

19 Genetic engineering — 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)		
Genetic engineer- ing	基因工程	_____	_____	_____
restriction en- donuclease	限制性内 切酶	_____	_____	_____
ligase	连接酶	_____	_____	_____
recombinant	重组	_____	_____	_____
plasmid	质粒	_____	_____	_____
vector	载体	_____	_____	_____

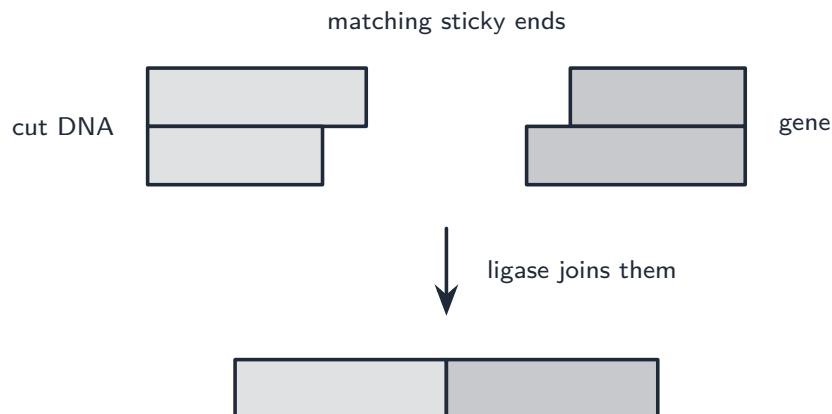
Recall

Genetic engineering 基因工程 changes an organism's genes — often by moving a gene from one organism into another.

New ideas

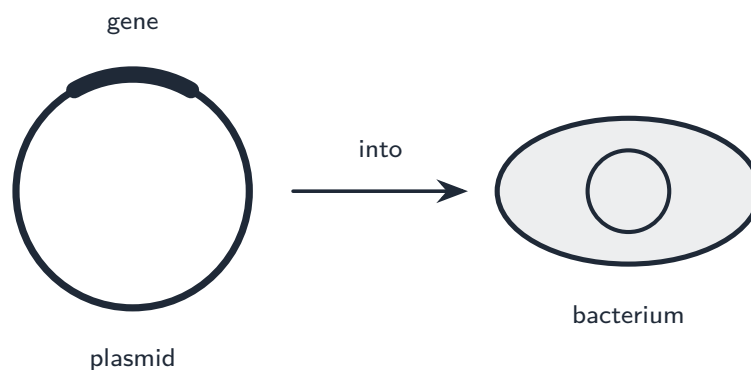
Read these first, then do the Practice.

■ 1 The cutting and joining tools



- a **restriction endonuclease** 限制性内切酶 cuts DNA at a set sequence, leaving “sticky ends”;
- DNA **ligase** 连接酶 joins matching pieces together. The result is **recombinant** 重组 DNA — DNA from two sources.

■ 2 Carrying the gene in



A **plasmid** 质粒 (a small ring of bacterial DNA) is used as a **vector** 载体 — it carries the gene into a cell.

Watch out: a restriction enzyme *cuts* DNA (leaving sticky ends); ligase *joins* the pieces; the result (DNA from two sources) is *recombinant*; a plasmid is the *vector* that carries the gene in. The sticky ends must *match* to join.

Practice

Try these in order.

19.1 What does *genetic engineering* do? [1]

19.2 What does a *restriction endonuclease* do? [1]

19.3 What does DNA *ligase* do? [1]

19.4 What is *recombinant* DNA? [1]

19.5 What is a *plasmid* used as? [1]

19.6 Challenge. The *same* restriction enzyme is used to cut both the gene and the plasmid. Explain why using the same enzyme on both is important. [2]
