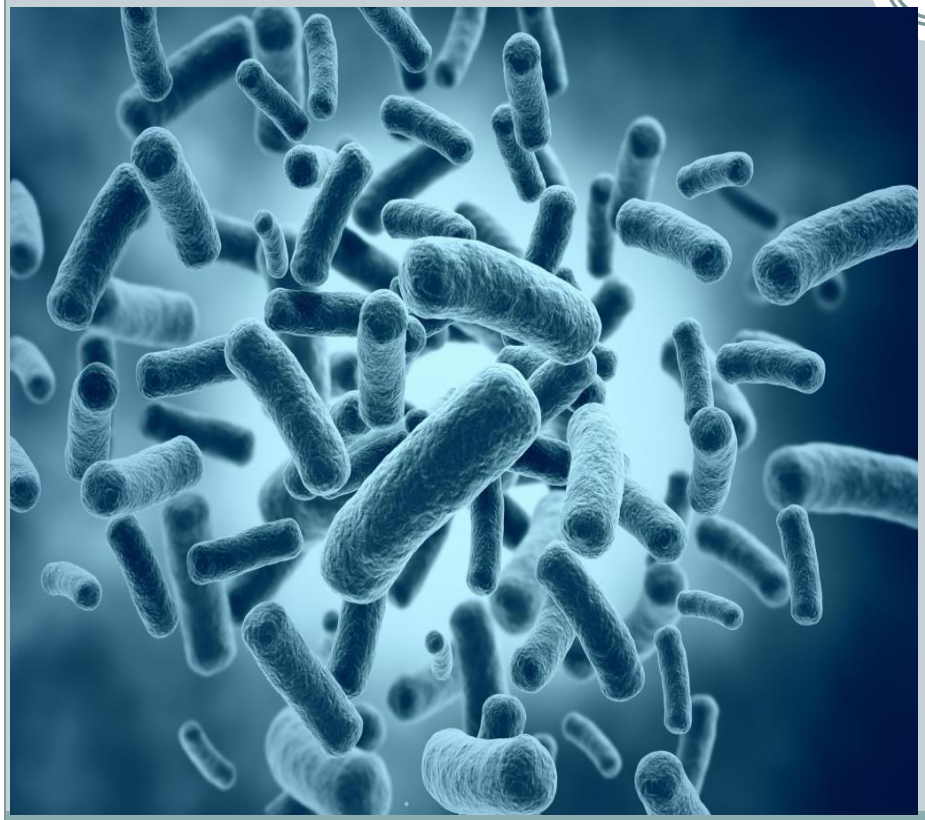
LIBYAN INTERNATIONAL MEDICAL UNIVERSITY

FACULTY OF PHARMACY



Bacteria

Presented by 1st year PharmD students

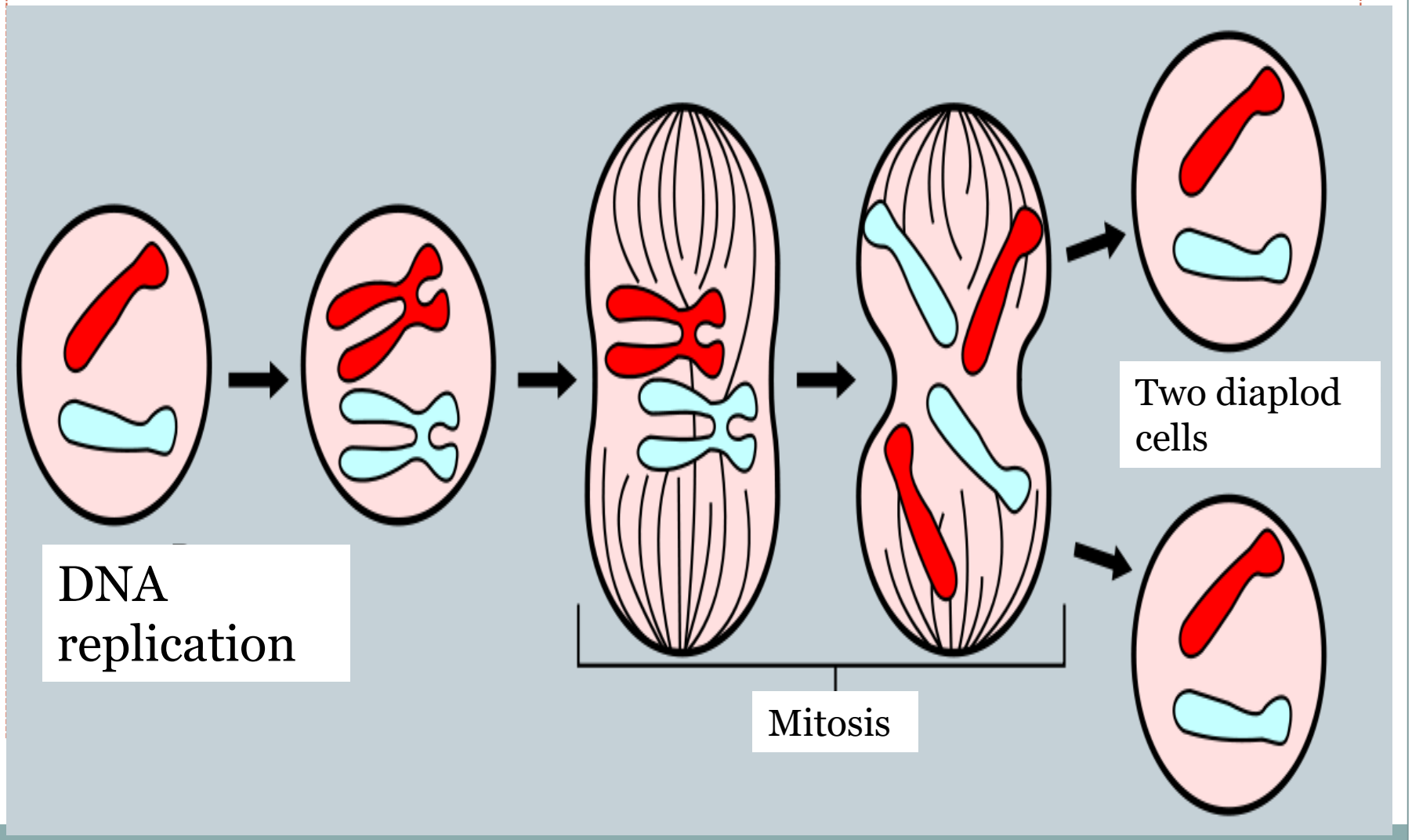
Aims

- Differentiate between Prokaryotic and Eukaryotic Cells
