

ROBERSON MUSEUM AND SCIENCE CENTER

Pre-Visit DNA Extraction: Jeopardy

Grade Level: 6 through Adult

New York State Standards: M & T 2, 4, 5, 7

Pennsylvania State Standards: S & T 3.1, 3.2, 3.3, 3.7

Objective: Students will review their knowledge of DNA, based on what they have learned in the classroom, prior to their field trip to Roberson Museum and Science Center. This activity can also be used as an introduction to DNA, depending on how the questions are written by the classroom teacher and can create an interest in the topic as well as the up-coming field trip.

Materials:

- Jeopardy board (can be drawn or projected on blackboard), (see attachment)
- Index cards 5 x 7
- Markers
- Set of 22 sample questions written on the 5 x 7 cards (see below)

Procedure:

1. The classroom teacher needs to project a Jeopardy board like the one printed on the attachments (on the blackboard or on a power-point). You may choose any category that best fits your curriculum or you may choose from the questions and categories below. The questions posed below are just a set of suggestions.
2. Place each answer to a question on a 5 x 7 index card that will correspond to a dollar value. Place the answer to the question on the reverse side of the index card. Questions and answers are below.
3. Arrange your class teams. Each team may have a team name. Tell them that each person on the team will have a turn at choosing a category and answering a question. If they are incorrect, the question passes to the next team.
4. Make sure you keep track of team earnings on the blackboard. You may also choose to have a final jeopardy question ready on which each team can wager an amount of their earnings.

Questions:

Category #1 DNA:

1. Answer: If one side of the DNA strand is GTAATC, the other side will be this
Question: What is CATTAG?
2. Answer: A DNA strand has this shape.
Question: What is a double helix?
3. Answer: The two sides of the DNA molecule are held together by these
Question: What are hydrogen bonds?
4. Answer: The process of making a new DNA molecule from an old one
Question: What is semi-conservative replication?
5. Answer: A DNA nucleotide is made of three parts.
Question: What are deoxyribose sugar, phosphate and nitrogenous base?

Category #2 RNA:

6. Answer: This base chemical is only found in RNA.
Question: What is uracil?
7. Answer: A molecule of RNA has this shape.
Question: What is a single helix?
8. Answer: The type of RNA that is formed from one side of a DNA code.
Question: What is messenger RNA?
9. Answer: Carried by t-RNA, these chemicals will end up being put together to make proteins.
Question: What are amino acids?
10. Answer: The part of the cell that is producing RNA.
Question: What is the nucleus?

Category # 3 Protein Synthesis:

11. Answer: The place in the cell where proteins are made.
Question: What is the cytoplasm?
12. Answer: The instructions to make the proteins are in this molecule.
Question: What is the DNA?
13. Answer: The molecule that carries amino acids.
Question: What is t-RNA?
14. Answer: The three letters that represent an amino acid.
Question: What is a codon?
15. Answer: There are 23 of these that help to make up proteins.
Question: What are amino acids?

Category #4 Not Like the Other:

16. Answer: Adenine, Uracil, Guanine, Phosphate.
Question: What is phosphate?
17. Answer: Answer: t-RNA, z-RNA, r-RNA, m-RNA.
Question: What is z-RNA?
18. Answer: Griffith, Avery, Von Leuwenhoek, Watson & Crick.
Question: Who is Von Leuwenhoek?
19. Answer: Duplication, Translation, Transcription, Replication.
Question: What is the process of duplication?
20. Answer: Base, Phosphate, Sugar, Codon.
Question: What is a Codon?

Category #5 Mutations:

21. Answer: A mutation is a change in the code of this molecule.
Question: What is DNA?
22. Answer: Base substitution causes this type of mutation.
Question: What is point mutation?
23. Answer: Most mutations will cause a change in the sequence of these protein-building chemicals.
Questions: What are amino acids?
24. Answer: This type of mutation occurs when a large part of a chromosome is missing.
Question: What is a chromosomal deletion?
25. Answer: These two mutations change the order of a large section of a chromosome.
Question: What are a translocation and an inversion?

Attachments:

Copy of Jeopardy board
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DNA	RNA	Protein Synthesis	Not Like the Other	Mutations
\$10	\$10	\$10	\$10	\$10
\$20	\$20	\$20	\$20	\$20
\$30	\$30	\$30	\$30	\$30
\$40	\$40	\$40	\$40	\$40
\$50	\$50	\$50	\$50	\$50