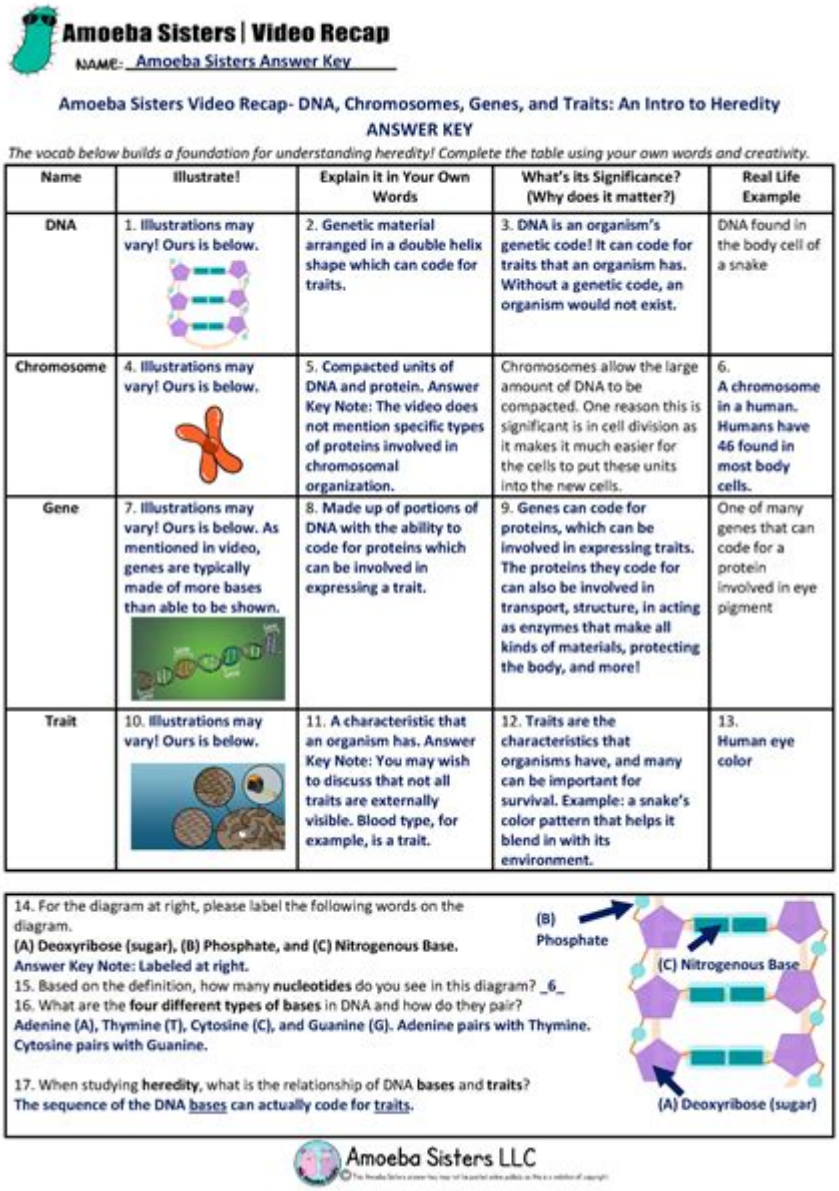
Amoeba Sisters Video Recap Biomolecules Answer Key



Amoeba Sisters | Video Recap

NAME: Amoeba Sisters Answer Key

Amoeba Sisters Video Recap- DNA, Chromosomes, Genes, and Traits: An Intro to Heredity

ANSWER KEY

The vocab below builds a foundation for understanding heredity! Complete the table using your own words and creativity.

