

IELTS Reading Practice Test - Academic Reading Test 005

Revolutionizing the Cacao Bean: A New Wave of Chocolate

A

For thousands of years, humans have been infatuated with the rich taste of chocolate, derived from the cacao bean. But now, research teams from India and Ghana have innovatively re-engineered this delicious treat in just a few years using the transformative CRISPR genome-editing technique. This modified cacao not only tastes richer and is more aromatic, but it also contains enhanced health benefits. By deploying CRISPR technology, genetic material within the cacao cells is manipulated, opening up possibilities of refining many plants beyond just food. As an example, a group in Australia is making progress in refining the coffee bean using similar methods.

This rapid evolution in plant modification can potentially lead to more robust crops that can withstand diseases like the frosty pod rot that affects cacao trees. "The implications are vast," comments Dr. Ayesha Patel from the Indian research team. "While we depend mainly on a handful of crops for our sustenance, there is a vast array of plants that are underutilized but can offer nutritional and environmental benefits."

B

Native to the tropical regions of Central and South America, the cacao tree's beans have been a culinary staple for civilizations like the Mayans and the Aztecs. Over time, these communities cultivated the cacao bean by selecting and propagating those that had mutations leading to more favorable characteristics, such as a richer taste.

However, as with the case of tomatoes, this selective breeding can result in a reduction of genetic diversity. Certain desirable characteristics may inadvertently eliminate others. Modern commercial cacao strains, while having a higher yield, often lack the depth of flavor found in their wild counterparts.

By studying the genetic differences between current commercial cacao and its wild ancestors, scientists have been able to pinpoint what changes took place during the initial domestication. The research teams in India and Ghana used this information to reintroduce these favorable traits without compromising the advantages of the commercial strains.

C

Dr. Patel's team initiated several genetic modifications. One such modification involved editing a gene responsible for bean size, resulting in beans that were almost twice as large. They also enhanced the cacao's resistance to common diseases.

Another intriguing accomplishment was their ability to enrich the cacao's flavonoid content. While domesticated cacao typically has reduced flavonoids – compounds believed to have several health benefits – the newly modified cacao possesses nearly three times the amount found in wild strains.

"They are truly delectable," Dr. Patel asserts. "The depth of flavor is unparalleled, and the aroma is simply captivating."

D

Inspired by these achievements, Dr. Emily Griffiths at the Queensland Institute in Brisbane began her exploration with coffee beans. Although coffee is already a beloved beverage globally, the bean's wild variants offer flavors that have been lost in commercial strains. By using CRISPR, Dr. Griffiths' team has

successfully reintroduced these lost flavors and, additionally, has made the plants more resistant to diseases like the coffee rust fungus.

E

While the possibilities are thrilling, challenges do remain. Introducing novel foods into the market requires extensive safety testing and regulatory approval. The costs associated with licensing CRISPR technology also pose potential hurdles.

Yet, the excitement in the scientific community is palpable. Research teams are scouting for more plants that could be re-engineered for a world facing climate change. However, with the ease and accessibility of CRISPR technology, many are keeping their targets close to their chest. Dr. Patel jokes, "It's a new gold rush. And in this race, everyone wants to stake their claim."

1. Complete the summary below.

Choose **ONE WORD ONLY** from the passage for each answer.

Revolutionizing the Cacao Bean

The cacao bean has been enjoyed for its flavor for millennia, but researchers have recently transformed this treat using the [1]_____ technique. This not only enhanced its taste and aroma but also its health benefits. The same technology is being used in [2]_____ to improve its characteristics. The changes made to the cacao bean include increased [3]_____ content and a resistance to diseases. However, there are challenges in introducing these modified foods to the market, including the need for [4]_____ testing.

2. The Reading Passage has sections. Which section contains the following information? Enter the correct letter (A, B, C ...) in the blanks. You may use any letter more than once.

[1]_____ The historical use and appreciation of cacao.

[2]_____ The decreased genetic diversity in cacao because of selective breeding.

[3]_____ Specific changes made to the cacao bean by Dr. Patel's team.

[4]_____ Challenges associated with the CRISPR technology's commercial application.

Next Questions:

Multiple Correct Answers.

- Choose multiple correct answers to complete the questions.

3. Which TWO of the following characteristics were reintroduced into commercial cacao strains by studying their wild ancestors?

A) Increased resistance to diseases.

B) Enhanced yield.

C) Depth of flavor.

D) Larger size.

E) Reduced flavonoid content.

4. Which TWO characteristics have been improved in the coffee bean using CRISPR, as mentioned in the article?

- A) Enhanced aroma.
- B) Resistance to the coffee rust fungus.
- C) Depth of flavor.
- D) Increased caffeine content.
- E) Enlarged bean size.

Answer Keys

Question	Answer
1	[1] CRISPR [2] coffee [3] flavonoid [4] safety
2	[1] A [2] B [3] C [4] E

Question	Answer
3	A C
4	B C