- Describe Structure of bacteria
- Describe Shape of the bacteria
- Compare Cell Walls of Gram-Positive and Gram-Negative Bacteria

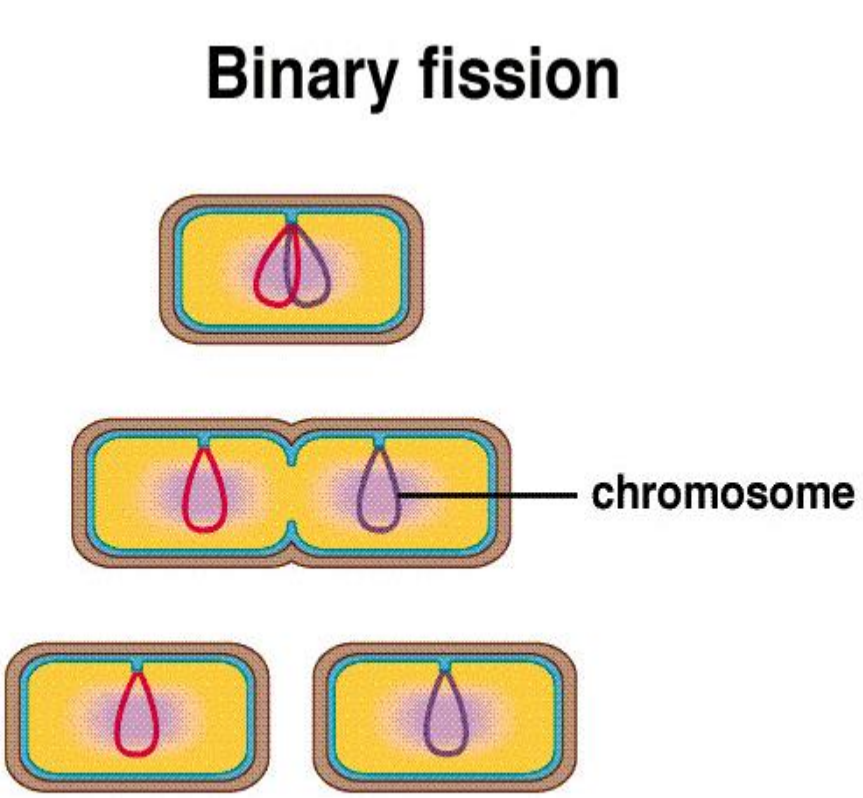
Differences between Prokaryotic and Eukaryotic Cells