Name	Illustrate!	Explain it in Your Own Words	What's its Significance? (Why does it matter?)	Real Life Example
DNA	1. Illustrations may vary! Ours is below.	2. Genetic material arranged in a double helix shape which can code for traits.	3. DNA is an organism's genetic code! It can code for traits that an organism has. Without a genetic code, an organism would not exist.	DNA found in the body cell of a snake
Chromosome	4. Illustrations may vary! Ours is below.	5. Compacted units of DNA and protein. Answer Key Note: The video does not mention specific types of proteins involved in chromosomal organization.	Chromosomes allow the large amount of DNA to be compacted. One reason this is significant is in cell division as it makes it much easier for the cells to put these units into the new cells.	6. A chromosome in a human. Humans have 46 found in most body cells.
Gene	7. Illustrations may vary! Ours is below. As mentioned in video, genes are typically made of more bases than able to be shown.	8. Made up of portions of DNA with the ability to code for proteins which can be involved in expressing a trait.	9. Genes can code for proteins, which can be involved in expressing traits. The proteins they code for can also be involved in transport, structure, in acting as enzymes that make all kinds of materials, protecting the body, and more!	One of many genes that can code for a protein involved in eye pigment
Trait	10. Illustrations may vary! Ours is below.	11. A characteristic that an organism has. Answer Key Note: You may wish to discuss that not all traits are externally visible. Blood type, for example, is a trait.	12. Traits are the characteristics that organisms have, and many can be important for survival. Example: a snake's color pattern that helps it blend in with its environment.	13. Human eye color

14. For the diagram at right, please label the following words on the diagram.
(A) Deoxyribose (sugar), (B) Phosphate, and (C) Nitrogenous Base.
Answer Key Note: Labeled at right.
15. Based on the definition, how many **nucleotides** do you see in this diagram? **_6_**
16. What are the **four different types of bases** in DNA and how do they pair?
Adenine (A), Thymine (T), Cytosine (C), and Guanine (G). Adenine pairs with Thymine. Cytosine pairs with Guanine.

17. When studying **heredity**, what is the relationship of DNA **bases** and **traits**?
The sequence of the DNA bases can actually code for traits.

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The Amoeba Sisters are renowned for their engaging and educational videos that simplify complex biological concepts for students of all ages. Their video recap on biomolecules is particularly valuable for learners seeking to understand the essential macromolecules that form the basis of life. This article serves as a comprehensive guide to the content presented in the Amoeba Sisters video on biomolecules, providing an answer key that summarizes the key points and concepts discussed.

Introduction to Biomolecules

Biomolecules, also known as biological molecules, are organic molecules that play critical roles in the structure and function of living organisms. They are classified into four primary categories:

1. Carbohydrates
2. Proteins
3. Lipids
4. Nucleic Acids

Each category of biomolecule has unique properties and functions, contributing to the overall functioning of cells and organisms.

Carbohydrates

Carbohydrates are one of the most important biomolecules, serving as a primary source of energy for living organisms. They are composed of carbon, hydrogen, and oxygen, usually in a ratio of 1:2:1.

Types of Carbohydrates

Carbohydrates can be classified into three main types:

1. Monosaccharides:
- The simplest form of carbohydrates.
- Examples include glucose, fructose, and galactose.

2. Disaccharides:
- Formed by the combination of two monosaccharides.

- Examples include sucrose (glucose + fructose) and lactose (glucose + galactose).

3. Polysaccharides:
- Long chains of monosaccharide units.
- Examples include starch (energy storage in plants), glycogen (energy storage in animals), and cellulose (structural component of plant cell walls).

Functions of Carbohydrates

- Energy Source: Carbohydrates provide quick energy for cellular processes.
- Energy Storage: Starch in plants and glycogen in animals serve as energy reserves.
- Structural Support: Cellulose provides structural integrity to plant cells.

Proteins

Proteins are complex molecules made up of amino acids linked by peptide bonds. They play a multitude of roles in the body, including acting as enzymes, hormones, and structural components.

Amino Acids

- There are 20 different amino acids that combine in various sequences to form proteins.
- Amino acids are classified as essential (must be obtained from the diet) and non-essential (can be synthesized by the body).

