

21 Biotechnology – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
Biotechnology	生物技术	_____	_____	_____
enzymes	酶	_____	_____	_____
Bacteria	细菌	_____	_____	_____
plasmids	质粒	_____	_____	_____
Yeast	酵母	_____	_____	_____
anaerobic respiration	无氧呼吸	_____	_____	_____
ethanol	乙醇	_____	_____	_____
biofuel	生物燃料	_____	_____	_____
pectinase	果胶酶	_____	_____	_____
washing powders	洗衣粉	_____	_____	_____

Recall

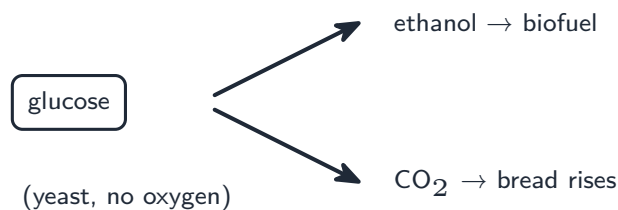
Biotechnology 生物技术 uses living things (or their **enzymes** 酶) to make useful products. **Bacteria** 细菌 are useful because they reproduce fast and contain **plasmids** 质粒 (small DNA rings).

New ideas

Read these first, then do the Practice.

■ 1 Yeast

Yeast 酵母 carries out **anaerobic respiration** 无氧呼吸 (without oxygen), making **ethanol** 乙醇 and carbon dioxide:



- the ethanol is a **biofuel** 生物燃料;
- the carbon dioxide makes bread dough rise.

■ 2 Enzymes in industry



- **pectinase** 果胶酶 releases more juice from fruit;
- biological **washing powders** 洗衣粉 contain enzymes that digest stains.

Watch out: yeast respire *anaerobically* to make **ethanol** (a biofuel) and **carbon dioxide** (which makes bread rise) — one reaction, two useful products. Industrial enzymes like **pectinase** (more juice) and the protease/lipase in washing powder work outside living cells.

Practice

Try these in order.

21.1 What is *biotechnology*? [1]

21.2 Give two reasons bacteria are useful in biotechnology. [2]

21.3 What two products does yeast make in anaerobic respiration? [2]

21.4 Give one use of the ethanol that yeast makes. [1]

21.5 What does pectinase do? [1]

21.6 Challenge. Bakers and brewers both use yeast, but they want different products from it. Explain what each one wants. [2]