Prokaryotic Cells	Eukaryotic cells
small cells (< 5 mm)	larger cells (> 10 mm)
always unicellular	often multicellular
no nucleus or any membrane-bound organelles	always have nucleus and other membrane-bound organelles
DNA is circular, without proteins	DNA is linear and associated with proteins to form chromatin
ribosomes are small (70S)	ribosomes are large (80S)
no cytoskeleton	always has a cytoskeleton
cell division is by binary fission	cell division is by mitosis or meiosis
reproduction is always asexual	reproduction is asexual or sexual

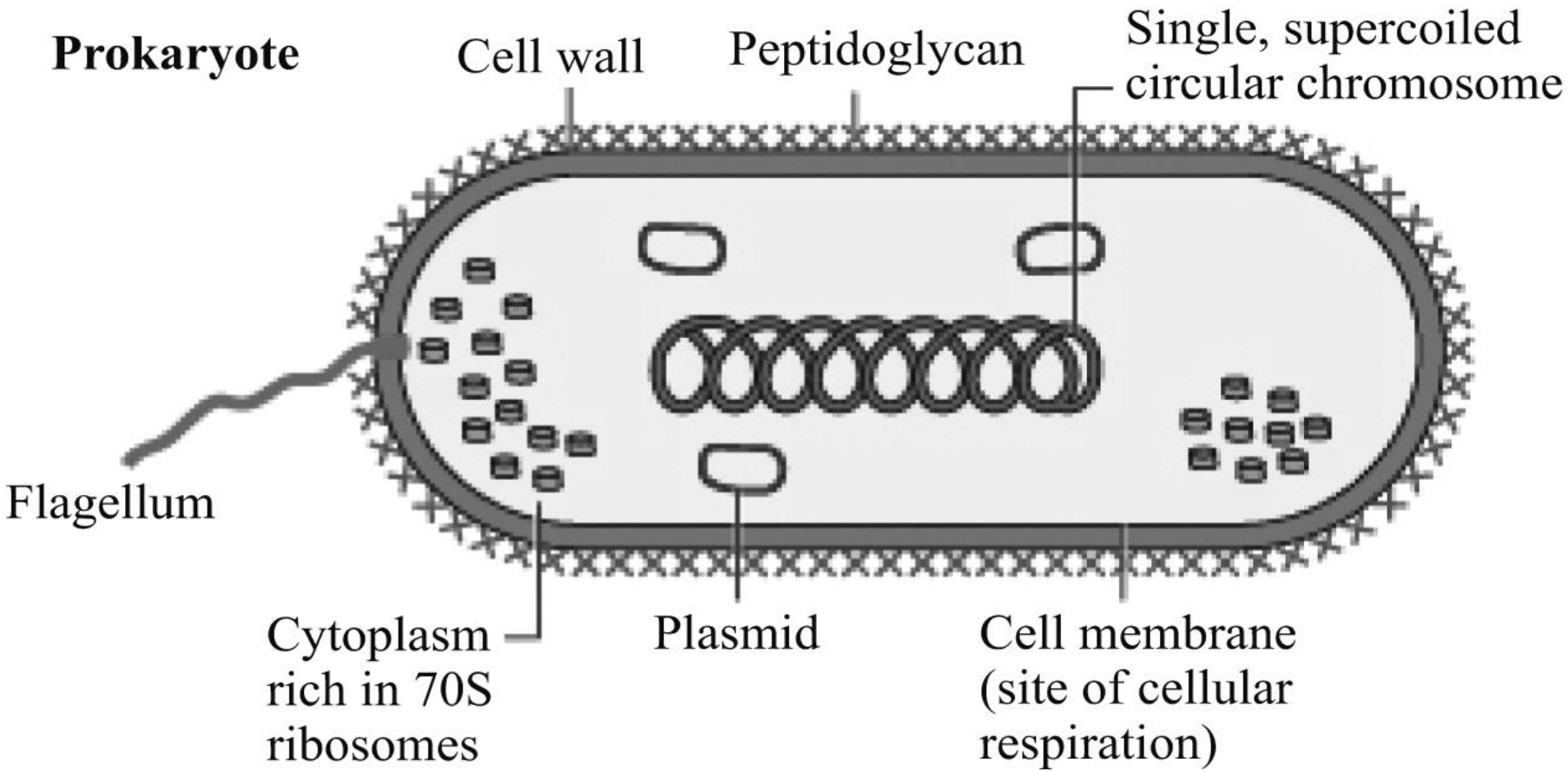
Cell division in Eukaryotes



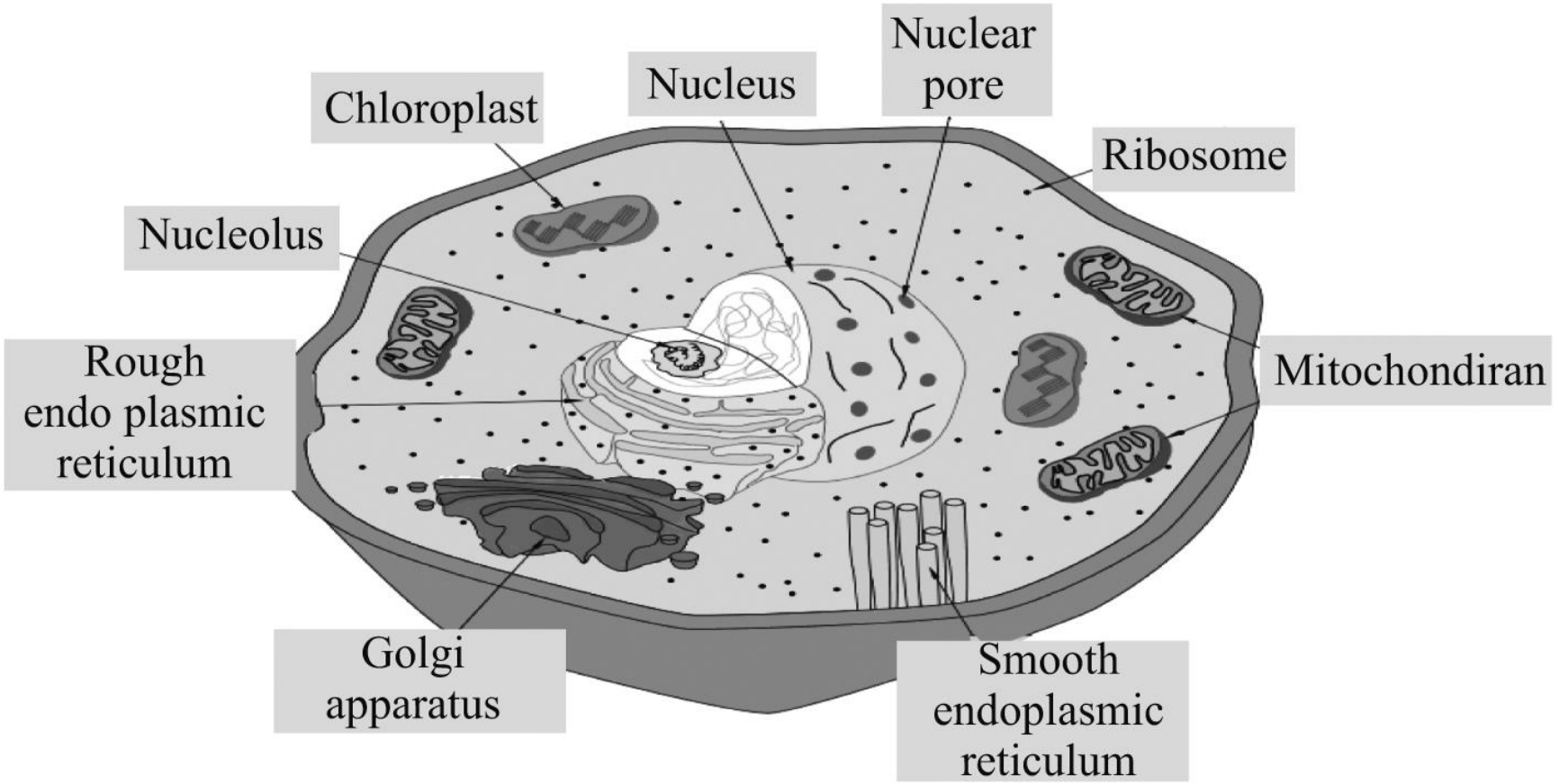
Cell division in Prokaryotes



