

21.1 Biotechnology and genetic modification

Name: _____ Class: _____ Date: _____ **Total: 6 marks**

KEY WORDS bacteria 细菌 • plasmids 质粒 • biotechnology 生物技术 • enzymes 酶
• molecules 分子

Objective

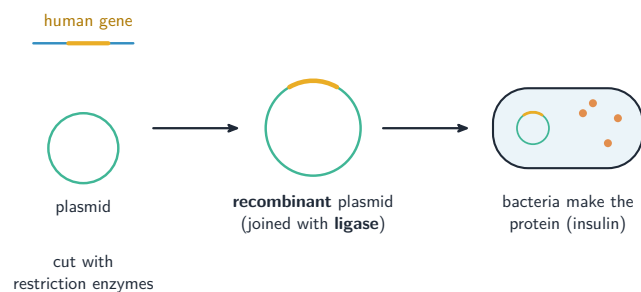
Build the skills to answer exam questions on **biotechnology and genetic modification** 生物技术与基因改造 — what they are, and why **bacteria** 细菌 are useful.

You must be able to:

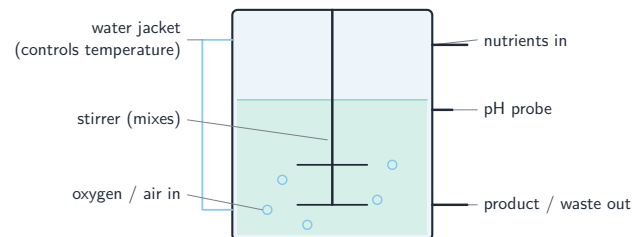
- define biotechnology and genetic modification
- explain why bacteria are used in biotechnology
- recognise the uses of each

1 Worked examples

■ Why bacteria



Biotechnology uses living things (or their enzymes) to make useful products; GM changes an organism's genes



Biotechnology uses fermenters to grow microbes

- **bacteria** are useful: reproduce fast, make complex molecules, contain plasmids, few ethical issues.

2 Practice

2.1 Define biotechnology. [1]

2.2 Define genetic modification. [1]

3 Exam-style questions

3.1 Bacteria are useful in biotechnology because they: [1]

- **A** reproduce slowly
- **B** reproduce very fast and contain plasmids
- **C** cannot make molecules
- **D** have no DNA

3.2 Bacteria are widely used in biotechnology.

(a) State two reasons why bacteria are suitable.

[2]

(b) State one product made using bacteria.

[1]

Solutions

2.1 using living things (or their enzymes) to make useful products.

2.2 changing an organism's genetic material by removing, changing or inserting genes.

3.1 B. Bacteria reproduce fast and contain plasmids.

3.2 (a) any two of: reproduce fast; make complex molecules; contain plasmids; few ethical concerns.

(b) any of: insulin; penicillin; mycoprotein.