

Gapped text

1 Work in pairs. Answer the questions.

- 1 What does the picture show?
2 How would you describe the shape?

- 2 Read the text quickly to check your ideas in exercise 1.
3 Read the first paragraph of the text again. Which words might link the text with the missing phrase?
4 Read the phrases (A–H) in exercise 5. Which one is the correct phrase to complete gap 1 in the text? How is it linked to the rest of the paragraph?

EXAM STRATEGY

- Look for pronouns and linking words in the text and in the phrases from the exam task. We use them to refer to people, things or ideas mentioned previously, and to avoid repetition.
- Pay attention to these reference words or phrases as they will help you connect the phrases to the gaps.

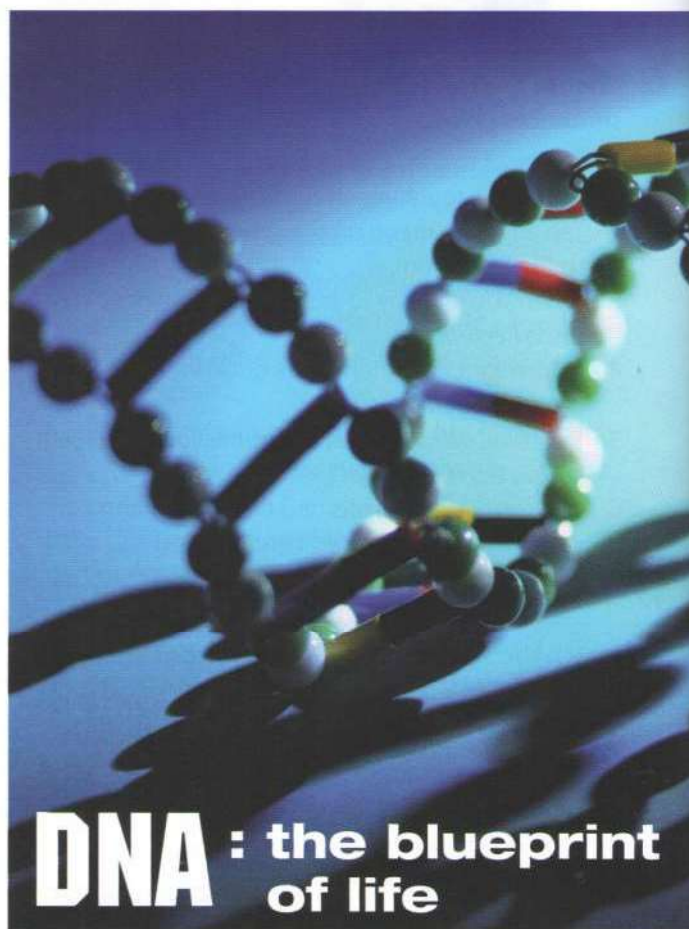
5 **EXAM TASK** Read the text. Choose from (A–H) the one which best fits the space (1–6). There are two choices you do not need to use.

- A that the structure is a double helix
- B whether two people are related or not
- C how to build a life form
- D whose work was key to solving the mystery
- E in order to understand the structure of molecules
- F which he couldn't identify
- G is responsible for carrying genetic code
- H what the term DNA stands for