Functions of Proteins

- Catalysts: Enzymes accelerate biochemical reactions.
- Transport: Hemoglobin transports oxygen in the blood.
- Structural: Collagen provides strength to connective tissues.
- Defense: Antibodies protect against pathogens.

Lipids

Lipids are a diverse group of hydrophobic molecules that include fats, oils, and steroids. They are primarily composed of carbon and hydrogen and serve various crucial functions in biological systems.

Types of Lipids

1. Triglycerides:
- Comprised of glycerol and three fatty acids.
- Serve as long-term energy storage.

2. Phospholipids:
- Composed of glycerol, two fatty acids, and a phosphate group.
- Form the bilayer of cell membranes, providing a barrier between the interior of the cell and the external environment.

3. Steroids:
- Characterized by a carbon skeleton consisting of four fused rings.
- Include hormones like testosterone and cholesterol.

Functions of Lipids

- Energy Storage: Lipids store energy more efficiently than carbohydrates.
- Membrane Structure: Phospholipids form cell membranes.
- Signaling: Steroid hormones play critical roles in communication between cells.

Nucleic Acids

Nucleic acids, such as DNA and RNA, are polymers made up of nucleotide monomers. They are vital for storing and transmitting genetic information.

Types of Nucleic Acids

1. DNA (Deoxyribonucleic Acid):
- Contains the genetic blueprint for an organism.
- Double-stranded helix structure.

2. RNA (Ribonucleic Acid):
- Involved in protein synthesis and gene regulation.
- Typically single-stranded.

Functions of Nucleic Acids

- Genetic Information Storage: DNA holds the instructions for building proteins.
- Protein Synthesis: RNA plays a key role in translating genetic information into proteins.
- Regulatory Functions: RNA molecules can regulate gene expression and cellular processes.

Summary of Biomolecules

The Amoeba Sisters' video on biomolecules effectively breaks down the complexities of these critical macromolecules into digestible segments. Here’s a summary of the key takeaways:

- Carbohydrates: Serve as energy sources and structural components; include monosaccharides, disaccharides, and polysaccharides.
- Proteins: Made of amino acids; function in catalysis, transport, structure, and defense.
- Lipids: Diverse group that includes triglycerides, phospholipids, and steroids; important for energy storage and membrane structure.
- Nucleic Acids: DNA and RNA store and transmit genetic information.

Conclusion

Understanding biomolecules is foundational to studying biology, as these macromolecules are integral to life processes. The Amoeba Sisters video recap provides an excellent overview, making it easier for students to grasp these concepts. This answer key serves as a resource for reinforcing the material covered in the video, enabling learners to deepen their understanding of biomolecules and their significance in the biological world. By mastering these concepts, students are better equipped to explore more complex topics in biology and appreciate the intricate workings of living organisms.

Frequently Asked Questions

What are biomolecules and why are they important for living organisms?

Biomolecules are large, complex molecules that are essential for life, including carbohydrates, proteins, lipids, and nucleic acids. They play crucial roles in various biological processes such as energy

storage, structural support, and genetic information transfer.

How do the Amoeba Sisters explain the four main types of biomolecules?

The Amoeba Sisters provide clear and engaging explanations of the four main types of biomolecules, highlighting their structures and functions. They use visuals and relatable analogies to make the information accessible, emphasizing how each type contributes to cellular functions.

What is the significance of enzymes as biomolecules?

Enzymes are a type of protein that act as catalysts in biochemical reactions, speeding up processes that are essential for metabolism and other critical functions in living organisms. The Amoeba Sisters emphasize that without enzymes, many biological reactions would occur too slowly to sustain life.

Can you summarize the relationship between nucleic acids and genetic information?

Nucleic acids, such as DNA and RNA, are biomolecules that store and transmit genetic information. The Amoeba Sisters explain that DNA contains the instructions for building proteins, while RNA plays a key role in translating those instructions into action within the cell.

How do lipids differ from carbohydrates in terms of structure and function?

