

# HGT (horizontal gene transfer) create genetic diversity acquire new genes

Transformation

Indirect

competent bacteria  
(they are able to pick free DNA)

DNA from environment

dead bacterial cell

Transduction

Indirect

bacteriophage  
(virus → bacteria)

virus infects

one bacterial cell

picks up bacterial DNA from one host

transfer DNA into a different bacterial host

Conjugation

direct

conjugation pilus

2 bacterial cells are connected w/ conjugation pilus

F<sup>+</sup>

(donor)

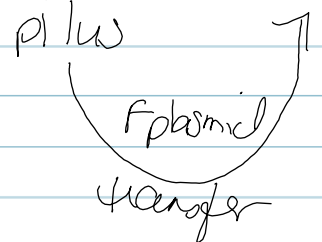
F plasmid (cell itself)

F<sup>-</sup>

(recipient)

lack F plasmid

make con. pilus



F<sup>-</sup>

recipient

F<sup>+</sup>

donor