Prokaryotic cell



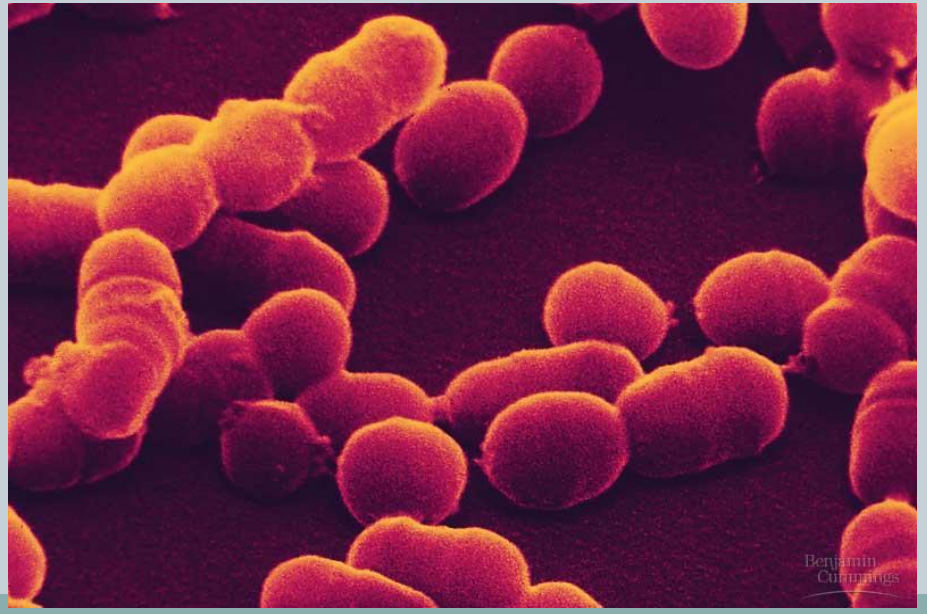
Eukaryotic Cell



Shape of the bacteria

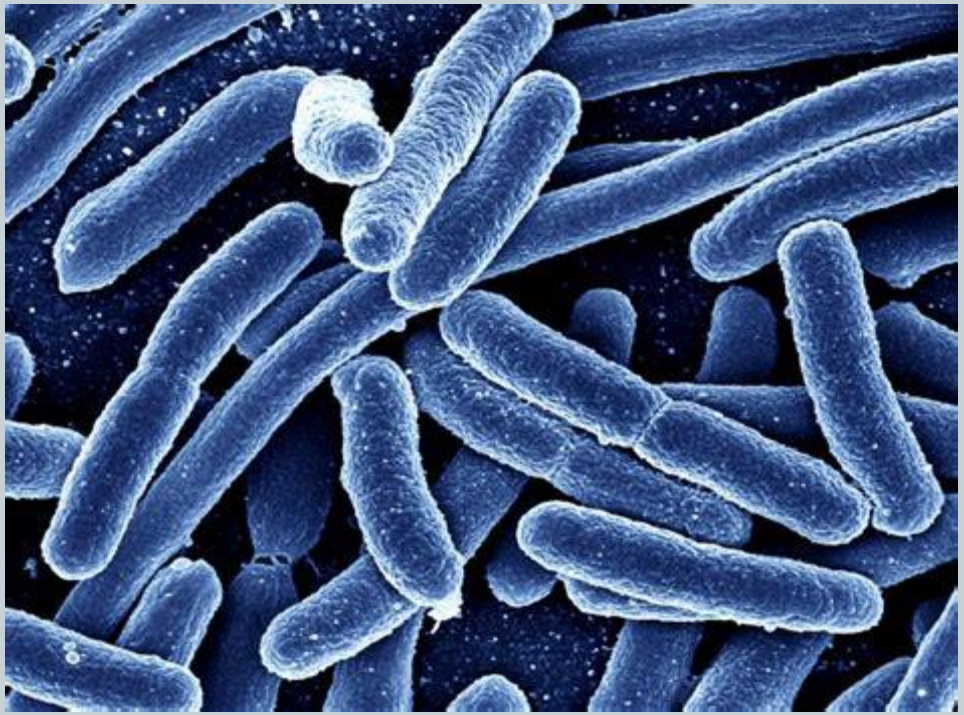
- Depending on their shape, bacteria are classified into several varieties:

1-Cocci (from kokkos meaning berry) are spherical or oval cells. Some forms of pneumonia and sepsis are caused by this bacteria



