

# 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-<br>ing      | 基因工程       | _____                      | _____ | _____ |
| restriction en-<br>donuclease | 限制性内<br>切酶 | _____                      | _____ | _____ |
| ligase                        | 连接酶        | _____                      | _____ | _____ |
| recombinant                   | 重组         | _____                      | _____ | _____ |
| plasmid                       | 质粒         | _____                      | _____ | _____ |
| vector                        | 载体         | _____                      | _____ | _____ |

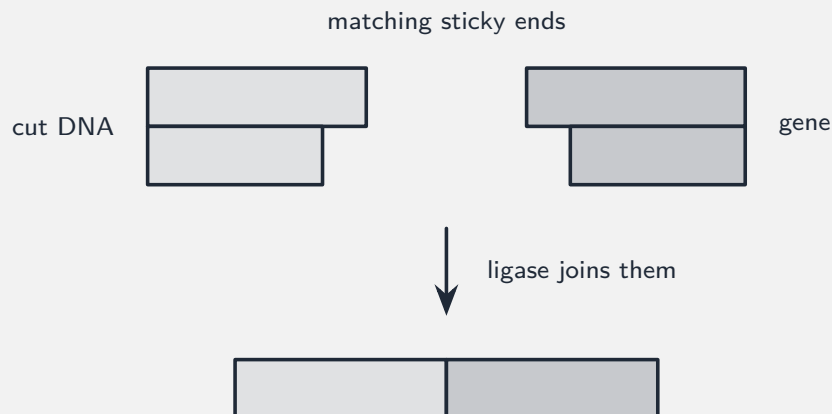
## Recall

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

## New ideas

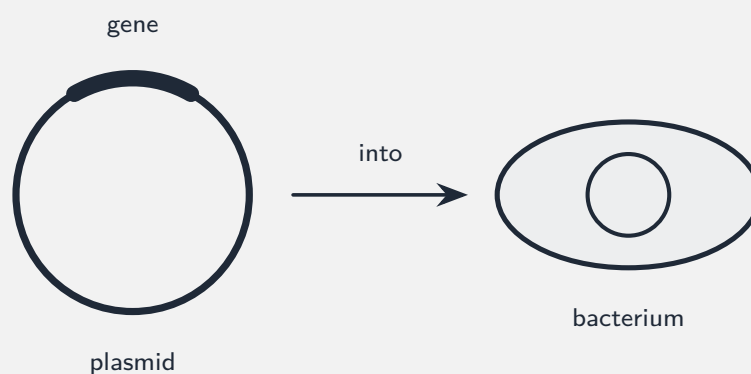
Read these first, then do the Practice.

### ■ 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]

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

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

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**19.4** What is *recombinant* DNA? [1]

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

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**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]

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