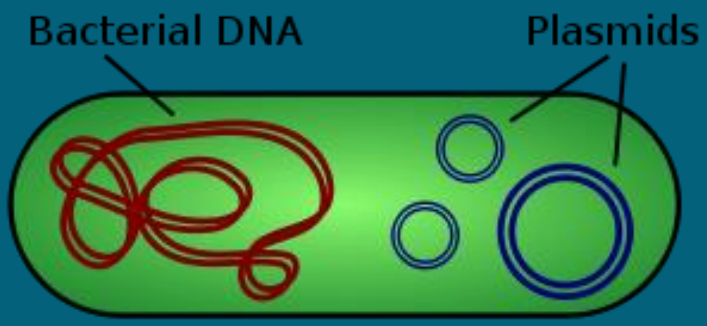
Plasmid

By
PRAMOD KUMAR MAHISH
Asst. Professor (Biotechnology)
Govt. Digvijay PG College Rajnandgaon
(C.G.)
pramod.mahish@rediffmail.com

- A plasmid is a small DNA molecule that is physically separate from chromosomal DNA, and can replicate independently.

- Most commonly found as small circular, double-stranded DNA molecules in bacteria



- **F-plasmids**
- R-plasmid
- Col plasmids
- Degradative plasmids
- Virulence plasmids

- They are capable of conjugation and result in the expression of sex pilli.

- F-plasmids
- **R-plasmid**
- Col plasmids
- Degradative plasmids
- Virulence plasmids

- Contain genes that provide resistance against antibiotics or poisons.

- F-plasmids
- R-plasmid
- **Col plasmids**
- Degradative plasmids
- Virulence plasmids

- contain genes that code for bacteriocins, proteins that can kill other bacteria

- F-plasmids
- R-plasmid
- Col plasmids
- **Degradative plasmids**
- Virulence plasmids

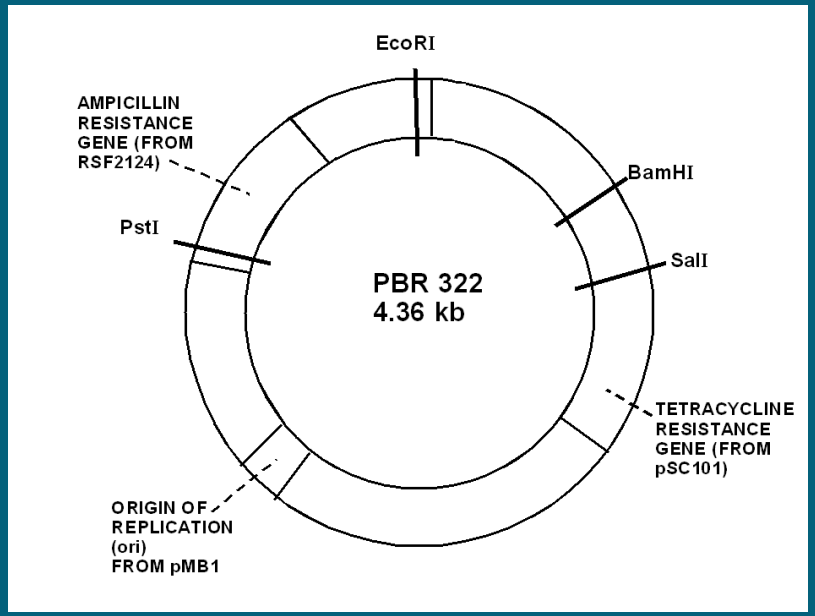
- Degradative plasmids, which enable the digestion of unusual substances,
e.g. toluene and salicy lic acid.

