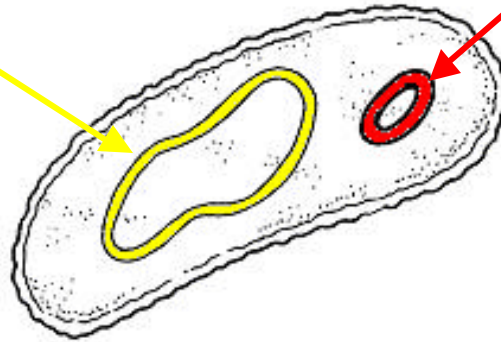


PROKARYOTIC AND EUKARYOTIC GENOME

PROKARYOTIC GENOME

Bacterial chromosome

- Single
- Circular
- Double stranded (ds) DNA
- Found in nucleoid region



Plasmid

- Extra chromosomal DNA
- ds DNA

SOURCES OF VARIATION AND RECOMBINATION

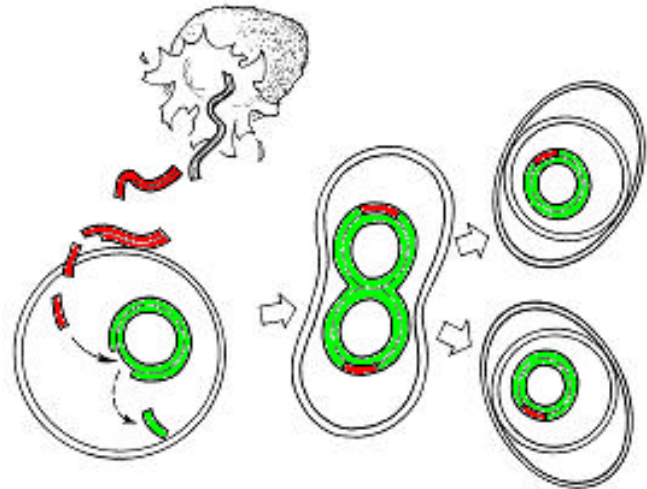
Mutation

- Change in DNA base sequences
- Can lead to different sequence of amino acids in protein

Transformation

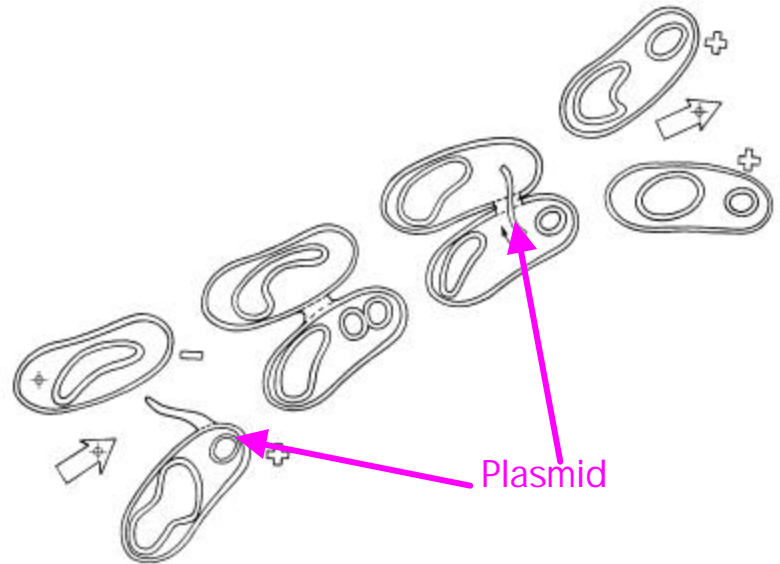
Bacteria pick up genetic material from environment

