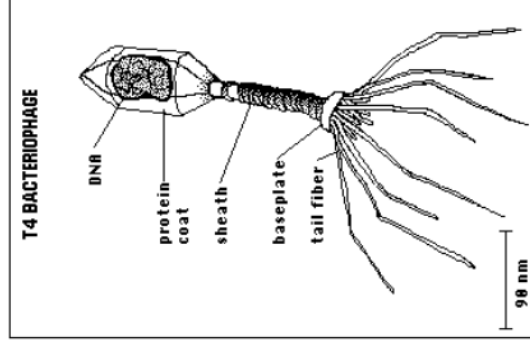
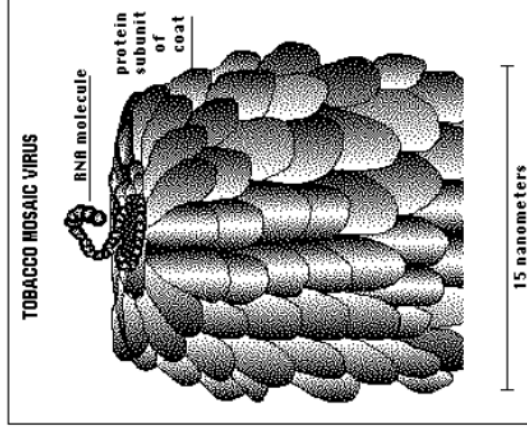


What are viruses? Are they Considered Living Organisms?

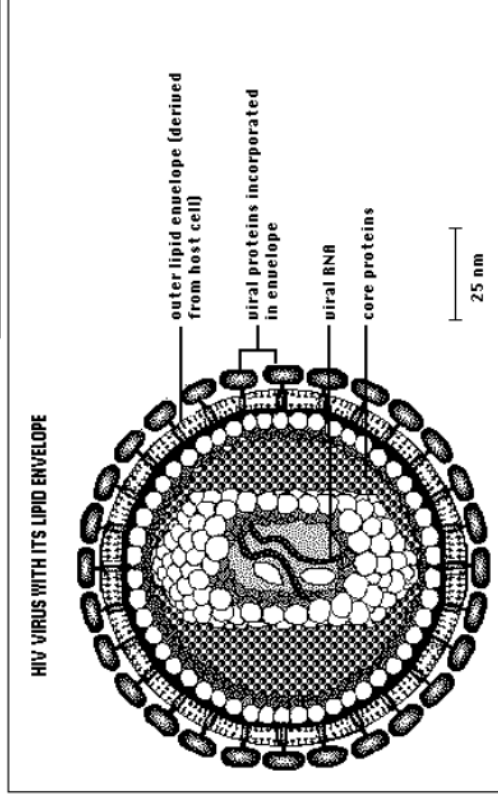
EXAMPLES OF VIRUSES



- "Genes in a Box"
- Consist of nucleic acids (DNA or RNA) enclosed in a protein coat called a capsid.

NOT considered a living organism, as a virus lacks basic cellular structures necessary for metabolism, reproduction, ability to exchange matter/energy.

