

READING GUIDE: Rewriting Genetic Information to Prevent Disease

Part 1- Terms to Know: Before you read the following article, use a dictionary and define the following terms:

- A) Immunity: _____
- B) Genome: _____
- C) Plasmids: _____
- D) Moratorium: _____
- E) Ramification: _____
- F) Stringent: _____
- G) Cleaves: _____
- H) Stave: _____

Part 2 – Read the article and answer the following questions.

1. What is CRISPR an acronym for?

2. What is CRISPR and in what type of organism was it first discovered?

3. List some potential benefits/applications of CRISPR technology mentioned in the article:
 - 1.
 - 2.
 - 3.
 - 4.

5. Why did Dr. Doudna and other biologists call for a global moratorium on the use of CRISPR technology outside of research settings?

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6. List some of the potential concerns with using CRISPR technology the article cites:

- 1.
- 2.

7. What is Cas9? What is its role?

8. In the last sentence of paragraph 7, the author writes that the protein Cas9 cuts the target sequences of foreign DNA, therefore “muting” the invader’s genes. Define the word “muting” as it is used in this context.

9. How did Doudna and her colleagues harness or program the CRISPR-Cas9 system they identified in bacteria?

10. What prize did Dr. Doudna receive?

11. How is Dr. Doudna’s team attempting to bring about change in biomedical research?

Part 3 - Writing Prompt: Explore the potential positive impacts of CRISPR-based technology on individual, societal, and environmental health as well as the potential drawbacks, such as medical and ethical concerns. Be sure to CITE evidence from the text in your response.

Part 4 - Time for Discussion: In groups of 3-4, discuss CRISPR technology, pros and cons for the use of CRISPR, any ethical or medical issues, etc. In the space below write down the major points discussed in your group.

Part 5 – Your Opinion: Now that we have seen a few clips on CRISPR, read an article, and discussed what CRISPR is and does with your classmates, in your opinion, should we use CRISPR on humans? **Explain your answer by using evidence from the clips and text.** Are there questions that you have about the CRISPR technology that were not covered? Would the answer to these questions change your opinion?