Foreign DNA
Bacterial DNA



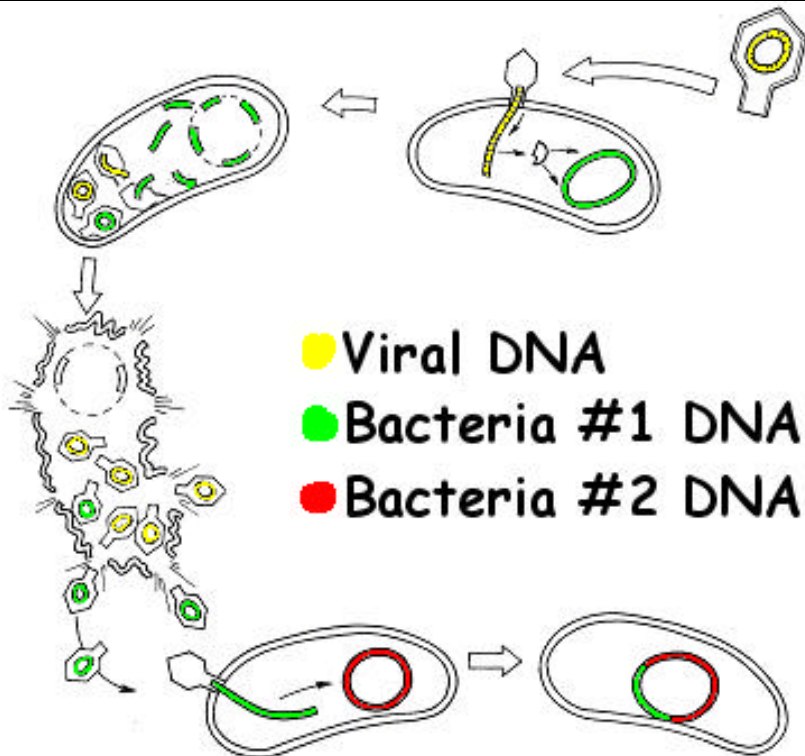
Conjugation

Direct transfer
of genes from one
bacterium to another



Transduction

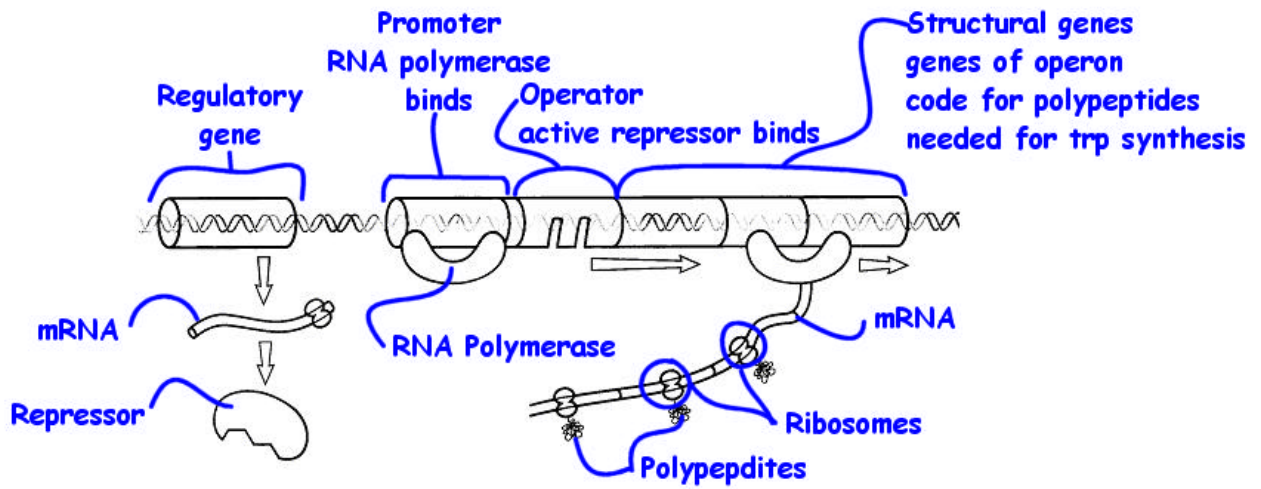
Gene transfer from
1 bacterium to
another via
bacteriophage



Transposons

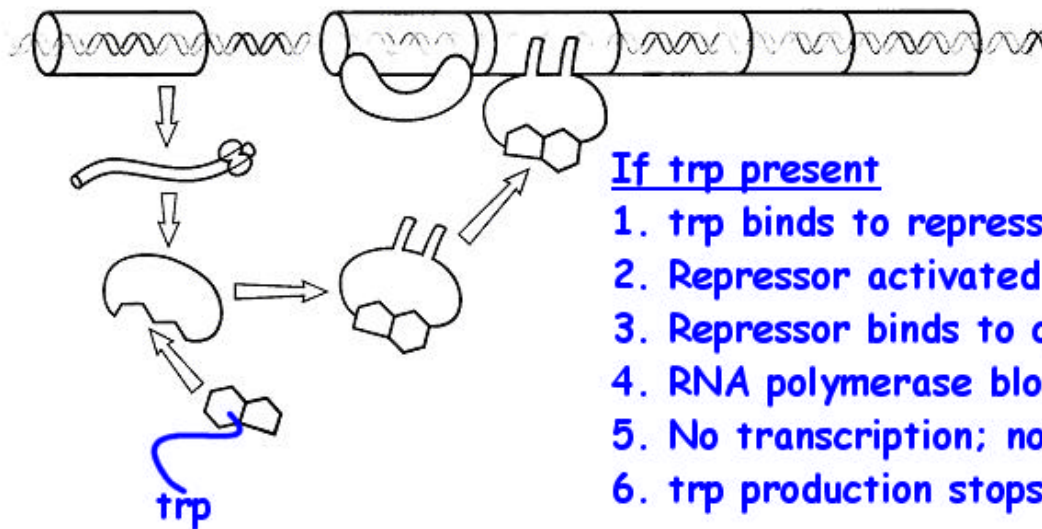
- Pieces of DNA move from 1 location to another
- AKA jumping genes
- Found in both prokaryotes and eukaryotes

OPERONS – TRP OPERON



If trp (tryptophan) absent:

1. Repressor inactive
2. RNA polymerase binds to promoter
3. Genes transcribed into mRNA
4. mRNA translated into polypeptides
5. trp produced

