

A&P 24

Metabolism & Nutrition

Essay

Author: OpenStax College

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4. Chapter: A&P 24 Metabolism & Nutrition Essay

1. A&P 24 Metabolism & Nutrition Essay Questions

4.1.1. Describe how metabolism can be altered.

Author: OpenStax College

Describe how metabolism can be altered.

- An increase or decrease in lean muscle mass will result in an increase or decrease in metabolism.

Check the answer of this question online at QuizOver.com:

Question: [Describe how metabolism can be altered. OpenStax College Anatomy](#)

4.1.2. Describe how Addison's disease can be treated.

Author: OpenStax College

Describe how Addison's disease can be treated.

- Addison's disease is characterized by low cortisol levels. One way to treat the disease is by giving cortisol to the patient.

Check the answer of this question online at QuizOver.com:

Question: [Describe how Addison's disease can be OpenStax College Anatomy Quest](#)

4.1.3. Explain how glucose is metabolized to yield ATP.

Author: OpenStax College

Explain how glucose is metabolized to yield ATP.

- Glucose is oxidized during glycolysis, creating pyruvate, which is processed through the Krebs cycle to produce NADH, FADH₂, ATP, and CO₂. The FADH₂ and NADH yield ATP.

Check the answer of this question online at QuizOver.com:

Question: [Explain how glucose is metabolized to OpenStax College Anatomy Quest](#)

4.1.4. Insulin is released when food is ingested and stimulates the uptake...

Author: OpenStax College

Insulin is released when food is ingested and stimulates the uptake of glucose into the cell. Discuss the mechanism cells employ to create a concentration gradient to ensure continual uptake of glucose from the bloodstream.

- Upon entry into the cell, hexokinase or glucokinase phosphorylates glucose, converting it into glucose-6-phosphate. In this form, glucose-6-phosphate is trapped in the cell. Because all of the glucose has been phosphorylated, new glucose molecules can be transported into the cell according to its concentration gradient.

Check the answer of this question online at QuizOver.com:

Question: [Insulin is released when food is ingested OpenStax College Anatomy](#)

4.1.5. Discuss how carbohydrates can be stored as fat.

Author: OpenStax College

Discuss how carbohydrates can be stored as fat.

- Carbohydrates are converted into pyruvate during glycolysis. This pyruvate is converted into acetyl CoA and proceeds through the Krebs cycle. When excess acetyl CoA is produced that cannot be processed through the Krebs cycle, the acetyl CoA is converted into triglycerides and fatty acids to be stored in the liver and adipose tissue.

Check the answer of this question online at QuizOver.com:

Question: [Discuss how carbohydrates can be stored OpenStax College Anatomy](#)

4.1.6. If a diabetic's breath smells like alcohol, what could this mean?

Author: OpenStax College

If a diabetic's breath smells like alcohol, what could this mean?

- If diabetes is uncontrolled, the glucose in the blood is not being taken up and processed by the cells. Although blood glucose levels are high, there is no glucose available to the cells to be converted into energy. Because glucose is lacking, the body turns to other energy sources, including ketones. A side effect of using ketones as fuel is a sweet alcohol smell on the breath.

Check the answer of this question online at QuizOver.com:

Question: [If a diabetic's breath smells like alcohol OpenStax College Anatomy](#)

4.1.7. Amino acids are not stored in the body. Describe how excess amino a...

Author: OpenStax College

Amino acids are not stored in the body. Describe how excess amino acids are processed in the cell.

- Amino acids are not stored in the body. The individual amino acids are broken down into pyruvate, acetyl CoA, or intermediates of the Krebs cycle, and used for energy or for lipogenesis reactions to be stored as fats.

Check the answer of this question online at QuizOver.com:

Question: [Amino acids are not stored in the body. OpenStax College Anatomy](#)

4.1.8. Release of trypsin and chymotrypsin in their active form can result...

Author: OpenStax College

Release of trypsin and chymotrypsin in their active form can result in the digestion of the pancreas or small intestine itself. What mechanism does the body employ to prevent its self-destruction?