Shape of the bacteria

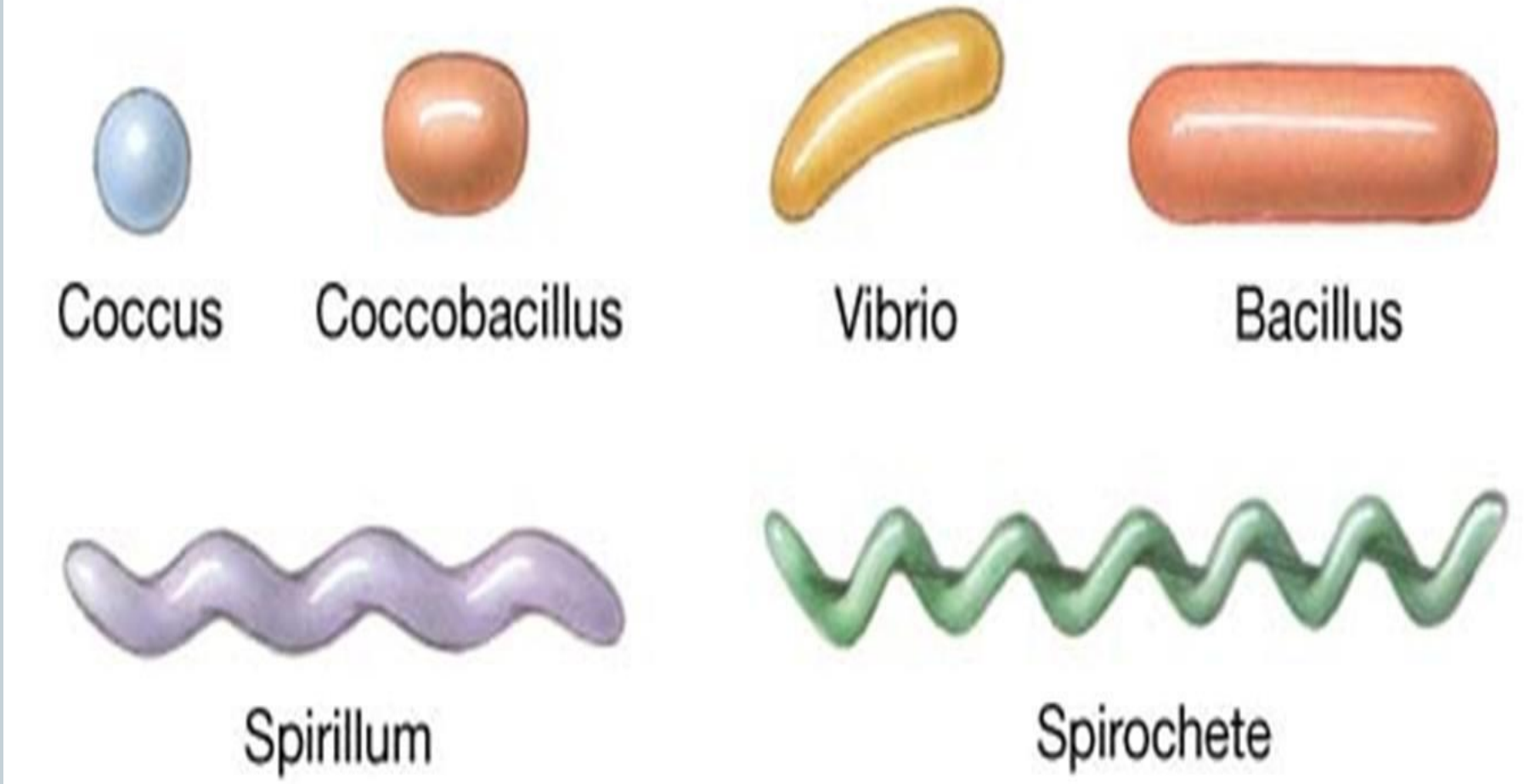
2. Bacilli (from baculus meaning rod) are rod shaped cells .Cause many serious diseases in animals