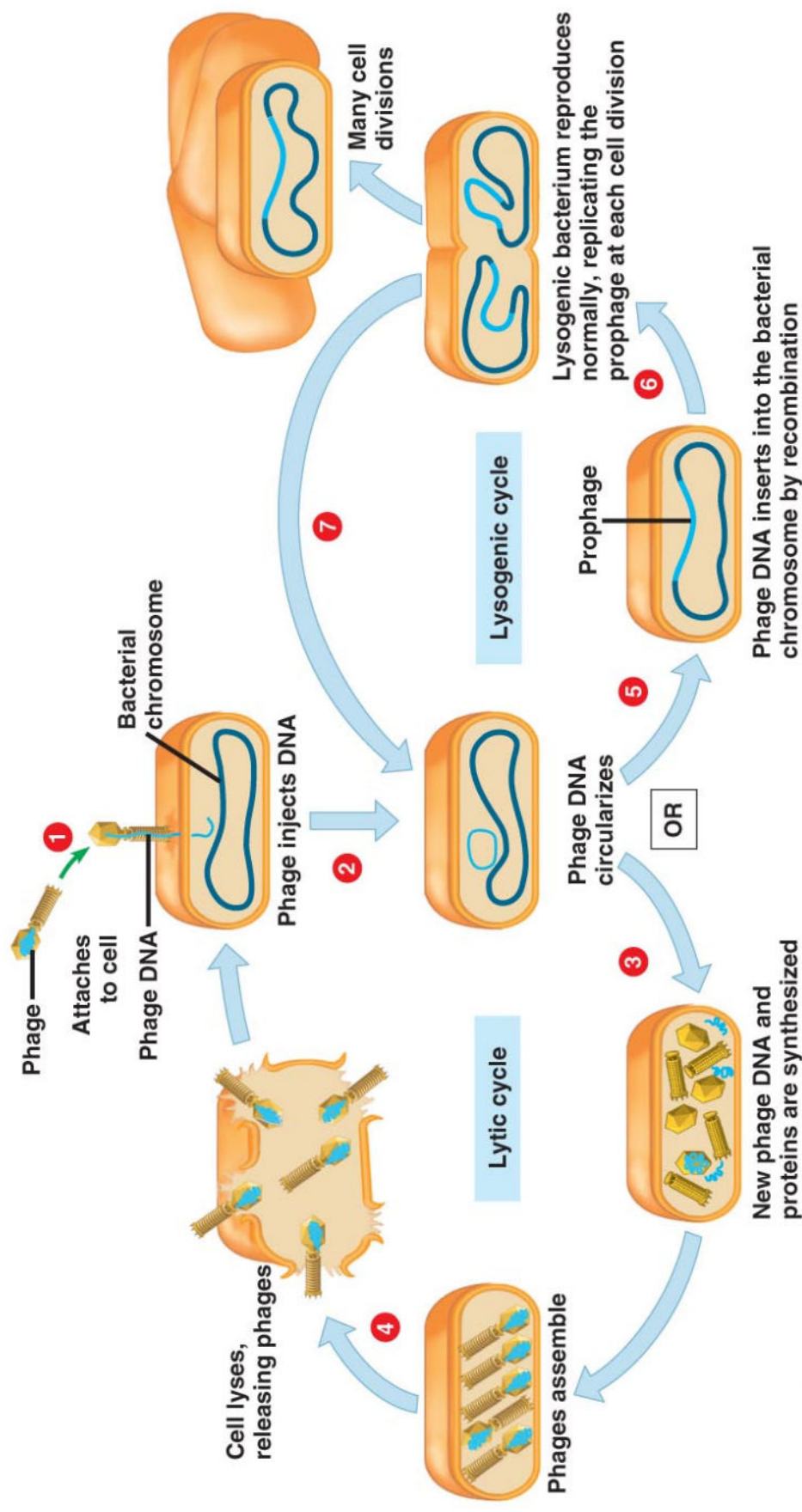
- The only way viruses can reproduce is by hijacking a cell



Viral Reproductive Cycles can be Lytic or Lysogenic:

-Lytic: Hijacked cell produces viruses and eventually splits open (lyses) and releases those viruses