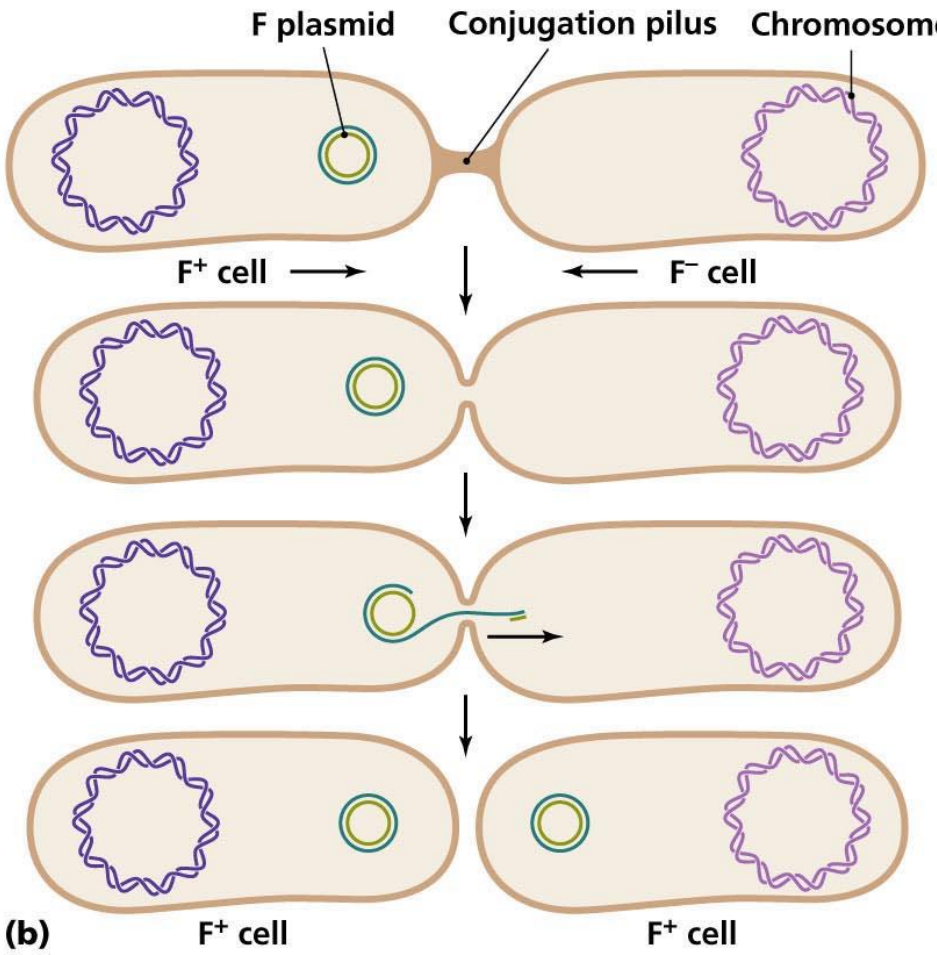
- F-plasmids
- R-plasmid
- Col plasmids
- Degradative plasmids
- **Virulence plasmids**

- which turn the bacterium into a pathogen.

Plasmid vector

- Small in size
- Easy to modify
- Contain restriction sites
- Contain gene of resistance
- Easy to transfer
- Contain ori site
- Self replication
- Multiple copies

