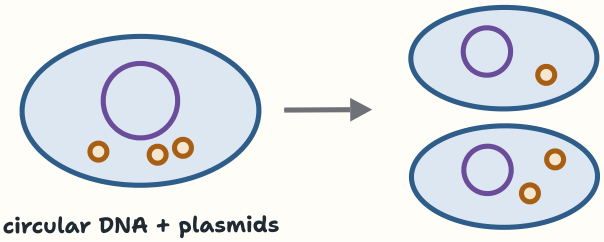
Binary Fission and Virus Replication

Bacteria divide by binary fission; viruses are acellular and are replicated by a host cell.

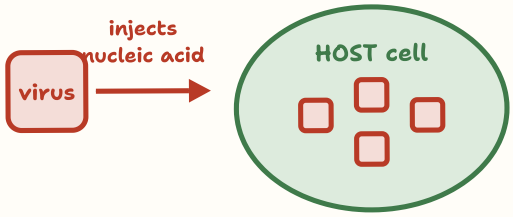
BACTERIUM: binary fission



circular DNA + plasmids are replicated

2 daughter cells: 1 circular DNA each, variable number of plasmids

VIRUS: no cell division



host cell replicates the virus particles (virus is acellular and non-living)

Key terms

binary fission	how prokaryotes divide: circular DNA and plasmids replicate, then the cytoplasm divides into two daughter cells.
circular DNA	the bacterial chromosome; each daughter cell receives one copy.
plasmid	a small ring of DNA; the number per daughter cell is variable.
daughter cell	one of the two cells formed by division.
virus	acellular and non-living, so it does not undergo cell division.
viral replication	the virus injects its nucleic acid into a host cell, which replicates the virus particles.

I can...

- ☐ Binary fission: replication of circular DNA and plasmids
- ☐ Division of cytoplasm giving two daughter cells each with one copy of circular DNA and variable plasmid copies
- ☐ Viruses do not undergo cell division; host cell replicates virus particles after injection of nucleic acid

EXAM TRAP

Binary fission is not mitosis: no nucleus, no spindle. Both DNA and plasmids are replicated, and plasmid numbers in the daughters are not always equal. A virus never divides: the host cell copies it.

5 marks: what earns them

1. Circular DNA and plasmids are replicated
   Not: chromosomes replicate; DNA replicates with no mention of plasmids
2. Cytoplasm divides to give two daughter cells, each with one copy of the circular DNA
   Not: nucleus divides; mitosis
3. Number of plasmids in each daughter cell is variable
   Not: each cell gets the same plasmids
4. Virus is non-living / acellular, so it does not undergo cell division
   Not: viruses are too small to divide
5. Virus injects its nucleic acid into a host cell, which replicates the virus particles
   Not: virus replicates by itself; virus divides inside the host

Remember

Fission: copy DNA and plasmids, split.
One circular DNA each, plasmids vary.
Virus: inject, host copies.

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