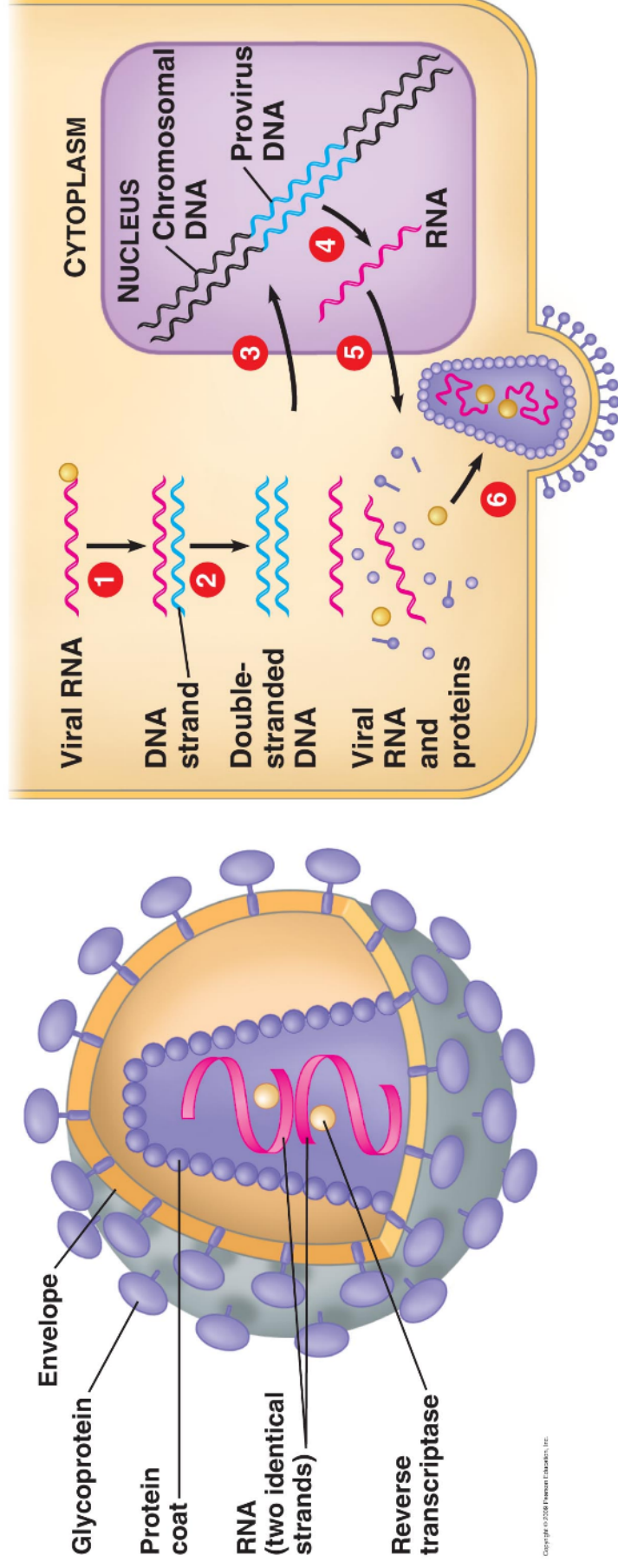
Lysogenic: Virus DNA is inserted into the bacterial chromosome...cellular reproduction then copies this "prophage" along with bacterial DNA...so virus doesn't kill host



HIV virus which causes AIDS is fairly unique...

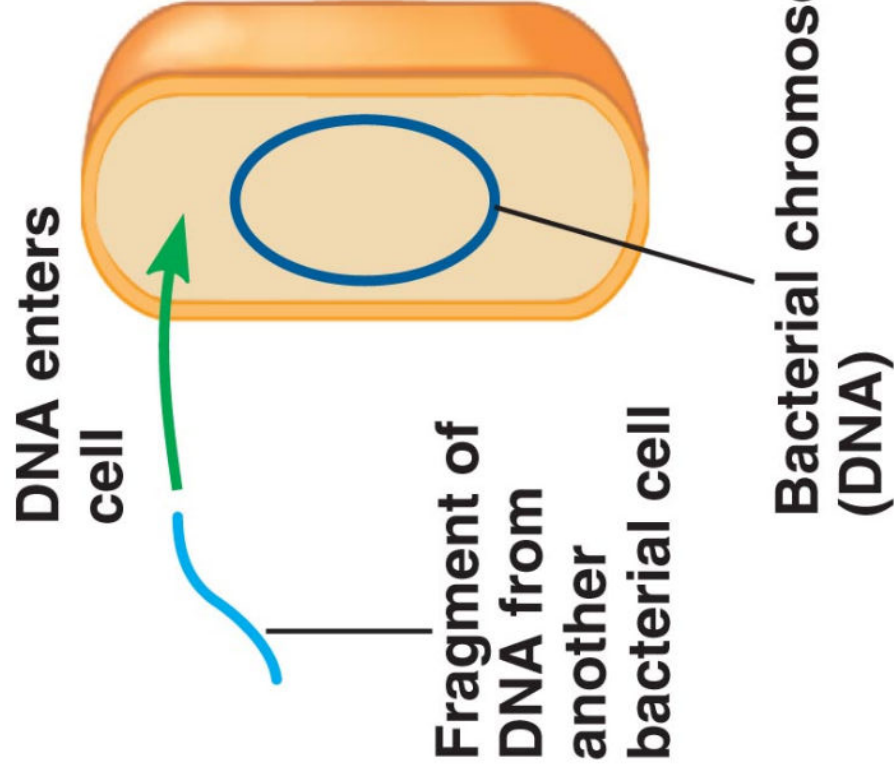
It is a "retrovirus" ...a virus which carries RNA as well as an enzyme called reverse transcriptase. Once it infects a cell it makes DNA from its RNA and inserts that DNA into the host cell's genome.

