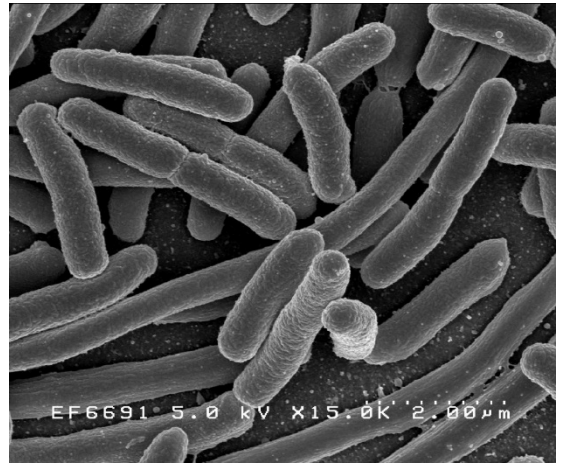


Introduction to Bacteria ^{"staff" or "cane"} (singular: *Bacterium*)

Bacteria are one of the three **Domains** of life along with the **Archaea**, which used to be mistaken for bacteria because they both are **Prokaryotes**, cells without a **nucleus**. The third Domain is the **Eukaryota**, organisms with cells that have a nucleus

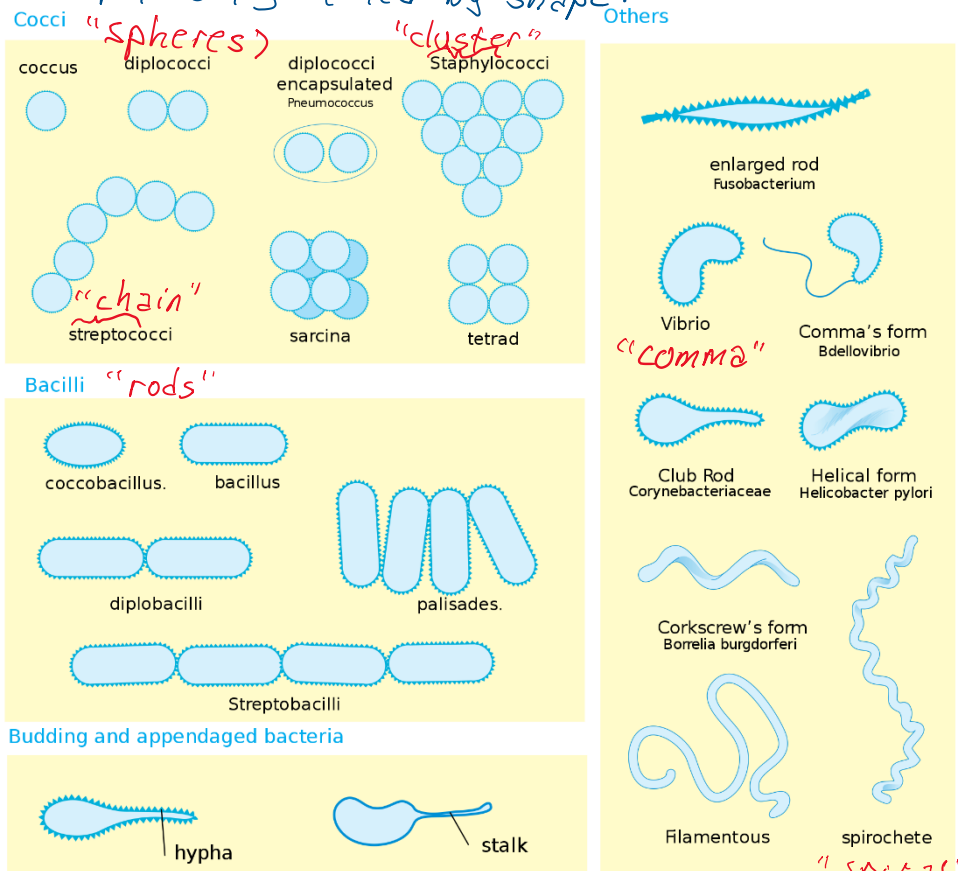


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Bacteria, like all prokaryotes are very small, visible only with high-power microscopes and **lack internal membranes, including membrane-bound organelles**, like a nucleus, mitochondria, Golgi bodies, vacuoles, vesicles, endoplasmic reticulum, but have cell structures like **ribosomes**, **DNA** (not chromosomes) in loops or strand or smaller circles called **plasmid**. Bacteria are the direct descendants of the Last Universal Common Ancestor.

