

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_crispr_lets_you_edit_dna?language=en and answer the following matching questions.

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.