Then the normal DNA-RNA-protein process produces more viruses which can leave the host cell to infect other cells.



If Bacteria Reproduce Asexually....
How can they become genetically varied?

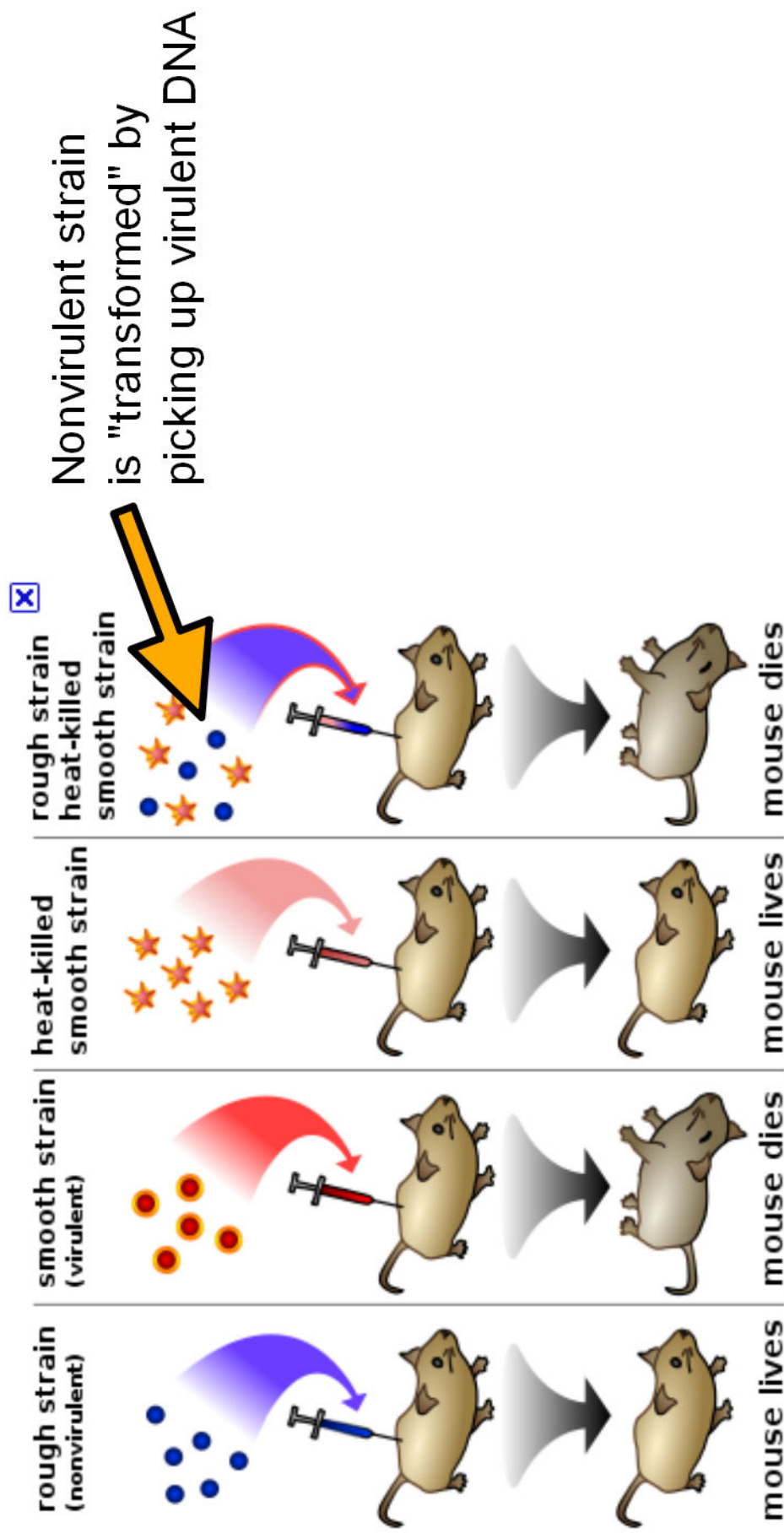
Bacteria can exchange genetic information 3 ways...



