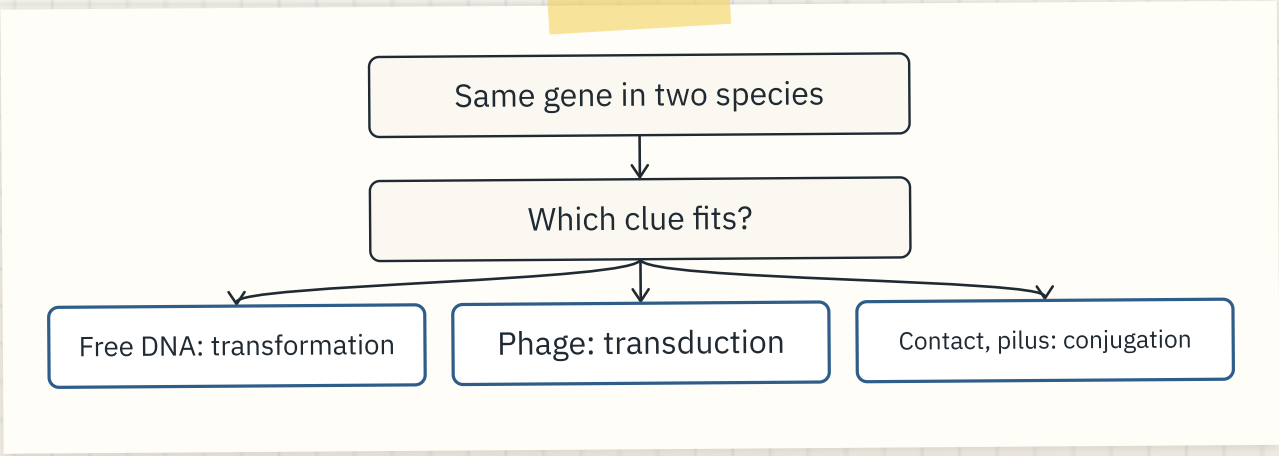
Gene transfer in bacteria

Transformation, transduction, conjugation, transposition



Step by step

1. Bacteria divide by binary fission, so new genes arrive by horizontal transfer.
2. Free DNA taken up from the surroundings is transformation; a DNase stops it.
3. DNA carried inside a phage is transduction; a DNase does not stop it.
4. Direct contact through a pilus is conjugation; a filter between the cells stops it.
5. Transposons jump within DNA but are not a route between cells.

Term	Clue	Stopped by / note
Transformation	Free DNA	DNase
Transduction	Phage in the middle	Not DNase
Conjugation	Pilus contact	A filter
Hfr cell	F plasmid in chromosome	Recipient stays F^-
Transposon	Jumping gene	Not a route between cells

One clue each

Three clues

Free DNA = transformation
Virus in the middle = transduction
Cell contact = conjugation

Exam traps

- A DNase stops transformation, not transduction.
- A filter that separates the cells stops conjugation.
- Hfr transfer usually stops before the end, so the recipient stays F^-.
- A transposon moves within DNA; it is not a route between cells.

Bacterial genetics: how bacteria swap genes

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/microbiology/bacterial-genetics-transformation-transduction-conjugation

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