Chapter 20

Biotechnology and genetic engineering

20.1 Biotechnology and genetic engineering

01. 0610_m22_qp_22 Q: 38

Genetically engineered bacteria are used to produce human proteins.

Into which component of the bacterial cell is human DNA inserted to produce human proteins?

A cell wall

B nucleus

C plasmid

D rough endoplasmic reticulum

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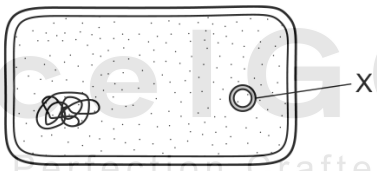
02. 0610_m21_qp_22 Q: 38

The diagram shows the structure of a bacterium.



The presence of structure X is one reason why bacteria are used in genetic engineering.

What is structure X?

A chloroplast

B mitochondrion

C nucleus

D plasmid

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03. 0610_s21_qp_21 Q: 39

Why are bacteria useful in genetic engineering?

A Their genetic code is different to other organisms.

B They have cell walls.

C They have plasmids.

D They reproduce sexually.

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04. 0610_s21_qp_23 Q: 39

Scientists wanted to know which one of four different varieties of bacteria, **A**, **B**, **C** or **D**, would be the best to use to make a protein.

They grew the bacteria for five days using the same starting mass of each bacterium. They then measured the mass of bacteria and the mass of protein produced per gram of bacteria.

The results are shown in the table.

Which variety of bacteria should the scientists choose?

	mass of bacteria at the start / g	mass of bacteria after five days / g	mass of protein / mg protein per g of bacteria
A	2	200	10
B	2	800	1
C	2	100	12
D	2	100	6

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05. 0610_w21_qp_22 Q: 37

What is a characteristic of bacteria that makes them useful in genetic engineering?

A The genetic code of bacteria is different to plants and animals.

B Their nucleus contains DNA.

C Plasmids can be transferred between cells.

D They have large numbers of mitochondria.

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06. 0610_w21_qp_23 Q: 37

Reasons why bacteria might be used in biotechnology and genetic engineering are listed.

1 All bacteria are harmless organisms.

2 Bacteria contain plasmids.

3 Bacteria share the same genetic code as other organisms.

4 There is a lack of ethical concerns about using bacteria.

Which reasons make bacteria useful in biotechnology and genetic engineering?

A 1, 2 and 3 **B** 2, 3 and 4 **C** 1 and 4 **D** 2 and 3 only

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07. 0610_s20_qp_22 Q: 39

Which is a reason for using bacteria in biotechnology?

A Bacteria are found inside the human body.

B Bacteria do not become resistant to antibiotics.

C Bacteria can make complex molecules.

D Bacteria reproduce slowly.

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08. 0610_w20_qp_21 Q: 38

Which are reasons why bacteria are often useful in biotechnology?

1 lack of ethical concerns over their manipulation and growth

2 they have the same genetic code as all other organisms

3 their DNA is located in a nucleus that can easily be altered with enzymes

A 1 and 2 only **B** 1 and 3 only **C** 1, 2 and 3 **D** 2 and 3 only

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09. 0610_m19_qp_22 Q: 37

What are **all** reasons why bacteria are useful in genetic engineering?

A They are very small. They do not need large containers. They have no mitochondria.

B They reproduce asexually. They can double their numbers in twenty minutes in good conditions. They have cell walls.

C They have the same genetic code as other organisms. They have plasmids. There is a lack of ethical concern about their use.

D Their DNA is not in a nucleus. They have a cell membrane. They have a large surface area to volume ratio.

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10. 0610_s19_qp_22 Q: 38

All organisms share the same genetic code.

This means that bacteria can be used to

A improve the health of the digestive system.

B manufacture biofuels in large quantities.

C produce foods such as yoghurt and cheese.

D make proteins using human DNA.

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11. 0610_s19_qp_23 Q: 38

Scientists in one country are using bacteria to break down crude oil in abandoned oil fields. This produces natural gas which is used as a fuel.

Why are bacteria useful in this example of biotechnology?

A Bacteria are involved in the nitrogen cycle.

B Bacteria are microorganisms.

C Bacteria can be pathogens.

D Bacteria can reproduce very quickly.

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12. 0610_w19_qp_21 Q: 37

Which part of a bacterial cell makes it useful in genetic engineering?