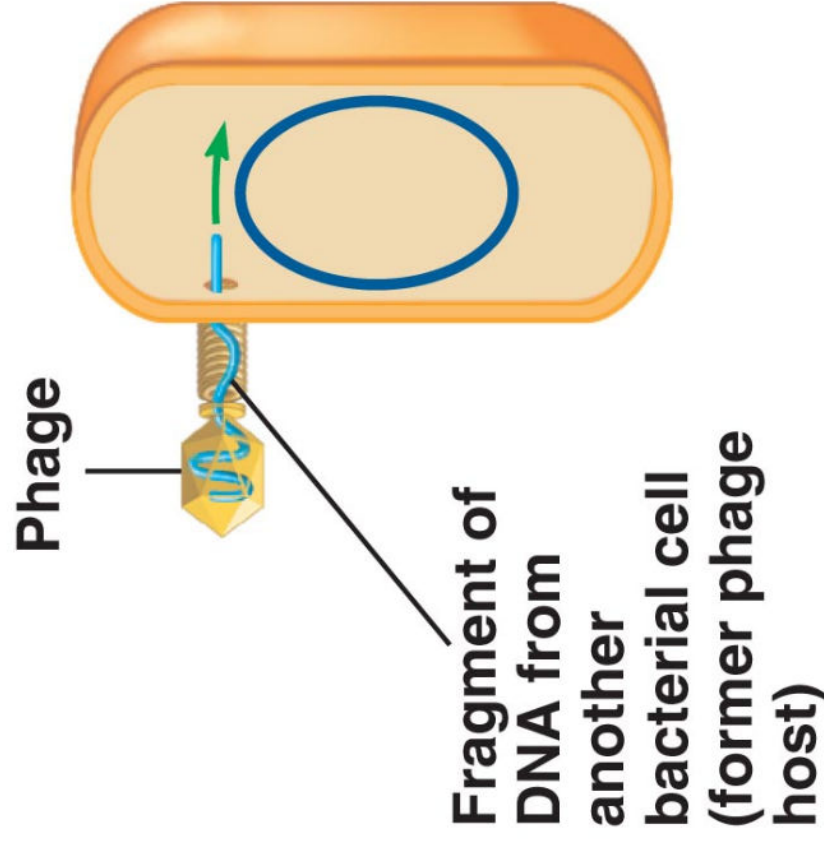
1. Transformation: Uptake of Foreign DNA from the environment...

Remember Griffith's Transformation Experiment?

Griffith's Experiment:



