

17

The pursuit of perfection:
genetic engineeringLevel: 

Let's think!

1. What are some physical limitations of humans?
2. What special ability would you choose if you could edit your DNA?

PLAYLIST



READ ALONG

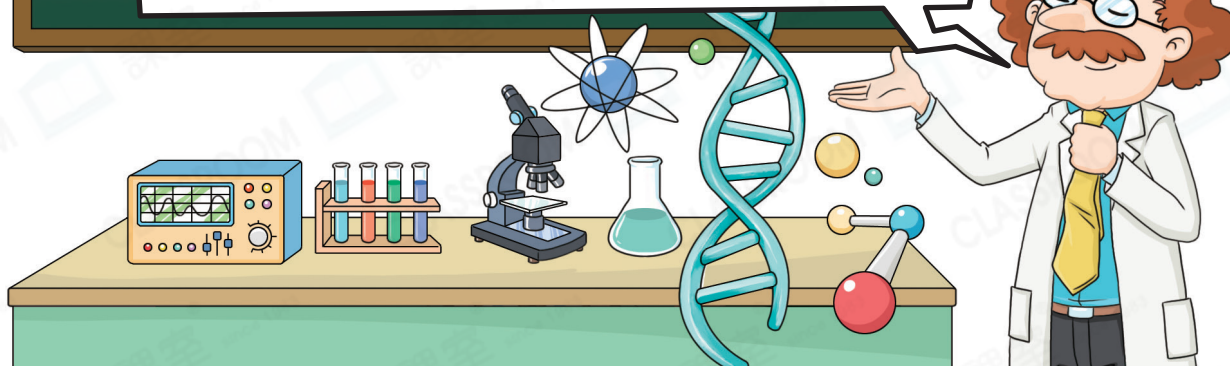


VR



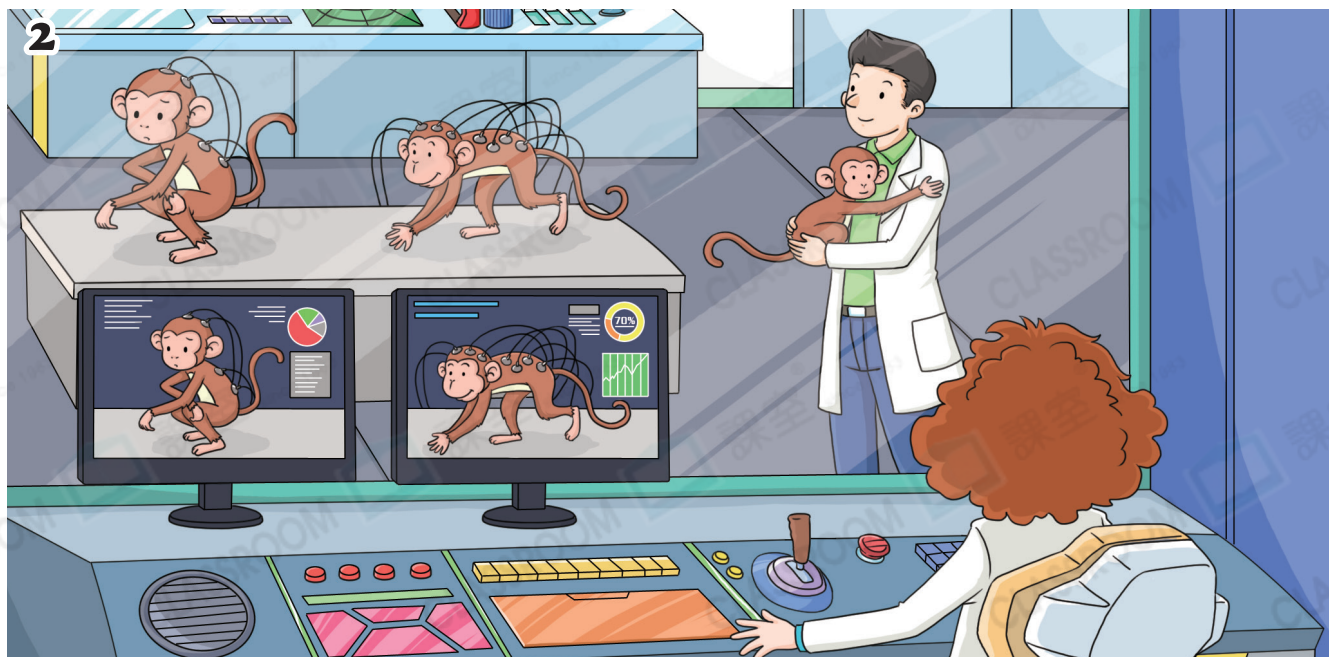
1

Science is all about control. Someone has to pave the way for humans to become the dominant species in the universe!



Dr Benjamin was an acclaimed genetic engineer. He was in his laboratory planning for his next genetic modification project. For him, making genetically modified food was not challenging enough. He was going to alter genes to make super humans. Dr Benjamin believed that he, as a scientist, could edit human genes as he liked.