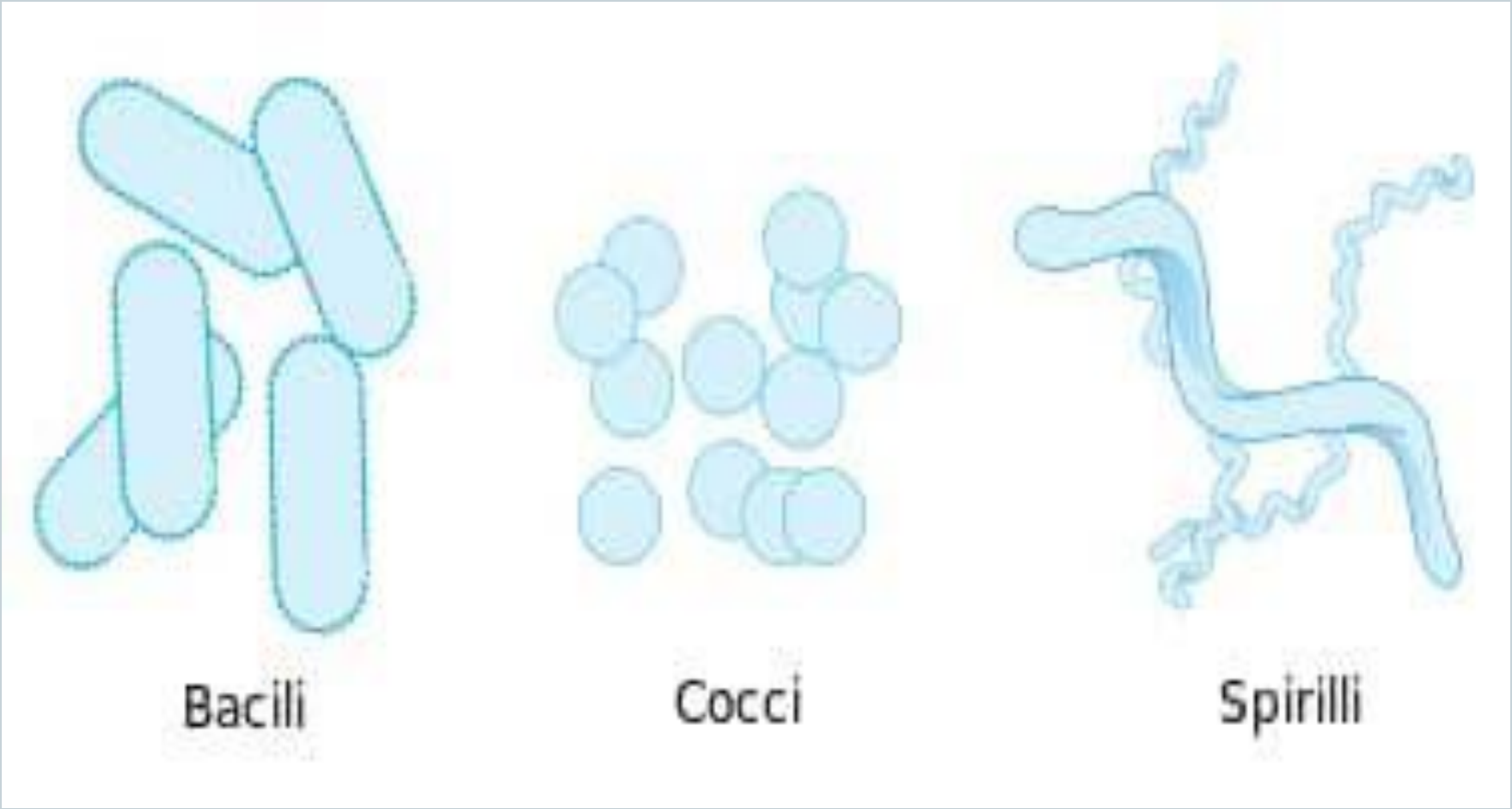
Shape of the bacteria

3-Spirila Shaped like spirals they are very motile. Require moist atmosphere to live, live very well in the reproductive tracts.

