

19. Genetic technology

Starter Quiz · 课前小测

A-Level Biology

Name: _____ Score: _____

1. Recombinant DNA is:

- ☐ DNA made by joining together DNA from two different sources
- ☐ DNA from a single organism only
- ☐ a type of protein
- ☐ a damaged chromosome

2. The polymerase chain reaction (PCR) is used to:

- ☐ amplify DNA, making millions of copies
- ☐ cut DNA into fragments
- ☐ separate DNA by length
- ☐ join two genes

3. Genetically modified bacteria can be used to make human insulin.

- ☐ True
- ☐ False

4. An organism whose genes have been deliberately changed, often with a gene from another species, is a genetically _____ organism.

5. Recombinant DNA is made by joining DNA from two different sources (e.g. a human gene into a bacterial plasmid).

- ☐ True
- ☐ False

6. The technique that makes millions of copies of a DNA sample is the _____ chain reaction.

7. An advantage of making insulin as a recombinant human protein is that it:

- ☐ is an exact human copy, safer and never in short supply
- ☐ must be taken from animals
- ☐ cannot be made in large amounts
- ☐ works less well than animal insulin

8. Insect-resistant GM cotton works because it:

- ☐ makes a protein that kills the insect pests
- ☐ grows faster

☐ is resistant to a herbicide

☐ needs no water

9. Reverse transcriptase is used to:

- ☐ make DNA from an mRNA template
- ☐ cut DNA at a specific sequence
- ☐ join two DNA pieces
- ☐ copy DNA directly

10. Human insulin made by genetically modified bacteria is described as _____ insulin.

A-Level Biology

1. **DNA made by joining together DNA from two different sources**

Recombinant DNA combines DNA from two sources — e.g. a human gene joined into a bacterial plasmid.

2. **amplify DNA, making millions of copies**

PCR amplifies DNA through repeated heat/cool cycles using Taq polymerase.

3. **True**

The human insulin gene is inserted into the bacteria, which then make exact human insulin.

4. **modified**

A GMO carries a gene added by genetic engineering.

5. **True**

Because the genetic code is universal, a human gene works inside a bacterium that takes it up.

6. **polymerase**

PCR (the polymerase chain reaction) uses Taq polymerase to copy DNA over many cycles.

7. **is an exact human copy, safer and never in short supply**

Recombinant insulin is identical to human insulin, available in quantity, and avoids animal/donor sources.

8. **makes a protein that kills the insect pests**

The engineered cotton produces a protein toxic to insect pests, protecting the crop.

9. **make DNA from an mRNA template**

Reverse transcriptase builds a DNA copy from mRNA — one way of obtaining the gene to transfer.

10. **recombinant**

Recombinant = the human gene has been combined into the bacterium's DNA.