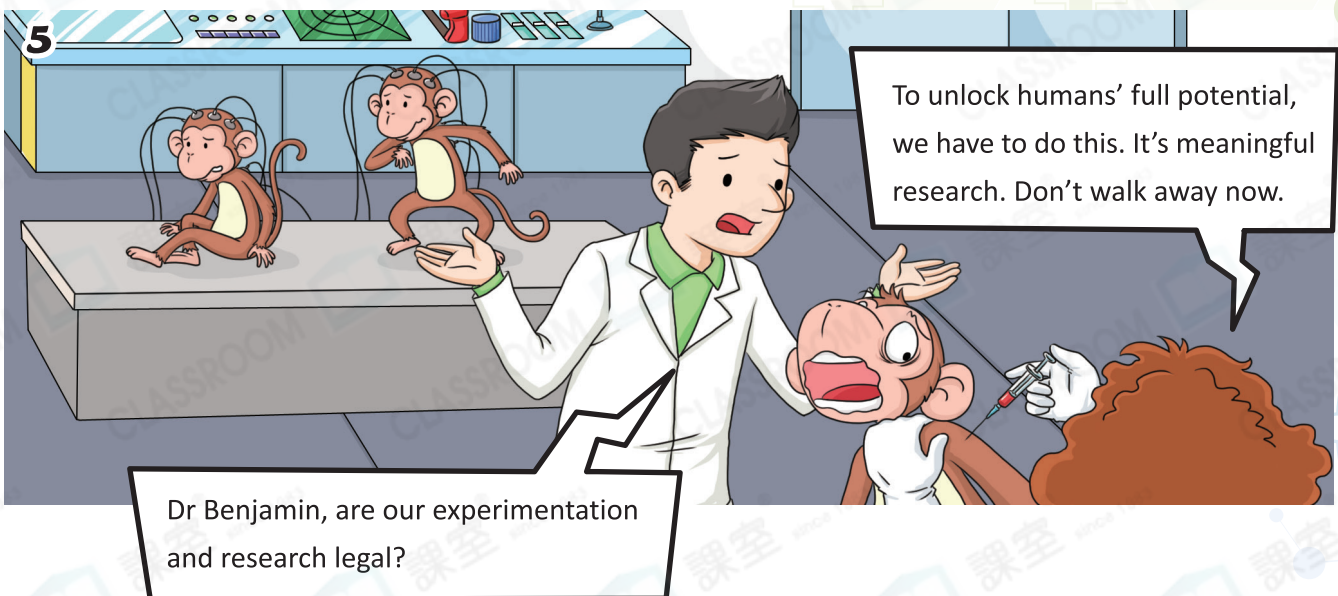
2



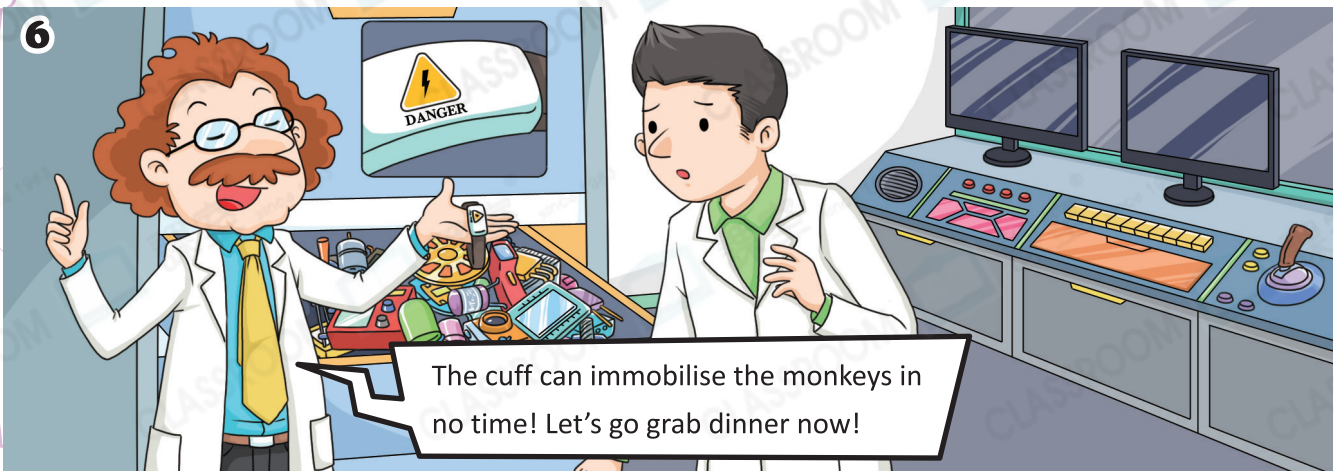
Among all animals, monkeys and chimpanzees are our closest relatives. As monkeys were smaller in size, Dr Benjamin's team considered them the most desirable subjects of his latest scientific exploration.



- G** This experiment was hard to pull off. Dr Benjamin had to be meticulous while tweaking the DNA segments. If his experiment was successful, humans would have stronger bodies. There would also be cures for deadly diseases and we would eventually have longer life expectancy. His assistant, Antonio, came in with a bottle of sample.



Dr Benjamin was taking his experiments to the next level. He was trying to make humans more resistant to viruses. While it would be great to achieve world-changing scientific breakthroughs, the idea of manipulating human DNA was concerning to many, including Antonio. If things went wrong, serious consequences could happen. There might be defects in vital organs or the immune system. This also brought ethical issues. For example, this sort of experiment might become a privilege only for the rich and this might become an act of playing God.