Bacteria can be **planktonic** ("drifters"), found floating in fluid, but most are found in **biofilms** that coat surfaces.

Bacteria are primarily named by shape:

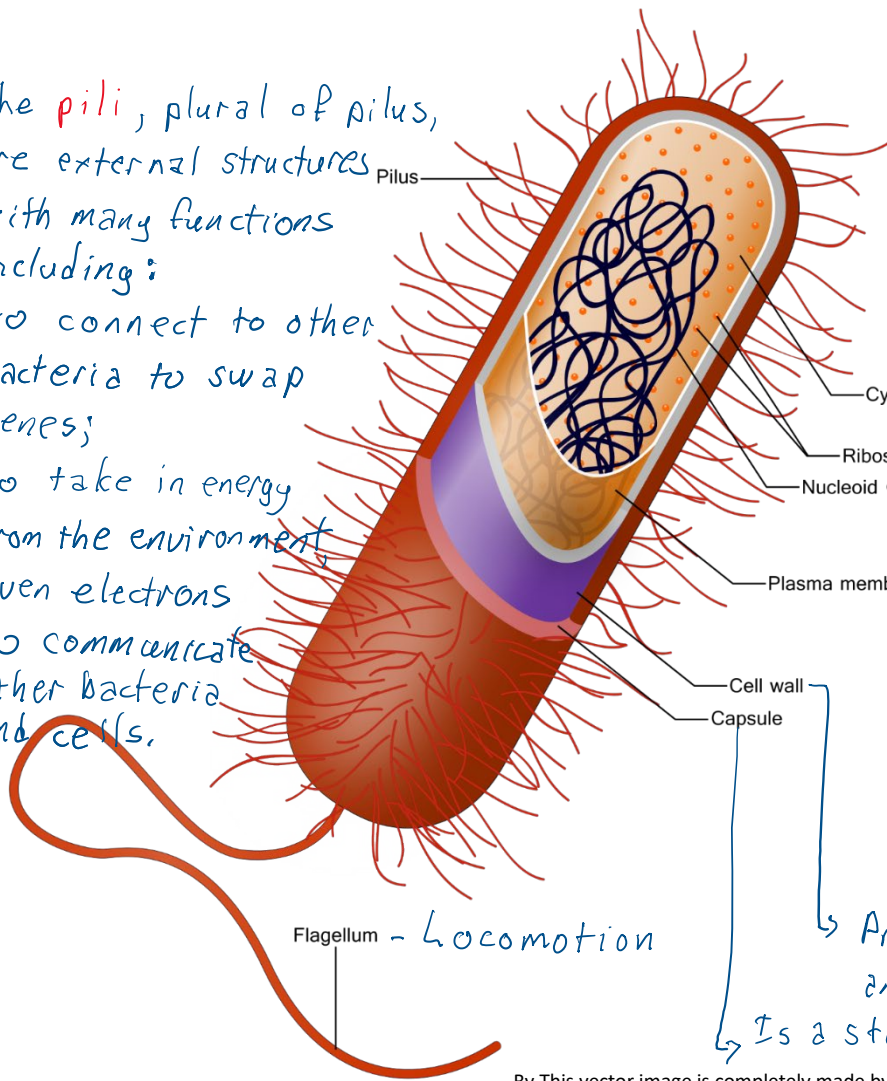


By Mariana Ruiz LadyofHats - the image i did myself using adobe ilustrator, using the information found on [1], [2], [3], [4], [5], [6], [7] and the book "medizinische mikrobiologie" from ernst wiesmann ED. Thieme (1986), Public Domain, <https://commons.wikimedia.org/w/index.php?curid=738916>

A Generic Bacillus Bacterium

The **pili**, plural of pilus, are external structures with many functions including:

- to connect to other bacteria to swap genes;
- to take in energy from the environment, even electrons
- to communicate other bacteria and cells.



→ Is the liquid environment of the cell, with all its structures, like ribosomes, DNA, nucleic acids, amino acids, salts, etc floating in it.

→ Will make proteins by translate mRNA from the DNA into amino acids.

→ Is the **semi-permeable membrane** that restricts some things entering the cell and permits others.

→ Protects by keeping the inside in and the outside.

→ Is a sticky coating found on some bacteria,

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Bacteria are the oldest living organisms. Since bacteria grow and divide, like our cells, the bacteria living today are direct descendants of the first bacteria, just like my finger nails are direct descendants of my baby finger nails.

Bacteria are found everywhere we look, in caves, in clouds, in the deepest mines, in thermal vents in glaciers and in all life.