

Matching Questions based on TED Talk: How CRISPR Lets You Edit DNA

Listen to the TED Talk at

https://www.ted.com/talks/andrea_m_henle_how_crisprLetsYouEditDNA?language=en and answer the following matching questions.

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| 1. CRISPR | a. A molecule naturally found in bacteria that scientists can program to target specific locations in DNA. |
| 2. Cas9 protein | b. The genetic material that contains the instructions for building and maintaining an organism. |
| 3. Guide RNA | c. A system that protects organisms from viruses and other invaders. |
| 4. DNA | d. A molecule that acts like a guide, showing Cas9 where to cut the DNA. |
| 5. Immunity | e. An enzyme (protein) that cuts DNA at a specific location. |

Multiple Choice Questions: choose the best answer for each question.

1. CRISPR naturally occurs in:

- a) Plants
- b) Bacteria
- c) Animals
- d) Viruses

2. The Cas9 protein acts like:

- a) A guide for targeting DNA
- b) Scissors that cut DNA
- c) The genetic material itself
- d) A virus that infects bacteria

3. Guide RNA in CRISPR is like:

- a) The instructions for building an organism
- b) A targeting system to find specific locations in DNA (This is mentioned in the talk)
- c) The enzyme that cuts the DNA
- d) A general immune response

4. A potential benefit of CRISPR technology mentioned in the talk is:

- a) Changing fur color in animals
- b) Correcting genetic errors that cause diseases
- c) Creating genetically superior humans
- d) Making crops less nutritious

5. The speaker mentions CRISPR is still under development because:

- a) It's too expensive for widespread use
- b) We don't fully understand the long-term effects
- c) The technology is too complex to use
- d) There are not enough applications for it

Gap-Fill Questions

fill in the blanks in the following questions. Focus on understanding the main ideas and speaker's arguments.

1. CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeats. It's a molecule found in bacteria that scientists can program to target specific locations in _____.
2. The speaker mentions CRISPR was first discovered in bacteria as a defense mechanism against _____.
3. The Cas9 protein acts like molecular scissors, making a precise cut in the _____ after it's guided to the right location by another molecule.
4. Scientists design a molecule called a guide RNA to _____ Cas9 to the desired location in the DNA. The guide RNA acts like a _____ complementary to the target DNA sequence.
5. Once the DNA is cut, the cell's natural repair machinery can fix the break in a few different ways. Ideally, the cell will use a repair method called **Homologous** _____ repair, which can insert a new piece of DNA at the cut site.
6. This precise insertion of new DNA allows scientists to potentially _____ genetic errors that cause diseases.
7. The speaker emphasizes that CRISPR is a powerful tool, but it's still under development. One reason is that scientists are still working to improve the _____ of the technology to minimize unintended cuts in the DNA.
8. Another challenge is that CRISPR might not work the same way in all _____ organisms, which requires further research.
9. Overall, the speaker highlights the immense potential of CRISPR for correcting genetic diseases and even creating new therapies, but acknowledges the importance of _____ research and ethical discussions to ensure its responsible use.