

21 Biotechnology – Part 1

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	Write it 3 times (English)		
Biotechnology	_____	_____	_____
enzymes	_____	_____	_____
Bacteria	_____	_____	_____
plasmids	_____	_____	_____
Yeast	_____	_____	_____
anaerobic respiration	_____	_____	_____
ethanol	_____	_____	_____
biofuel	_____	_____	_____
pectinase	_____	_____	_____
washing powders	_____	_____	_____

Recall

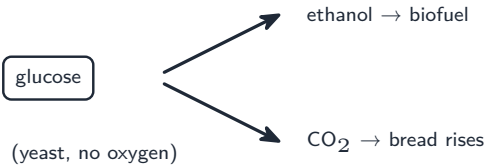
Biotechnology uses living things (or their **enzymes**) to make useful products. **Bacteria** are useful because they reproduce fast and contain **plasmids** (small DNA rings).

New ideas

Read these first, then do the Practice.

■ 1 Yeast

Yeast ethanol carries out **anaerobic respiration** (without oxygen), making and carbon dioxide:



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

■ 2 Enzymes in industry



- **pectinase** releases more juice from fruit;
- biological **washing powders** 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*?

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]