Lipids are hydrophobic molecules that include fats and oils, primarily serving as long-term energy storage and forming cell membranes. In contrast, carbohydrates are hydrophilic and provide quick energy and structural support. The Amoeba Sisters highlight these differences to clarify their roles in biological systems.

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变形虫 - 知乎
Apr 24, 2020 · 变形虫，拉丁文为Amoeba，中文音译为阿米巴，所以也叫做阿米巴原虫或阿米巴虫。变形虫是一种单细胞原生动物，仅由一个细胞构成，可以根据需要改变体形，因而得名变形虫。变形虫以往被分类于原生生物界，现被独立分于变形虫界（Kingdom Amoebozoa）。

Distinguish between 1) Nutrition in Amoeba and Paramecium.
Jun 29, 2016 · There are two very simple animals namely amoeba and paramecium. They are made up of single cell and so known as unicellular animals. So, all the 5 processes of nutrition are performed by single cell. The mode of nutrition in amoeba is holozoic. They eat tiny or microscopic plants and animals as food which floats in water in which it lives.

Draw a neat and clean diagram of Amoeba showing the correct
Apr 17, 2020 · The Amoeba is one of the organism that are photosynthetic and parasitic in nature. Explanation: Amoeba is one of the organism that is responsible for causing diarrhoea and dysentery in human being. if we describe the cell of the amoeba it has a nucleus which suggest it is a Eukaryotic organism. In addition to this is a vacuole which helps in the story of the food ...

Explain the nutrition in amoeba - Brainly
Jul 12, 2024 · - amoeba is a single cell organism in which the food is taken in by the entire surface. - Amoeba takes in food using temporary fingerlike extensions of the cell surface called pseudopodia which fuse over the food particle forming a food vacuole. - Inside the food vacuole , complex substances are broken down into simpler one, which then diffuse into the cytoplasm. ...

19. assertion : egestion in amoeba takes place through a ...
Dec 28, 2023 · Find an answer to your question 19. assertion : egestion in amoeba takes place through a permanent membrane present in them. reason : cilia is absent in amoeba

write one similarity and one difference between the nutrition in ...
Jun 25, 2023 · Answer Similarity:- the digestive juice in amoeba and secreted into food vacuole and is human beings the digestive juice and secreted in a stomach and a small intestine. then the juice convert complex food into simpler soluble and absorbable substance. D i f f erence:- Amoeba captures the food with help of pseudopodia and engulf it. ln human beings food is ...

6 differences between spirogyra and amoeba - Brainly.in
Jan 24, 2024 · Answer: Spirogyra undergoes kingdom Plantae while Amoeba undergoes kingdom Animalia. Spirogyra is autotrophic while amoeba is heterotrophic. Spirogyra do photosynthesis but amoeba do not. Spirogyra has chlorophyll but amoeba do not posses it. Spirogyra reproduces by fragmentation while amoeba reproduces by binary fission. Spirogyra is a multicellular ...

7.Explain with the help of neat and well labelled diagram the
Jun 20, 2024 · Amoeba, a single-celled organism, obtains its nutrition through a process called holozoic nutrition. Here's a breakdown of the different steps involved, illustrated with a neat and well-labeled diagram:

Explain with the help of neat and well labilled diagram the steps ...
Jun 15, 2018 · Amoeba follows holozoic mode of nutrition in which the solid food particles are ingested which are then acted upon by enzymes and digested.Amoeba engulfs food by temporary finger-like projections of its body surface called pseudopodia.When a pseudopodium fuses with the

food particle, it forms a food vacuole.Complex substances are broken down into simple …

Assertion: Amoeba follow holozoic mode of nutrition.
Dec 31, 2024 · Amoeba is actually a heterotroph that feeds on bacteria, algae, and other small organisms, but it is not strictly omnivorous. A more accurate reason would be: "Amoeba follows holozoic mode of nutrition because it ingests and digests solid food particles, such as bacteria and algae, through a process called phagocytosis."

变形虫_-_知乎
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Unlock the secrets of biomolecules with our Amoeba Sisters video recap and comprehensive answer

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