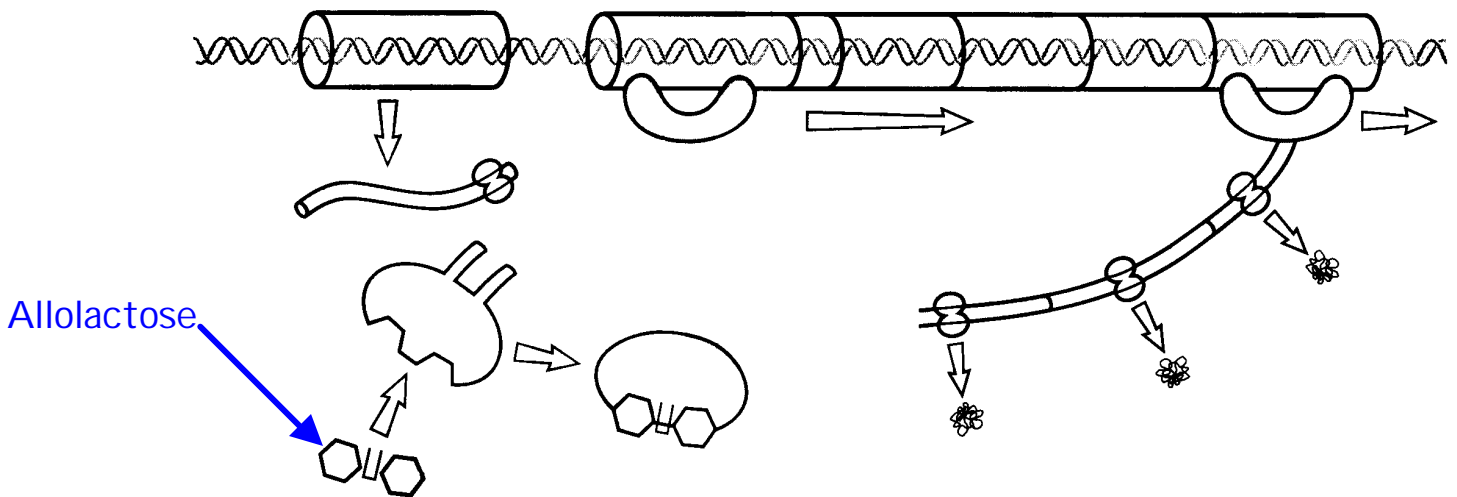
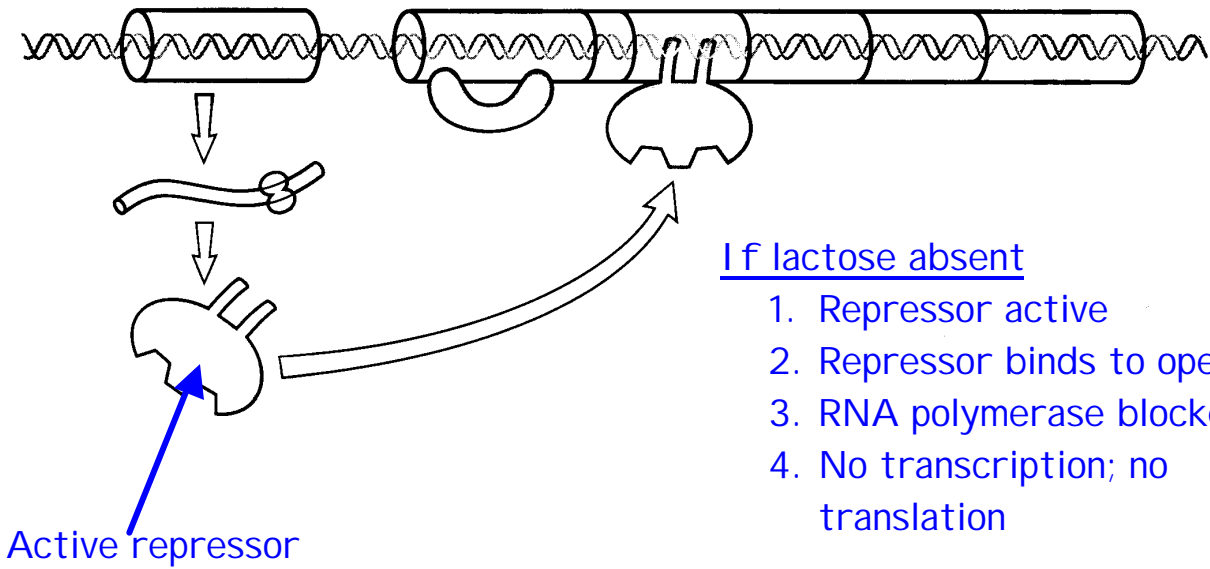


If trp present

1. trp binds to repressor
2. Repressor activated
3. Repressor binds to operator
4. RNA polymerase blocked
5. No transcription; no translation
6. trp production stops

OPERONS – LAC OPERON

Codes for polypeptides that break down lactose



If lactose present

1. Allolactose binds to repressor
2. Repressor inactive
3. RNA polymerase binds to promoter
4. Genes transcribed
5. mRNA translated
6. Polypeptides needed for lactose breakdown produced

EUKARYOTIC GENOME

- Complex
- Large amounts of protein
- Contains enormous amounts of DNA

DNA Packing

