

# 19 Genetic engineering – Part 1

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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

## Vocabulary

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*Write each word three times.*

| English           | Write it 3 times (English) |  |  |
|-------------------|----------------------------|--|--|
| Genetic engineer- |                            |  |  |
| ing               |                            |  |  |
| restriction en-   |                            |  |  |
| donuclease        |                            |  |  |
| ligase            |                            |  |  |
| recombinant       |                            |  |  |
| plasmid           |                            |  |  |
| vector            |                            |  |  |

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## Recall

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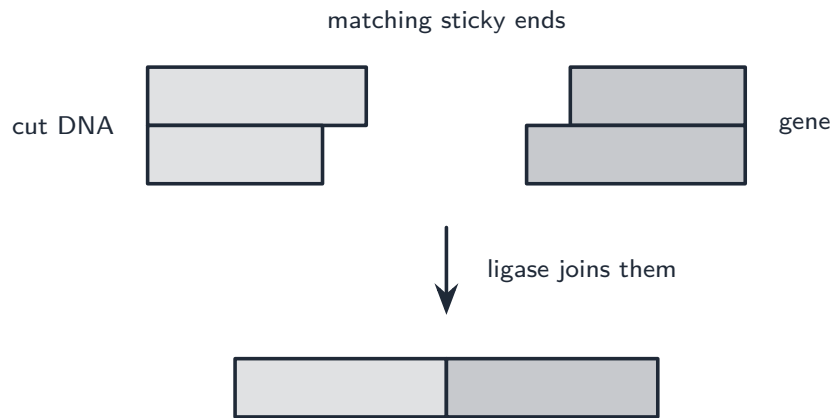
**Genetic engineering** changes an organism's genes – often by moving a gene from one organism into another.

## New ideas

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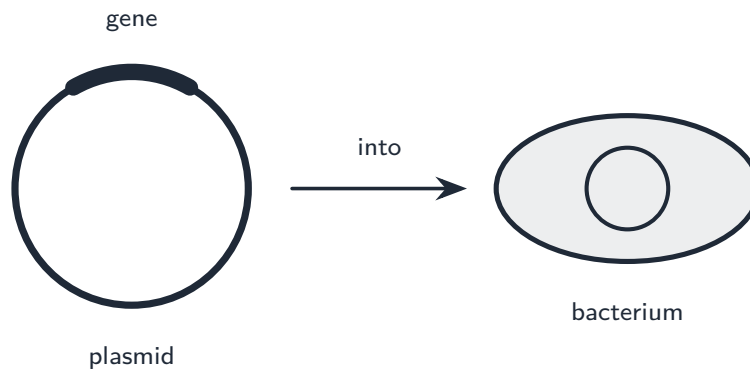
Read these first, then do the Practice.

## ■ 1 The cutting and joining tools



- a **restriction endonuclease** cuts DNA at a set sequence, leaving “sticky ends”;
- **DNA ligase** joins matching pieces together. The result is **recombinant** DNA – DNA from two sources.

## ■ 2 Carrying the gene in



A **plasmid** (a small ring of bacterial DNA) is used as a **vector** – 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

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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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