



AI-Designed 'Molecular Scissors' Enhance CRISPR Technology

Description

Scientists have used artificial intelligence (AI) to create new CRISPR proteins that edit genes better than natural ones. This discovery could help in areas like medicine and farming. The research was published on 16 July in the journal *Science*.

Soeren Lienkamp, a molecular biologist from the University of Zurich, notes that AI can help design new proteins easily, similar to how CRISPR made gene editing more accessible. He believes this study combines important fields: AI design and enzymes called RNA-guided nucleases. These nucleases can cut DNA and RNA.

CRISPR uses a guide RNA to direct nucleases to a specific DNA section, acting like scissors to edit genetic material. These tools are based on bacteria's natural defence against viruses. However, gene editing is complicated. Jennifer Doudna, a biochemist at the University of California, Berkeley, explains that making changes can lead to non-functional proteins.

AI can speed up finding new, useful nucleases. Instead of many experiments, scientists could let AI help. Doudna's team worked on creating synthetic versions of small nucleases called TnpBs. They wanted to see how much they could change these proteins while keeping their gene-editing ability.

Comprehension Questions

Multiple Choice

1. What technology did scientists use to create new CRISPR proteins?

- Option: Quantum Computing
- Option: Artificial Intelligence
- Option: Machine Learning
- Option: Robotics

2. Where was the research published?

- Option: Nature
- Option: Cell
- Option: Science
- Option: PLOS Biology



3. What institution is Soeren Lienkamp affiliated with?

- Option: Harvard University
- Option: University of Zurich
- Option: California Institute of Technology
- Option: Stanford University

4. What is the purpose of RNA-guided nucleases in CRISPR?

- Option: To replicate DNA
- Option: To cut DNA and RNA
- Option: To create proteins
- Option: To modify RNA

5. Who is a biochemist at the University of California, Berkeley mentioned in the text?

- Option: Soeren Lienkamp
- Option: Jennifer Doudna
- Option: Albert Einstein
- Option: Marie Curie

6. What type of nucleases did Doudna's team create synthetic versions of?

- Option: Cas9
- Option: TnpBs
- Option: gRNA
- Option: RNA polymerase

True-False

7. AI can help in designing new proteins easily.

8. CRISPR proteins edit genes better than natural ones according to the research.

9. Gene editing is simple and does not involve complications.

10. Jennifer Doudna is associated with a university in California.

11. Soeren Lienkamp believes the study focuses on the combination of AI design and RNA-guided nucleases.

12. The research was published on 16 July.



Gap-Fill

13. Scientists have used artificial intelligence to create new CRISPR proteins that edit genes better than natural ones. This research was published on _____.
14. Soeren Lienkamp notes that AI can help design new proteins easily, similar to how CRISPR made gene editing more _____.
15. CRISPR uses a guide RNA to direct nucleases to a specific DNA section, acting like _____ to edit genetic material.
16. Gene editing is complicated and making changes can lead to non-functional _____.
17. AI can speed up finding new, useful _____.
18. Doudna's team wanted to see how much they could change these proteins while keeping their gene-editing _____.

Answer

Multiple Choice: 1. Artificial Intelligence 2. Science 3. University of Zurich 4. To cut DNA and RNA 5. Jennifer Doudna 6. TnpBs

True-False: 7. True 8. True 9. False 10. True 11. True 12. True

Gap-Fill: 13. 16 July 14. accessible 15. scissors 16. proteins 17. nucleases 18. ability

CATEGORY

1. Sci/Tech - LEVEL2

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2. CRISPR
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