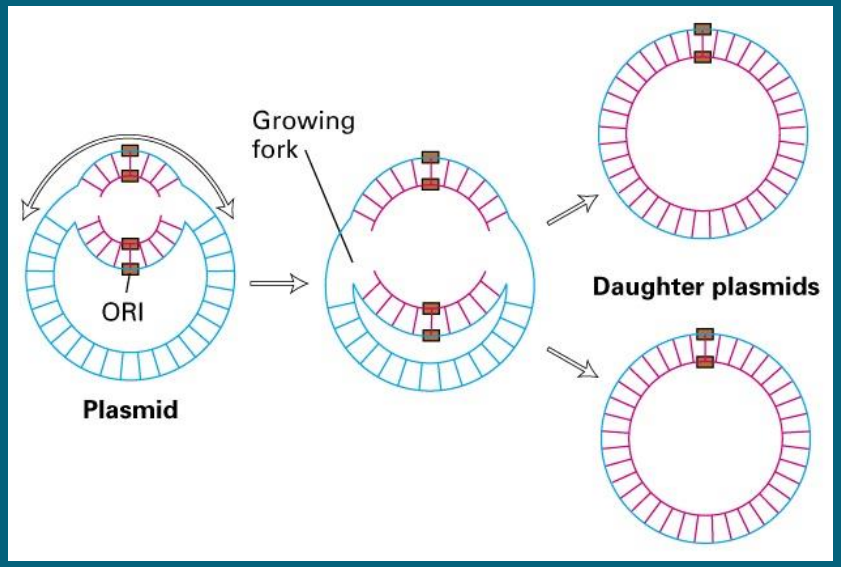




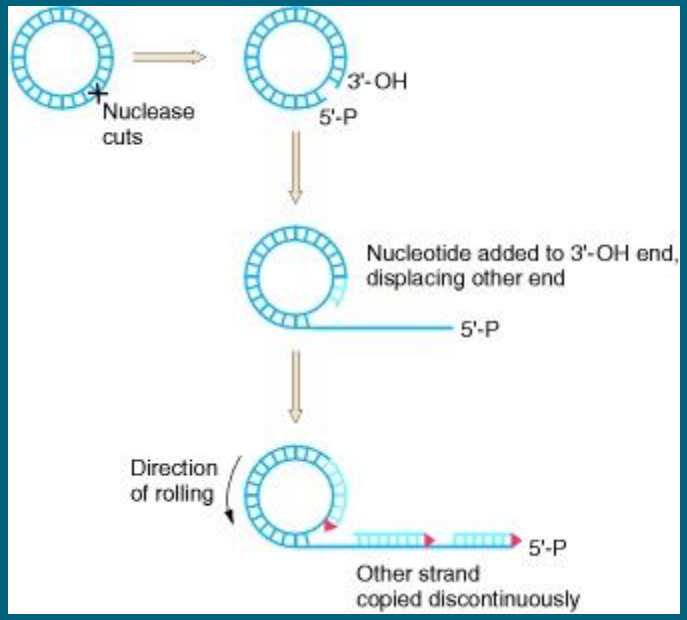
1. Donor cell attaches to a recipient cell with its pilus. The pilus draws the cells together.
2. The cells contact one another.
3. One strand of plasmid DNA transfers to the recipient.
4. The recipient synthesizes a complementary strand to become an F^+ cell; the donor synthesizes a complementary strand, restoring its complete plasmid.

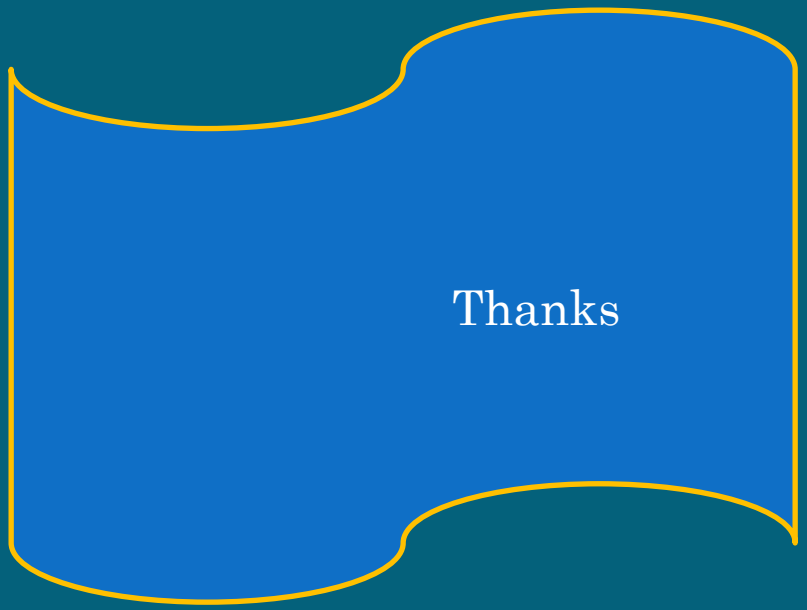
DNA replication

- θ model



- Rolling circle model




Thanks