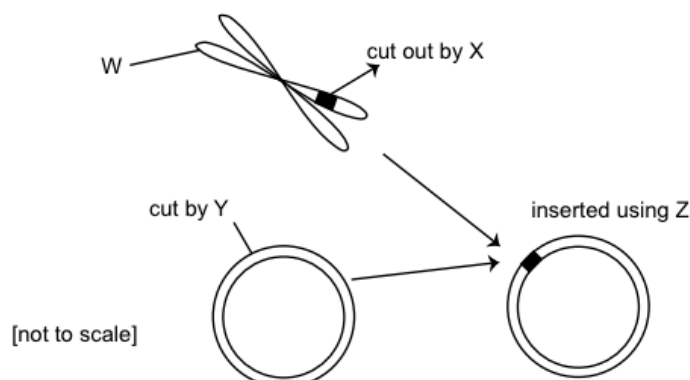


## Genetic Engineering

- 5 The diagram shows some of the stages of how a length of DNA can be removed from one organism and introduced into another organism.



Which row is correct?

	<i>W is a</i>	<i>X is a</i>	<i>Y is a</i>	<i>Z is a</i>
<b>A</b>	chromosome	restriction enzyme	restriction enzyme	restriction enzyme
<b>B</b>	chromosome	restriction enzyme	restriction enzyme	ligase
<b>C</b>	chromosome	ligase	ligase	ligase
<b>D</b>	gene	ligase	restriction enzyme	ligase
<b>E</b>	gene	ligase	ligase	restriction enzyme
<b>F</b>	gene	restriction enzyme	ligase	restriction enzyme

2016

- 9 Insulin is a protein involved in the regulation of human blood glucose levels.

Genetic engineering can be used to allow the large-scale production of human insulin.

Which statement describes the process of genetic engineering in this case?

- A** Taking insulin from a human and inserting it into the DNA of a bacterium. As the bacterium reproduces, it makes large quantities of insulin DNA that can be used to treat human diabetes.
- B** Taking insulin from a human and inserting it into the DNA of a bacterium. As the bacterium reproduces, it makes large quantities of insulin that can be used to treat human diabetes.
- C** Taking the insulin gene from a human chromosome and inserting it into the DNA of a bacterium. As the bacterium reproduces, it makes large quantities of insulin DNA that can be used to treat human diabetes.
- D** Taking the insulin gene from a human chromosome and inserting it into the DNA of a bacterium. As the bacterium reproduces, it makes large quantities of insulin that can be used to treat human diabetes.
- E** Taking the insulin gene from a human chromosome and replacing it in another human chromosome in the same human, so that it will work better to produce large quantities of insulin.

2014



## Genetic Engineering

13 Which of the following is **not** needed in order to genetically engineer bacterial cells to produce a fluorescent protein from a jellyfish?

- A ligase enzyme
- B a plasmid or viral vector
- C fluorescent protein from a jellyfish
- D enzymes to cut DNA molecules

2013

5 Which one of the following statements is true about the members of a clone?

- A Members of a clone will always show identical features at maturity.
- B Multiple births, such as twins, are always members of a clone.
- C They are produced only during genetic engineering.
- D They are the result of a mutation.
- E They contain identical DNA.

2009