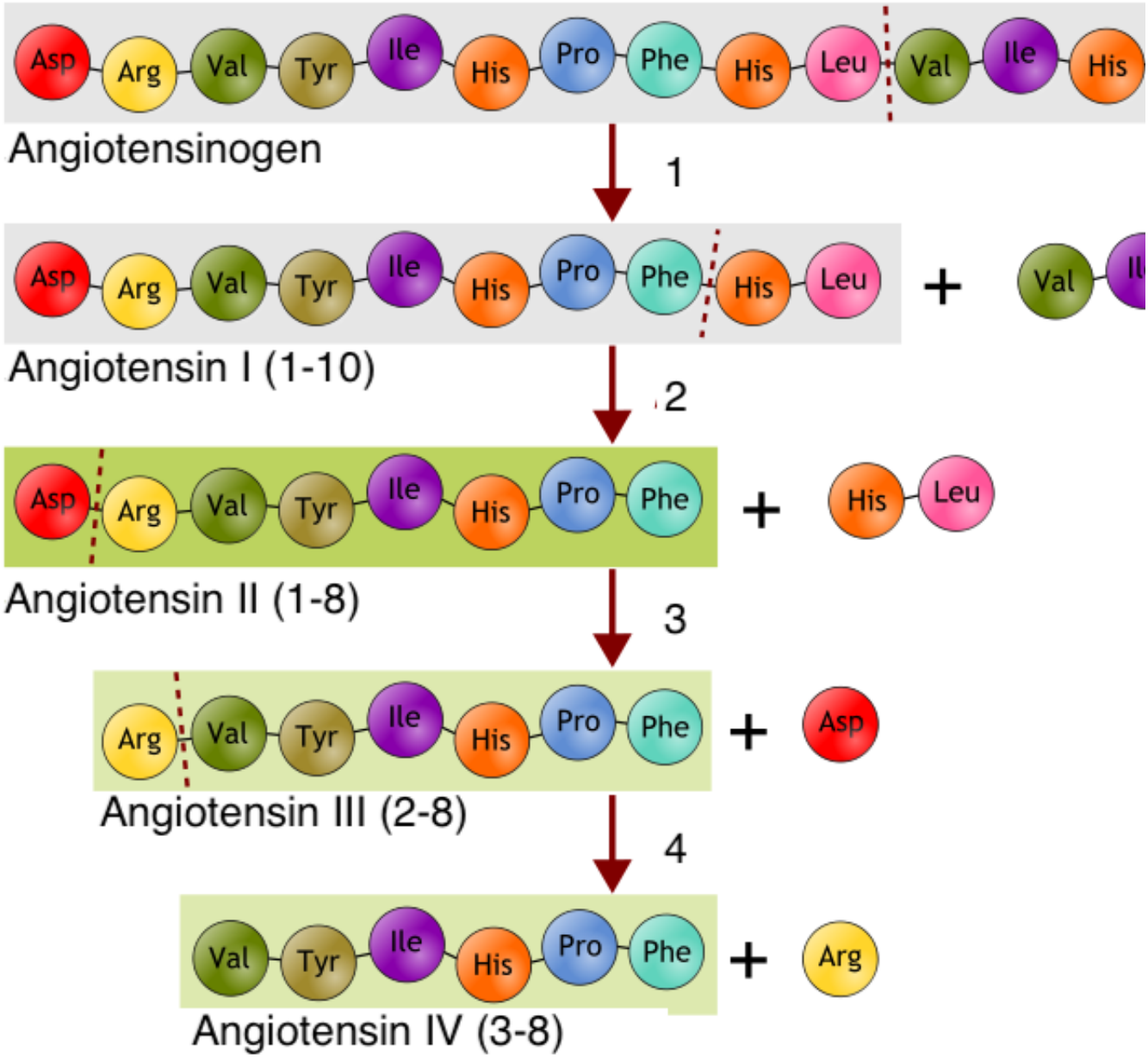
- insulin
- growth hormone
- epinephrine
- cortisol
- glucagon

Question 38 **0 / 1 point**

The northern European variant of lactase persistence is due to a substitution of T for C at a site 13,910 base pairs upstream of the lactase gene (LCT). This mutation doesn't change the protein product (since the mutation is not in the coding region) but the pattern of expression. What are T and C?

- carbohydrates
- nucleotides
- nucleic acids
- polypeptides
- amino acids

Question 39 **0 / 1 point**



In the image, each little colored ball on the chain represents

- a monosaccharide
- a peptide
- a protein
- an amino acid
- a nucleotide

Question 40 0 / 1 point

In the chart, + is the allele that makes a functional product and - is the allele that makes a dysfunctional product.

