

Conjugation

Conjugation is a gradual, controllable process. A **cytoplasmic connection** between the two bacteria involved in the process is established in the form of a narrow tube. Afterward, a part or all of the genome is transferred from the donor cell to the recipient cell.

The presence of **sex chromatin (F-factor)** determines the ability to transfer part of its genetic equipment to another bacterium. F-factor is encoded on a plasmid (**F-plasmid**). We call such cells **F +** and they are always **donors of genetic information**. F factor genes determine the formation of fimbriae (**F-pili**) on the surface, which allows contact between bacteria. The F + bacterium specifically binds to the surface of the recipient bacterium and transfers a single strand of its F-plasmid to it. The second strand is then synthesized in both bacteria.

The F plasmid replicates independently of the cell's chromosome. After F-plasmid transfer, the **F - cell transforms into an F + cell** and is also able to pass on its genetic information. The F plasmid may be integrated into the **main chromosome** (using insert sequences). The transferred part of the chromosome of a donor cell can recombine with the main chromosome of the recipient cell. Such cells show a high frequency of gene recombination and are referred to as **Hfr bacteria**.

The described process is typical for **gram-negative** bacteria. **Gram-positive** bacteria do not use pili, but instead use **adhesins**, which temporarily connect the cells to allow conjugation.

References

Related articles

- Horizontal gene transfer in bacteria
 - Transformation
 - Transduction

Source

- ŠTEFÁNEK, Jiří. *Medicine, diseases, study at the 1st Faculty of Medicine, Charles University* [online]. [feeling. 14.03.2010]. < <https://www.stefajir.cz/> >

References

- JULÁK, Jaroslav. *Introduction to medical bacteriology*. 1st edition. Prague: Karolinum, 2006. ISBN 80-246-1270-4 .
- KOHOUTOVA, Milada. *Medical Biology and Genetics (Part II)*. 1st edition. Praha: Nakladatelství Karolinum, 2013. 202 pp. ISBN 978-80-246-1873-9 .
-