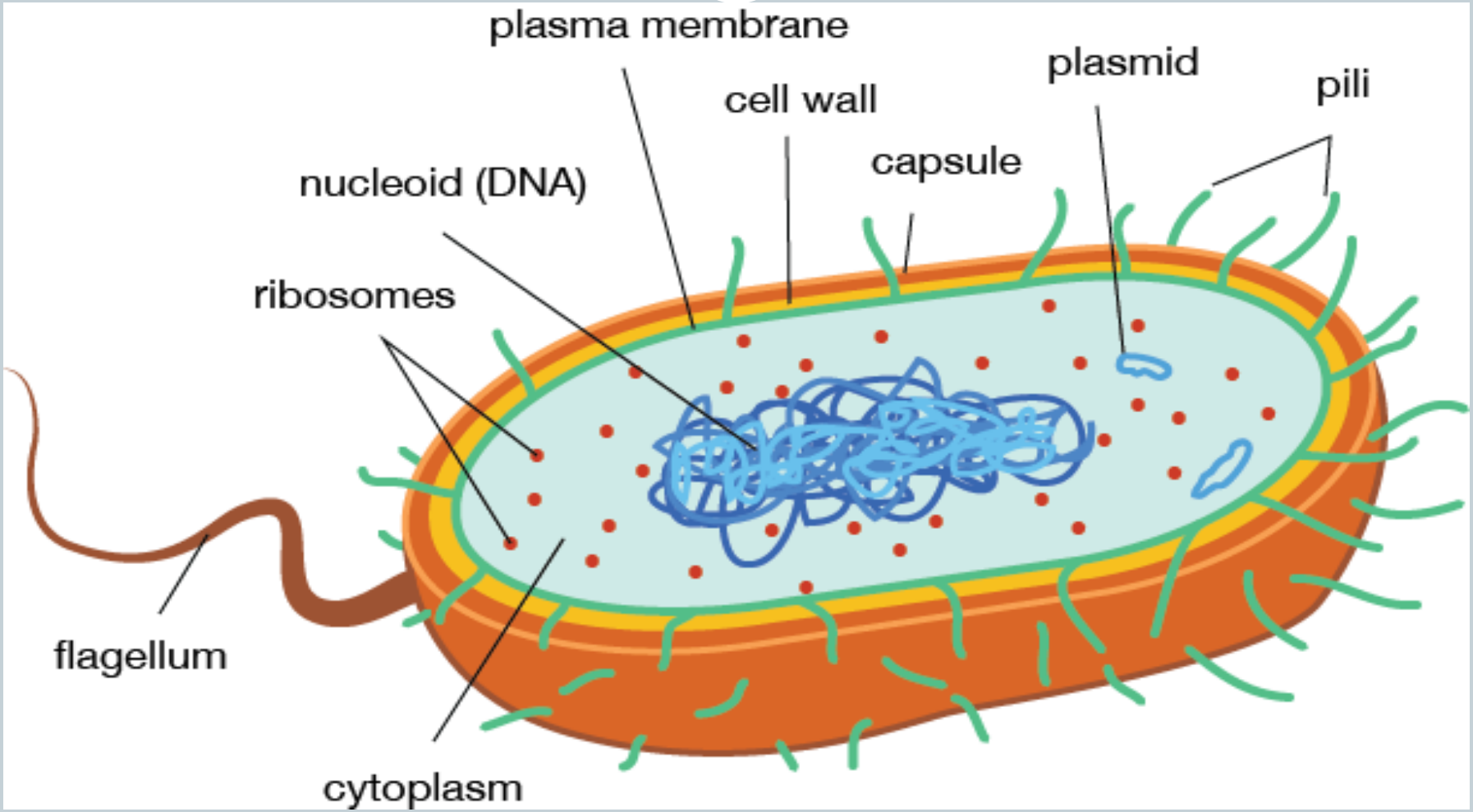
Shape of the bacteria



Shape of the bacteria

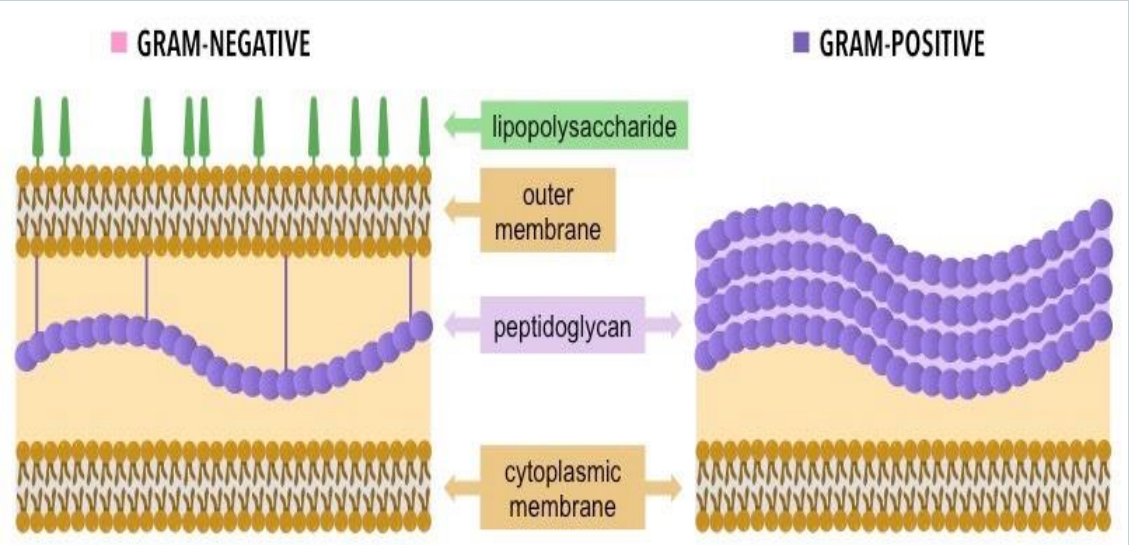


The structure of the bacteria



The structure of the bacteria

1-Cell wall



Capsules

Capsules are mainly present in pathogenic bacteria. The main function of a capsule is to protect the bacterium from the immune system of the host (the organism in which the bacteria can grow and live).

Comparison of Cell Walls of Gram-Positive and Gram-Negative Bacteria

Component	Gram-Positive Cells	Gram-Negative Cells
Peptidoglycan	Thicker; multilayer	Thinner; single layer
Teichoic acids	Yes	No
Lipopolysaccharide (endotoxin)	No	Yes

The structure of the bacteria

2-Flagella

Flagella are responsible for the motility of the bacteria. They are thin structures (3 to 12 µm).

3-Ribosomes

The ribosomes are small particles found in the cytoplasm. they are responsible for the synthesis of proteins.

The structure of the bacteria

4-Nuclear Body (Nucleoid)

Apart from DNA and RNA, bacteria also contain plasmids**. Plasmids** are the circular DNA fragments present outside the nucleus. In the bacterial nucleus, densely aggregated DNA molecules are present, whereas in the cytoplasm RNA molecules are aggregated.

THANK YOU

Reference :-

- https://scienceaid.net/Bacteria
- http://www.nios.ac.in/media/documents/dmlt/Microbiology/Lesson-01.pdf