A	B	C	D
+/+	100% functional protein	watery	no disease
+/-	50% functional protein	intermediate	no disease
-/-	0% functional protein	thick	disease

What do we call +/+ in column A?

- the recessive genotype
- the heterozygous + genotype
- the dominant genotype
- the homozygous + genotype
- the co-dominate genotype

Question 41 0 / 1 point

HDL is called "good cholesterol" because

- HDL particles transport excess cholesterol from cells to the liver for elimination in the bile
- HDL is the form of cholesterol used in plasma membranes while LDL is the form of cholesterol that creates arterial plaques and cardiovascular disease
- HDL is the unsaturated form of cholesterol while LDL ("bad cholesterol") is saturated
- HDL is the form of cholesterol synthesized by plants and that we get by eating plants while LDL is the form synthesized by animals and that we get by eating meat
- HDL particles transport cholesterol to all cells of the body

Question 42 **0 / 1 point**

exocrine secretions from the pancreas contain

- digestive enzymes
- the hormones insulin and glucagon
- emulsifying agents
- bile
- the strong acid HCl

Question 43 **0 / 1 point**

urea is a nitrogen waste resulting from the breakdown of

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

Question 44 **0 / 1 point**

LDLR (encoding the LDL-receptor) has two alleles: + (which encodes a functional product) and - (which encodes a non-functional product). The LDL receptor transports LDL from the blood into tissue cells and is necessary for normal lipid homeostasis. LDLR is on chromosome 19. A person with either the +/- or -/- genotype has **familial hypercholesterolemia**. Which of the following statements is TRUE?

- familial hypercholesterolemia is autosomal dominant, because a single copy of the "-" allele is sufficient to express the phenotype
- familial hypercholesterolemia is autosomal dominant because the "-" allele causes the disease
- familial hypercholesterolemia is autosomal recessive because a single copy of the "-" allele is sufficient to express the phenotype
- familial hypercholesterolemia is autosomal dominant because the "-" allele is the most common in the population
- familial hypercholesterolemia is autosomal recessive because it is the "-" allele that causes the disease