A cell wall

B cytoplasm

C flagellum

D plasmid

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13. 0610_w19_qp_22 Q: 37

Which structures found in bacteria make bacteria useful in genetic engineering?

A cell walls

B membranes

C nuclei

D plasmids

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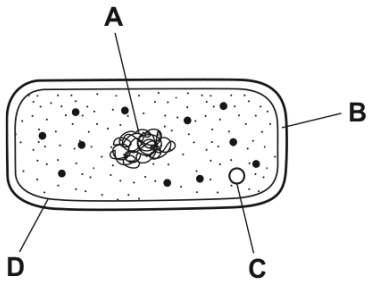
14. 0610_w19_qp_23 Q: 37

The diagram shows a bacterium.

Which structure is used in genetic engineering?



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15. 0610_m18_qp_22 Q: 35

Some of the characteristics of bacteria are listed.

1 can make complex molecules

2 can reproduce quickly

3 have cytoplasm

4 may cause diseases

Which characteristics make bacteria useful in biotechnology and genetic engineering?

A 1, 2, 3 and 4 **B** 1 and 2 only **C** 2 and 3 only **D** 3 and 4 only

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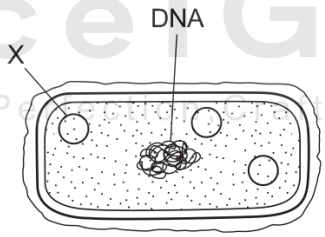
16. 0610_s18_qp_21 Q: 37

The diagram shows the structure of a bacterial cell.



The presence of structure X in the bacterial cell is one reason why bacteria are used in genetic engineering.

What is structure X?

A endoplasmic reticulum

B mitochondria

C plasmid

D ribosome

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17. 0610_w18_qp_21 Q: 37

Bacteria are used in genetic engineering and biotechnology.

Bacteria are used because of the presence of which cell structure?

A cell membrane

B cell wall

C cytoplasm

D plasmids

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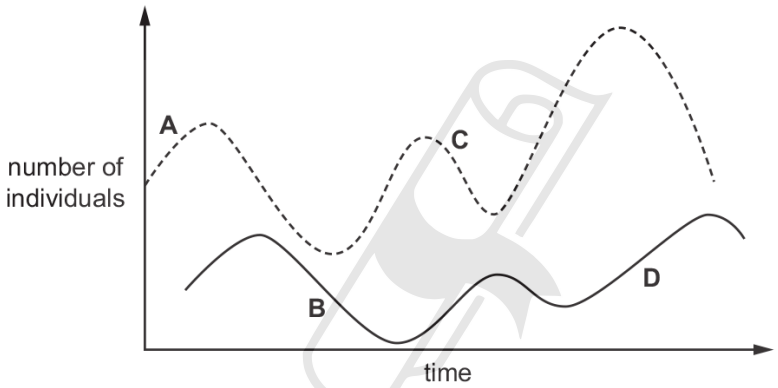
18. 0610_s17_qp_21 Q: 38

The graph shows the changes in the populations of predator and prey over a period of time.

Which point on the graph shows a decrease in predator population?



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19. 0610_s17_qp_22 Q: 38

Which feature of bacteria makes them useful in genetic engineering?

A They do not have mitochondria.

B They do not have vacuoles.

C They have plasmids.

D They have cell walls.

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20. 0610_w17_qp_22 Q: 37

Why are bacteria useful in biotechnology and genetic engineering?

A Bacteria do not have cell vacuoles.

B Bacteria do not have mitochondria.

C Bacteria have cell walls.

D Bacteria share their genetic code with all other organisms.

SN	Paper	Q. No.	Answer
01	0610_m22_qp_22	38	C
02	0610_m21_qp_22	38	D
03	0610_s21_qp_21	39	C
04	0610_s21_qp_23	39	A
05	0610_w21_qp_22	37	C
06	0610_w21_qp_23	37	B
07	0610_s20_qp_22	39	C
08	0610_w20_qp_21	38	A
09	0610_m19_qp_22	37	C
10	0610_s19_qp_22	38	D
11	0610_s19_qp_23	38	D
12	0610_w19_qp_21	37	D
13	0610_w19_qp_22	37	D
14	0610_w19_qp_23	37	C
15	0610_m18_qp_22	35	B
16	0610_s18_qp_21	37	C
17	0610_w18_qp_21	37	D
18	0610_s17_qp_21	38	C
19	0610_s17_qp_22	38	C
20	0610_w17_qp_22	37	D