

Science Time

Program Content for December 2, 2015

Read the article “**A menagerie edited in labs poses vexing ethical questions**” on page A3 of the Friday, November 27, 2015 edition of The Seattle Times.

Pre-reading and Vocabulary: Define each term and then use it in a sentence to demonstrate your understanding.

1. ethics
2. menagerie
3. genetic engineering
4. enzyme

Comprehension Questions

1. What is unique about the two hornless dairy calves born last spring at a breeding facility in Sioux Center, Iowa?
2. How was gene editing used to alter the recently born calves?
3. Why are some people upset about the ability to make precise manipulations to DNA?
4. It was recently reported that mosquitoes have been edited. What does this mean?
5. Why is it likely that in the coming years we will see a large number of animals that have undergone gene editing?
6. What is selective mating (breeding) and what is one disadvantage of this process?
7. What problems have the new genetic-engineering techniques collectively called “gene editing” solved?
8. Describe how gene editing is done.
9. How has genetic engineering been used in the past to alter food?
10. How have people responded to genetically modified organisms (GMOs)?
11. How is the new generation of edited animals different from genetically engineered foods?
12. How is dehorning completed?

Prompts and Extensions

1. Check out this [website](#) to learn more about genetic engineering and other DNA alteration techniques/purposes.
2. One of the new gene editing techniques relies on Crispr-Cas9 technology. Watch an overview of the process [here](#)
3. In the article there is an extensive mentioning of the pros and cons for the advancement and implementation of the new gene editing technology at the center of this article. To begin, create a table that sites the pros and cons. Next, create an argument that is supported by evidence and reasoning that supports or objects to gene editing. In your response be sure to also state and refute the counter-claim or opposing viewpoint of your own.
4. In this article it is mentioned that the federal government recently approved a fast-growing salmon as the first genetically altered animal Americans can eat. To view this article and the associated Science Time see [last week's NIE edition](#).

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