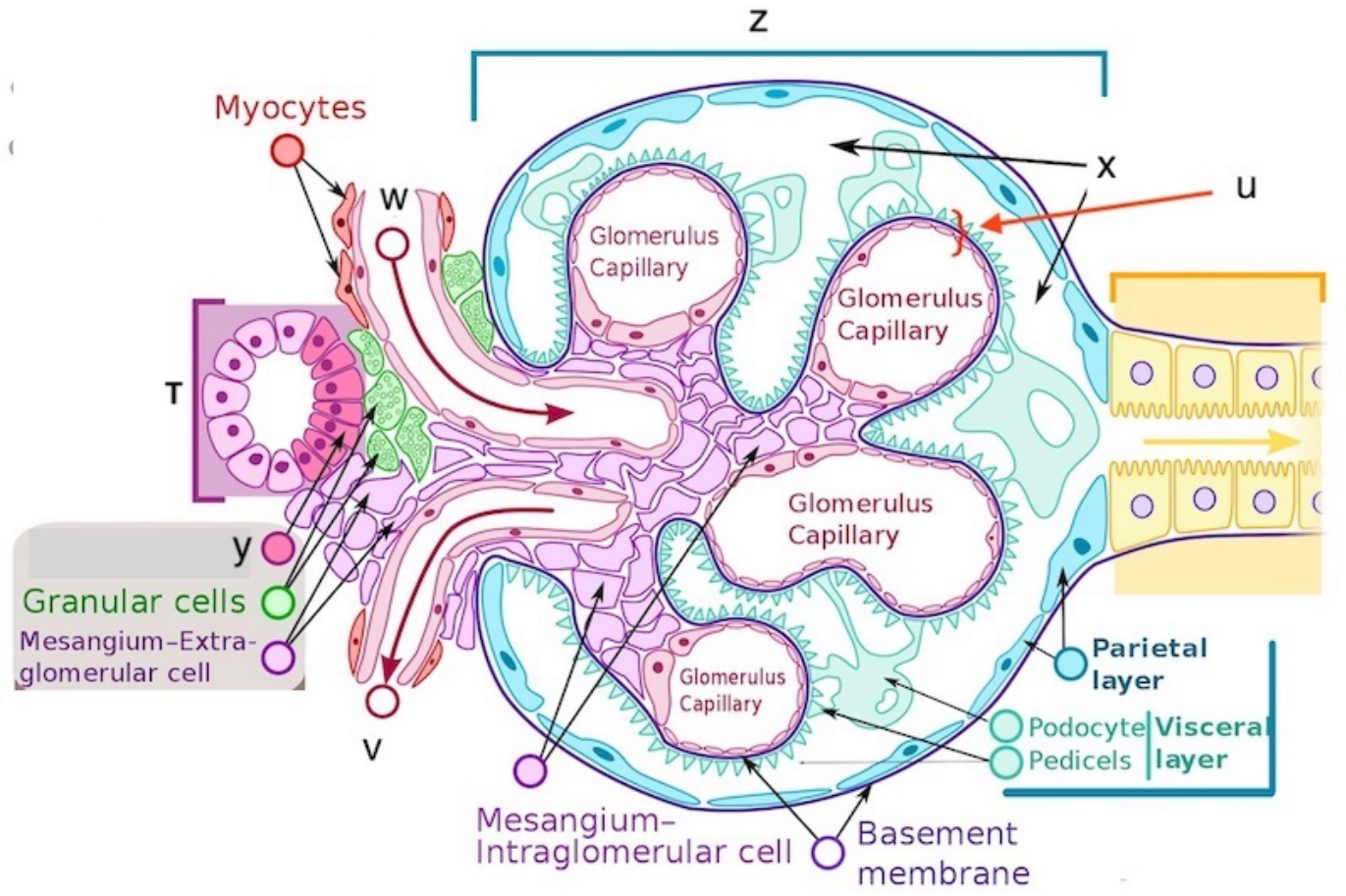
Question 45 **0 / 1 point**

The most common mutation occuring in people with cystic fibrosis is the

loss of a single amino acid (phenylalanine) at position 508 of the protein encoded by the gene CFTR. What is this protein?

- a glycoprotein that forms the mucus layer on the epithelial surface
- a water channel that facilitates the transport of water onto the epithelial surface
- a Cl- channel that facilitates the transport of Cl- ions onto the epithelial surface
- a collagen isoform, which is the dominant component of the extracellular matrix of a fibrous cyst
- a Ca++ pump that regulates smooth muscle tone in the respiratory submucosa