- Trypsin and chymotrypsin are released as inactive proenzymes. They are only activated in the small intestine, where they act upon ingested proteins in the food. This helps avoid unintended breakdown of the pancreas or small intestine.

Check the answer of this question online at [QuizOver.com](http://www.quizover.com):

Question: [Release of trypsin and chymotrypsin in OpenStax College Anatomy Quest](#)

4.1.9. In type II diabetes, insulin is produced but is nonfunctional. Thes...

Author: OpenStax College

In type II diabetes, insulin is produced but is nonfunctional. These patients are described as "starving in a sea of plenty," because their blood glucose levels are high, but none of the glucose is transported into the cells. Describe how this leads to malnutrition.

- Insulin stimulates the uptake of glucose into the cells. In diabetes, the insulin does not function properly; therefore, the blood glucose is unable to be transported across the cell membrane for processing. These patients are unable to process the glucose in their blood and therefore must rely on other sources of fuel. If the disease is not controlled properly, this inability to process the glucose can lead to starvation states even though the patient is eating.

Check the answer of this question online at QuizOver.com:

Question: [In type II diabetes insulin is produced OpenStax College Anatomy](#)

4.1.10. Ketone bodies are used as an alternative source of fuel during star...

Author: OpenStax College

Ketone bodies are used as an alternative source of fuel during starvation. Describe how ketones are synthesized.

- When triglycerides and fatty acids are broken down, acetyl CoA is created. If excess acetyl CoA is generated in this process, the excess is used in ketogenesis or the creation of ketones. This creation results from the conversion of acetyl CoA by thiolase into acetoacetyl CoA. This acetoacetyl CoA is subsequently converted into β -hydroxybutyrate, the most common ketone in the body.

Check the answer of this question online at QuizOver.com:

Question: [Ketone bodies are used as an alternative OpenStax College Anatomy](#)

4.1.11. How does vasoconstriction help increase the core temperature of the...

Author: OpenStax College

How does vasoconstriction help increase the core temperature of the body?

- When blood flows to the outer layers of the skin or to the extremities, heat is lost to the environment by the mechanisms of conduction, convection, or radiation. This will cool the blood and the body. Vasoconstriction helps increase the core body temperature by preventing the flow of blood to the outer layer of the skin and outer parts of the extremities.

Check the answer of this question online at QuizOver.com:

Question: [How does vasoconstriction help increase OpenStax College Anatomy](#)

4.1.12. How can the ingestion of food increase the body temperature?

Author: OpenStax College

How can the ingestion of food increase the body temperature?

- The ingestion of food stimulates digestion and processing of the carbohydrates, proteins, and fats. This breakdown of food triggers glycolysis, the Krebs cycle, the electron transport chain, fatty acid oxidation, lipogenesis, and amino acid oxidation to produce energy. Heat is a byproduct of those reactions.

Check the answer of this question online at QuizOver.com:

Question: [How can the ingestion of food increase OpenStax College Anatomy Quest](#)

4.1.13. Weight loss and weight gain are complex processes. What are some of...

Author: OpenStax College

Weight loss and weight gain are complex processes. What are some of the main factors that influence weight gain in people?

- Factors that influence weight gain are food intake (both quantity and quality), environmental factors, height, exercise level, some drugs or disease states, and genes.

Check the answer of this question online at QuizOver.com:

Question: [Weight loss and weight gain are complex OpenStax College Anatomy](#)

4.1.14. Some low-fat or non-fat foods contain a large amount of sugar to re...

Author: OpenStax College

Some low-fat or non-fat foods contain a large amount of sugar to replace the fat content of the food. Discuss how this leads to increased fat in the body (and weight gain) even though the item is non-fat.

- Although these foods technically do not have fat added, many times a significant amount of sugar is added to sweeten the food and make it taste better. These foods are non-fat; however, they can lead to significant fat storage or weight gain because the excess sugar is broken down into pyruvate, but overloads the Krebs cycle. When this happens, the sugar is converted into fat through lipogenesis and stored in adipose tissues.

Check the answer of this question online at QuizOver.com:

Question: [Some low-fat or non-fat foods contain a OpenStax College Anatomy](#)