Words in context

6 Find words in the text to match the definitions (1–6).

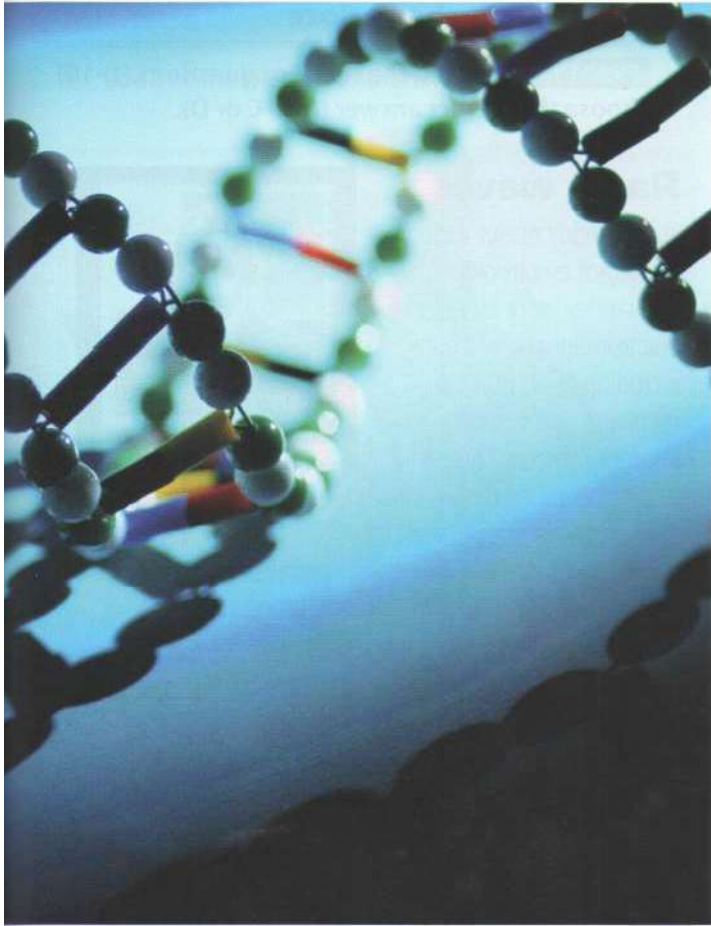
- 1 the arrangement of genes that controls how each living thing will develop: g_____ c_____
- 2 a way of doing something, especially one in which you have to learn special skills: t_____
- 3 a big change or strong effect: i_____
- 4 typical features or qualities that someone or something has: c_____
- 5 a fact or piece of evidence that helps you solve a mystery or problem: c_____
- 6 the central part of a cell: n_____



DNA : the blueprint of life

DNA was discovered in 1869 by Swiss biologist Friedrich Miescher, while he was investigating what the nucleus in human cells contains. Miescher found that the cells contained mostly protein, as expected, but also another substance ¹_____. This mysterious substance later became known as *nucleic acid*.

In 1933 Belgian chemist Jean Brachet found that DNA was present inside cells. After many years of research, he also realized that DNA ²_____ from generation to generation. Scientists then realized that within our DNA there must be thousands of genes which carry information for every human characteristic. Together, these are like a complete instruction manual giving a detailed plan of ³_____. The challenge now was to work out the structure of the DNA molecule in order to understand how it does its job.



In the 1940s, scientists began to use a technique involving X-rays ⁴_____ . English scientist Rosalind Franklin carried out this type of experiment on DNA molecules until she produced a clear pattern of dots on photographic film. This provided the clues needed about the structure of DNA for molecular biologists James Watson and Francis Crick. Using Franklin's photograph they were able to build a model of DNA in their laboratory in 1953. They realized ⁵_____, which can be described as a spiral staircase.

The understanding of how DNA works has had a big impact on our lives today, and has led to many different scientific applications. For example, understanding that everyone has a unique DNA code has been crucial in criminal investigations and also in proving ⁶_____. In medicine, gene therapy is a technique in which healthy DNA is introduced into a patient's cells to treat a genetic disease. In agriculture, similar techniques are used to alter the genetic information in plants in order to make them stronger and faster growing.

7 Choose the correct verb from the pair of given words to complete sentences a and b.

- 1 *carry/lead*
 - a The role of your blood is to _____ oxygen to your vital organs.
 - b Discoveries in one area of science often _____ to other discoveries in different fields.
- 2 *alter/realize*
 - a Sometimes scientists don't _____ the importance of their discoveries in their own time.
 - b Nothing can _____ the fact that our genes play a big part in who we are.
- 3 *investigate/solve*
 - a Does anyone know how to _____ these maths problems?
 - b In this programme, scientists _____ the link between diet and cancer.
- 4 *prove/provide*
 - a I'm not going to believe you unless you can _____ that what you say is true.
 - b It isn't possible for scientific tests to _____ clear-cut answers in every police investigation.