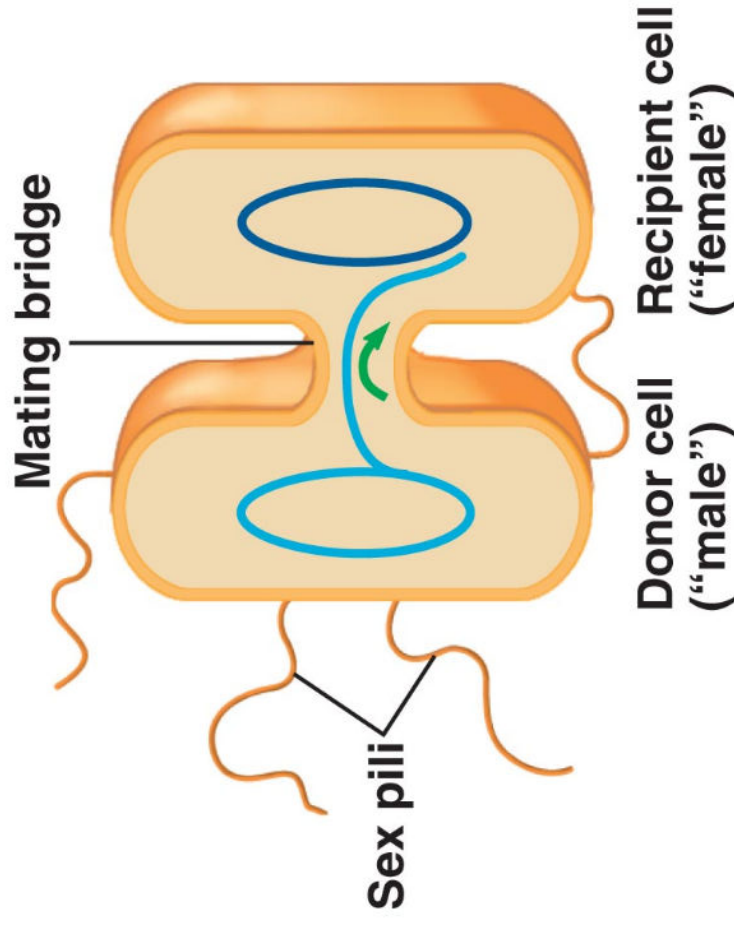
2. Transduction: Transfer of bacterial DNA by a phage virus



DNA fragment from previous host gets incorporated into the phage virus' coat...it then is like a "stowaway"

...when the phage infects another bacteria the DNA fragment can get injected as well.

3. Cojugation: The joining of "male" and "female" bacteria

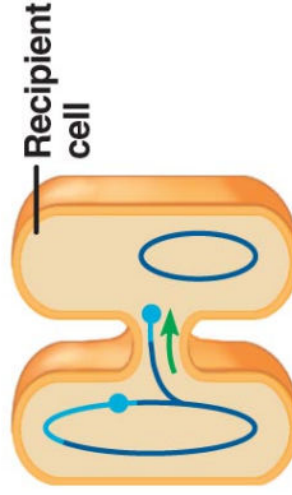


Sex pili are used by the "male" cell to inject DNA into the "female" bacteria...part of that DNA may then combine with the original DNA of the "female" cell.

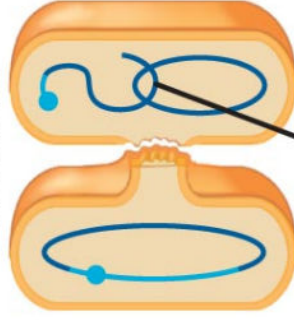
Presence of a "Fertility Factor" makes a bacteria "male"



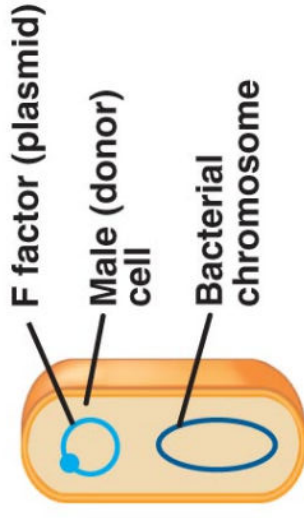
F factor starts replication and transfer of chromosome



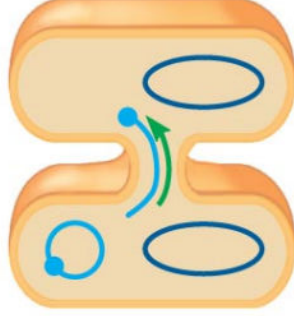
Only part of the chromosome transfers



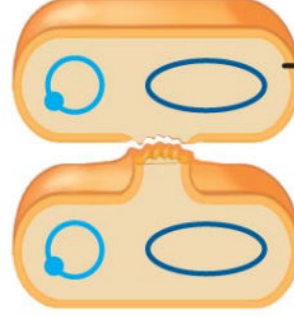
Recombination can occur



F factor starts replication and transfer



Plasmid completes transfer and circularizes



Cell now male

The "F" factor can exist as an integrated piece of DNA...

or as a plasmid...a circular piece of DNA