

Bacterial morphology

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Bacteria exhibit large variety in shape, size, and colonial arrangement. It is convenient to describe most bacteria by one of three general shapes according to the configuration of the cell wall:

1. **Coccus**: If the cell is spherical or ball-shaped, Cocci can be perfect spheres, but they also can exist as oval, bean-shaped, or even pointed variants.
2. **Bacillus**: A cell that is cylindrical also named **rod**. When a rod is short and plump, it is called a **coccobacillus** ; if it is gently curved, it is a **vibrio**.
3. **Spirillum** :A bacterium having the shape of a curviform or spiral shaped cylinder.
4. **Pleomorphic bacteria** : It is common for cells of a single species, bacteria display rod, swollen, curved, filamentous, and coccoid variations such as *Corynebacterium diphtheria*.

Bacterial cells can also be categorized according to **arrangement**, or style of grouping. The main factors influencing the arrangement of a particular cell type are its pattern of division and how the cells remain attached afterward. There are several arrangement styles as following:

1. **diplococci** :They may exist as singles, in pairs .
2. **Streptococcus**: chains of coccus bacterial cells.
3. **Staphylococcus**: random or grapelike clusters of coccus cells.
4. **tetrads**: square groups of four coccus cells.
5. **Streptobacillus**: chains of bacillus or rod cells.
6. **Sarcina**: cubical packets of eight cells.
7. **Palisades** : typical of the *corynebacteria* , is formed when the cells of a chain remain partially attached by a small region at the ends.

Bacteria Size

Bacteria are generally smaller than the cells of eukaryotes, but larger than viruses. Bacteria are measured in units of length called micrometers, or microns (μm).

Cocci = $1\mu\text{m}$

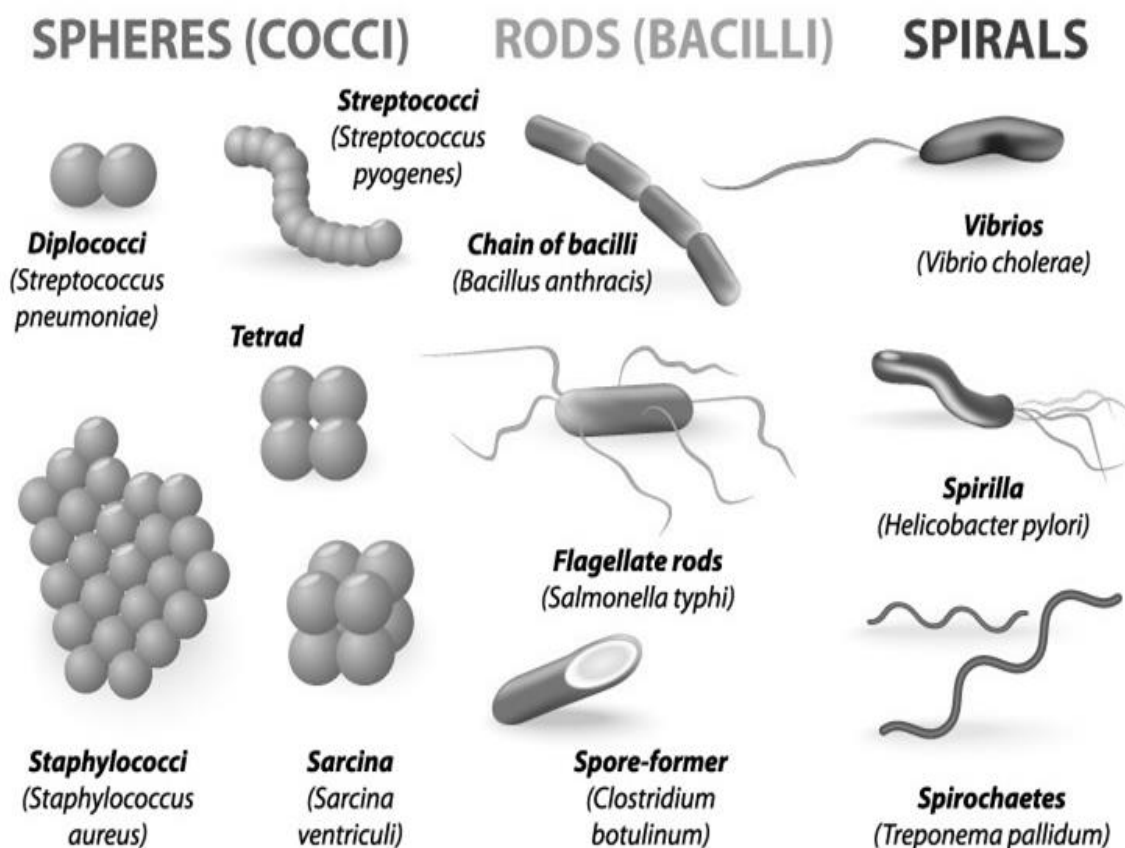
Bacilli = $0.5-1\mu\text{m}$ in width and $3\mu\text{m}$ in length.

spiral = $0.3-0.6\mu\text{m}$ in width and $1\sim 3\mu\text{m}$ in length.

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1meter = 100 cm , 1cm= 10 mm , 1millimeter (mm) =1,000 microns ( $\mu\text{m}$ ).

$1\mu\text{m} = 1000$  nanometer (nm).

## Bacterial Shapes and Arrangement



### Wet mount

Live samples of microorganisms are used to prepare wet mounts. The cells are suspended in a suitable fluid (water, broth, saline) that temporarily maintains viability and provides space and a medium for locomotion. A wet mount consists of a drop or two of the culture placed on a slide and overlaid with a cover glass. Although this preparation is quick and easy to make, it has certain disadvantages. The cover glass can damage larger cells, and the slide is very susceptible to drying and can contaminate the handler's fingers.