8 Work in pairs. Do some research to find out more about the topic of the article. Then discuss the questions.

- 1 What genetic information has been passed on to you from your mother and/or father?
- 2 What can the knowledge of DNA tell us about history and anthropology?
- 3 What do you think about using the knowledge of DNA for genetic engineering? What are its uses?



LANGUAGE REVIEW

future perfect and continuous

1 Complete the sentences with the correct future form of the verb in brackets: the future continuous or the future perfect.

- I've told the guest speaker that we _____ (wait) for her outside the conference hall at 10.30.
- Do you think the team _____ (complete) the science project by the end of next year?
- I think in 50 years' time, teachers _____ (replace) by computers or robots.
- Jack, _____ (you/use) your laptop in the next two hours or so? If not, I'd like to borrow it.
- This time next Monday our class _____ (take) the test – and probably be anxious to finish it.

Grammar reference pages 132–134

Grammatical multiple-choice cloze

EXAM STRATEGY

Think about the context and analyse the meaning of the sentences with gaps. For example, if you have to select the correct form of a verb, check if the subject is singular or plural, or look for time expressions to tell you what tense to use.

2 EXAM TASK Read the text. For questions (1–5) choose the correct answer (A, B, C or D).

To infinity and beyond

Having already explored all earthly territories, humans have moved on ¹ one of the last remaining uncharted areas: the universe. This desire for space exploration has resulted in numerous technological achievements. Technologies from space travel ² to create everyday items such as water filters and Velcro. In recent decades, satellites have given us vastly ³ communication and weather forecasting systems. Then there are navigation systems, without ⁴ many of us would be unable to find our way around unfamiliar cities. Undoubtedly, space travel opens up possibilities that ⁵ exist without it. But the question still remains as to whether it is worth the cost.



- A discover B discovering C to discover D discovered
- A use B will use C have used D have been used
- A improved B improvable C improving D improve
- A whom B which C that D who
- A shouldn't B mustn't C wouldn't D don't have to

Lexical multiple-choice cloze

3 EXAM TASK Read the text. For questions (1–10) choose the correct answer (A, B, C or D).

Radio waves

Today, many of our most important electronic appliances work by using electromagnetic waves, including radio and TV receivers and wireless Internet devices. The technological advances which led to the creation of these devices started with the ¹ of radio waves. Radio waves are used for the transmission of electronic pulses that ² sounds, information and pictures.



Scottish physicist James Maxwell first ³ the existence of radio waves in the 1860s. World-famous Italian inventor Guglielmo Marconi later proved that radio communication was a real ⁴ when he transmitted the world's first wireless radio signal in 1895. At a ⁵ date, the letter S in Morse code was broadcast over 2,100 miles across the Atlantic from the USA to England in 1901. It was the first ⁶ wireless radio signal to cross between continents.

Marconi's company became ⁷ as a provider of wireless equipment and operators for shipping. It most ⁸ supplied equipment to the Titanic. The company's wireless transmissions helped save many lives, as SOS messages were sent out from the ⁹ ship to other ships nearby.

Marconi had been invited to sail on the ship's first ¹⁰, but had not been able to make it. It was only after the event that he must have realized how lucky he had been!

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|----------------|----------------|---------------|--------------|
| 1 A discovery | B confirmation | C invention | D evidence |
| 2 A illustrate | B picture | C reflect | D represent |
| 3 A predicted | B judged | C reckoned | D valued |
| 4 A capacity | B possibility | C probability | D certainty |
| 5 A coming | B following | C successive | D later |
| 6 A lucky | B profitable | C successful | D fortunate |
| 7 A well-said | B well-known | C well-done | D well-made |
| 8 A officially | B publicly | C famously | D remarkably |
| 9 A dropping | B sinking | C falling | D collapsing |
| 10 A voyage | B travel | C cruise | D expedition |

4 Work in pairs. Discuss the question.

Which invention or discovery do you think has had the biggest impact on the way we live our lives today? Why?