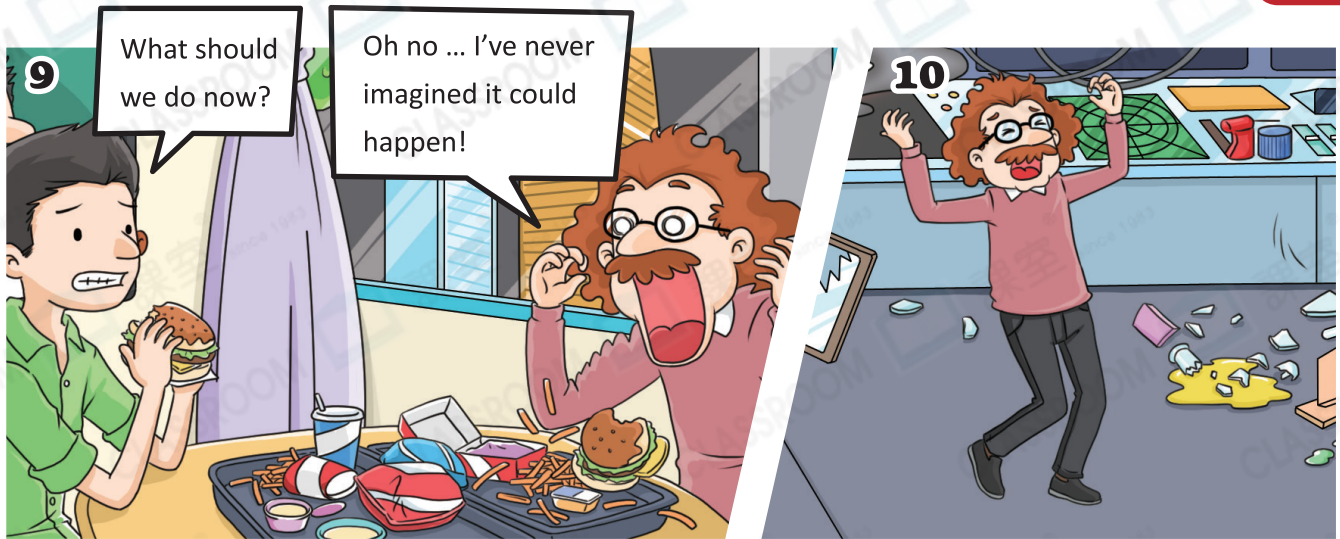
Dr Benjamin thought Antonio worried too much. He showed him the high-voltage electronic cuffs for the monkeys. If they were out of control, the cuffs could immobilise them.



During the night, the monkeys' muscles grew intensively. They also became aggressive and furious. In the end, they escaped from captivity and went on a rampage in the city.



Dr Benjamin and Antonio were at the restaurant. The news gave them a great shock.



Knowing that their experiment went terribly wrong. The panicky scientist and his assistant hurried back to the laboratory.



Dr Benjamin pressed the shock button and stopped the monkeys from doing more damage, but this chaos was impossible to cover up and this could cost his career ...



Looking into Grammar

We can use **adjective + to-infinitive** to give opinions.

✓ This experiment was **hard to pull off** (✗ pulling off).

? Underline a similarly structured sentence in the graphic novel.

Read the text and answer questions 1–14. For multiple-choice questions, choose the best answer and blacken ONE circle only. (33 marks)

1. In panel 1, Dr Benjamin was trying to _____ the DNA of animals. A B C D
 A. match B. copy C. edit D. repair

2 What is Dr Benjamin's attitude towards genetic engineering?

2. According to panel 1, what is the ultimate goal of Dr Benjamin?

3. Find a word in panels 3–4 which means 'very careful'.

4. According to panels 1–4, which of the following statements is NOT true about Dr Benjamin?
 A. He is a famous scientist.
 B. He is conducting an animal experiment.
 C. He thinks humans have the right to control other species.
 D. He kicks off his experiment with a lot of efforts.

5. Based on panels 2–4, complete the summary about Dr Benjamin's project by writing ONE word to fill in each black. The first letter of each word is provided. Make sure your answers are grammatically correct.

Dr Benjamin tries to (i) t_____ the DNA of monkeys in his (ii) e_____. He thinks that monkeys are more (iii) d_____ for the test as their DNA is (iv) c_____ to that of humans. He believes that humans can live (v) l_____ if the project succeeds.

6. Find a word in panel 5 which means 'causing worry'. _____

7. According to panel 5, what were the issues surrounding genetic engineering? Give ONE example of each issue.

Biosafety: whether it could result in (i) _____

Ethics: whether it might become (ii) _____

Religion: whether it might become (iii) _____

8. According to panels 3–4, what benefits does Dr Benjamin think his experiment will bring to humans? List THREE of them.