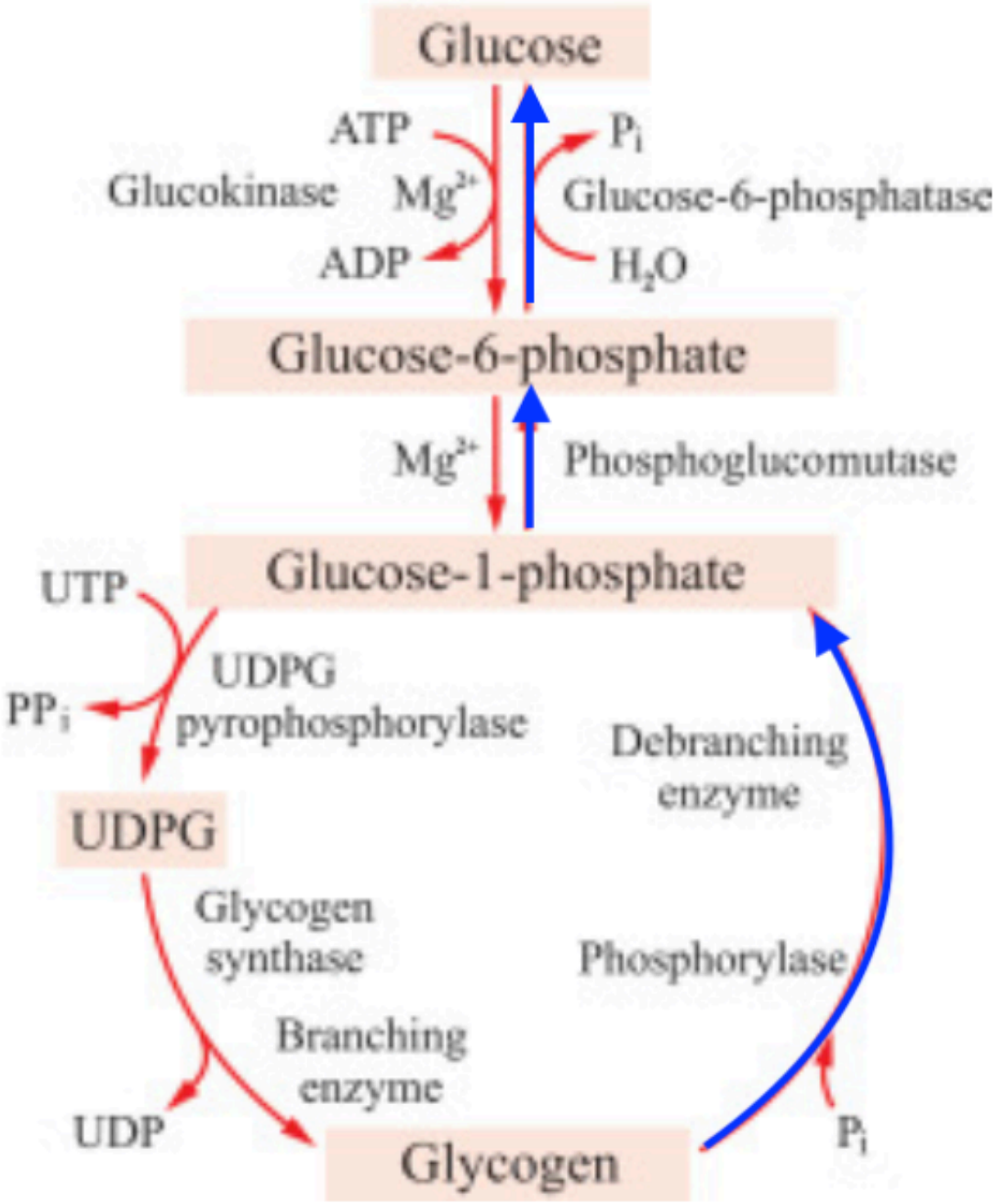
Question 46 **0 / 1 point**



Information flowing from 1) the lumen of the tube labeled T to 2) the cells labeled y, to the cells labeled myocytes, to the events occurring at the red arrow labeled u is the mechanism of

- hormonally controlled Na+ reabsorption
- tubuloglomerular feedback
- urea recycling
- renal clearance
- the countercurrent multiplier system

Question 47 **0 / 1 point**



The **complete** set of reactions marked by the blue arrows occurs predominantly in

- adipocytes
- osteocytes
- skeletal muscle cells
- fibroblasts
- hepatocytes

Question 48 **0 / 1 point**

When blood glucose is abundant, a pretty neat trick of the liver is

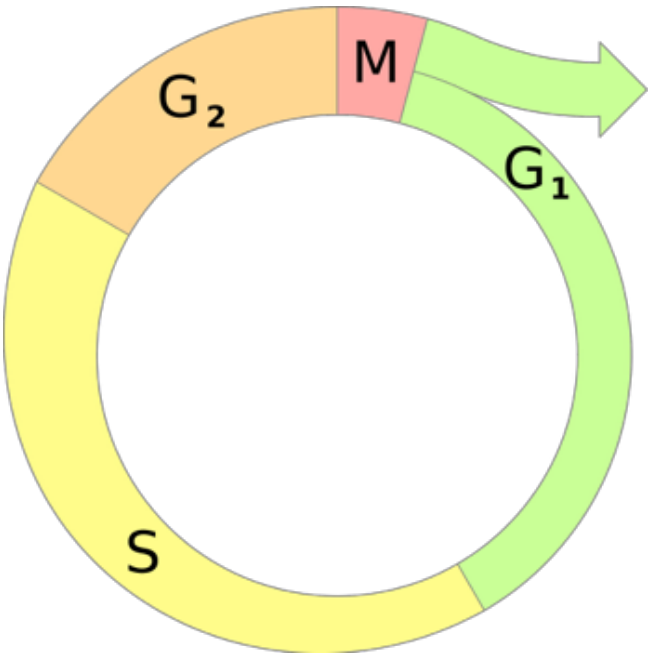
- glycogenolysis, which is an animal's way of storing glucose
- glycolysis, which is an animal's way of storing glucose
- gluconeogenesis, which is an animal's way of storing glucose
- the production of glycoproteins, which an animal's way of storing glucose
- glycogenesis, which is an animal's way of storing glucose

Question 49 **0 / 1 point**

In sweating, the loss of body fluid includes some loss of Na+. The fluid loss

- decreases systemic blood pressure and therefore GFR. The decreased GFR inhibits the renin-angiotensin-aldosterone system, which increases Na+ secretion
- increases systemic blood pressure and therefore GFR. The increased GFR stimulates the renin-angiotensin-aldosterone system, which decreases Na+ secretion
- decreases systemic blood pressure and therefore GFR. The decreased GFR stimulates the renin-angiotensin-aldosterone system, which increases Na+ reabsorption
- increases systemic blood pressure and therefore GFR. The increased GFR stimulates the renin-angiotensin-aldosterone system, which increases Na+ secretion
- increases systemic blood pressure and therefore GFR. The increased GFR inhibits the renin-angiotensin-aldosterone system, which increases Na+ secretion

Question 50 **0 / 1 point**



Proteins active in G1 assess the quality of DNA prior to S and can activate repair mechanisms or apoptosis pathways. This general mechanism of cell cycle control is known as

- a cyclin-dependent kinase pathway
- apoptosis
- tyrosine kinase receptor signaling
- a cell cycle growth factor
- a cell cycle checkpoint

Done