(i) _____

(ii) _____

(iii) _____

9. Do you think Dr Benjamin expects that the experiment may fail? Explain your answer with his words.

10. How does Dr Benjamin feel after the chaos is settled?

- A. furious
B. grateful
C. regretful
D. sorry

10 Refer to panel 12. We can tell how a person feels from his or her facial expression. How does Dr Benjamin look?

- A B C D
○ ○ ○ ○

11. Number the following events in chronological order. Write 1–4 in the boxes provided.

- (i) Dr Benjamin successfully knocked out the monkeys.
(ii) The police were trying to stop the chaos on the streets.
(iii) Dr Benjamin invented the electronic cuffs as an emergency plan.
(iv) Antonio and Dr Benjamin headed out for a dinner.

12. Decide whether the following statements are True (T), False (F) or Not Given (NG).

	T	F	NG
(i) Dr Benjamin preferred working on animal projects.	○	○	○
(ii) Humans will stand a chance of defeating aliens if Dr Benjamin's experiment succeeds.	○	○	○
(iii) Antonio and Dr Benjamin worked in the same laboratory.	○	○	○
(iv) The monkeys were caught by the police soon after the attack started on the streets.	○	○	○
(v) The electronic cuffs were able to freeze the monkeys.	○	○	○
(vi) Citizens were attacked during the rampage of the monkeys.	○	○	○

 13. What is the purpose of this graphic novel?

- A. to explain the idea of genetic engineering
B. to describe the rampage of monkeys
C. to illustrate the scientific ambition of Dr Benjamin
D. to talk about the harm brought by genetic engineering

- A B C D
○ ○ ○ ○

 14. Complete the summary by underlining the correct answers.

Dr Benjamin's latest experiment on (i) (diseases / genes / viruses) has caused debate. If his experiment succeeds, humans are likely to be (ii) (smarter / stronger / deadlier). Yet, genetic engineering remains a (iii) (controversial / groundbreaking / disturbing) topic as people doubt whether such experiments are (iv) (costly / legal / animal-friendly).

Vocabulary

GLOSSARY



A. Complete the article below with the given words. Make sure your answers are grammatically correct.

acclaimed (*adj.*)breakthrough (*n.*)concerning (*adj.*)cover up (*phr. v.*)genetic modification (*n.*)meticulous (*adj.*)mutant (*adj.*)pave the way (*idm.*)pull off (*phr. v.*)subject (*n.*)

Dolly the cloned sheep

In 1996, two scientists from England used three female sheep as the (1) _____ of their experiment and (2) _____ a cloned sheep from it. The cloned sheep was known as Dolly. It was the world's first mammal that was cloned from an adult cell.

Even though Dolly grew up in the (3) _____ care of the scientists, its health was (4) _____.

It suffered from joint conditions and lung diseases. In 2003, it died of lung cancer. Dolly was kept in captivity most of the time. Some thought that not being able to move freely was one of the reasons for its poor health. Not wanting to be blamed for (5) _____



the cause of Dolly's lung cancer, the scientists revealed that Dolly was infected by a virus. In addition, they explained that cloned animals were prone to health defects as they carried (6) _____ genes in their transformed cells.

Although Dolly died young, the experiment was widely

(7) _____ because it was one of the major

(8) _____ in genetics. The development of

(9) _____ reached new heights. It was a remarkable

scientific advance and it (10) _____ for an exploration of cloning.

B. Put the words or phrases related to genetic engineering in the right categories.

Benefits and drawbacks of genetic engineering

allergies

antibiotic resistance

ethical concerns

fighting diseases

increase in the crop growth rate

increase in life expectancy

more nutritious food

reduction in genetic diversity

reduction in the use of pesticides

tougher competition

Benefits

1. _____
2. _____
3. _____
4. _____
5. _____

Drawbacks

6. _____
7. _____
8. _____
9. _____
10. _____

Writing

What will the world in the future look like when the technology of genetic engineering advances?

Write an article to express your views in about 200 words.

