

AN OVERVIEW OF CELLS

How did we discover cells and where in the world did the name “cell” come from????

Early 17th century

Galileo

- ☺ looked at an insect through 2 glass lenses
- ☺ noticed geometric patterns of its eyes
- ☺ First biological observation made through a microscope.

Mid Century

Robert Hooke

- ☺ looked at sliced cork – observed tiny compartments
- ☺ gave them the Latin name *cellulae*, meaning small rooms
- ☺ Hence the origin of the biological term “cell”.

Middle of the 19th Century

Microscopic Analysis Gave Us the Cell Theory

3 generalizations:

1. All organisms consist of one or more cells
2. The cell is the smallest unit that still retains the characteristics or properties of life
3. Each new cell arises from a preexisting cell

Structural Organization of Cells

- ❖ differ enormously in size, shape, activities
- ❖ yet all cells are alike in 3 ways

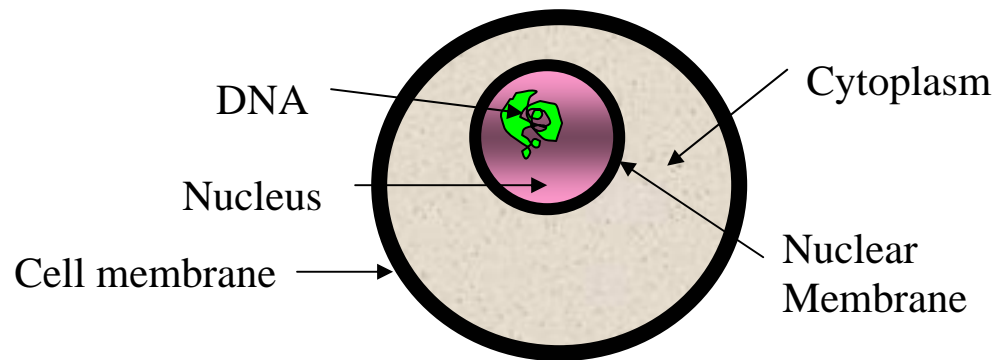
1. All cells have a plasma membrane
 - ➔ Thin, outermost membrane
 - ➔ Maintains the cell as a distinct entity
 - ➔ Allows events *inside* the cell to proceed regardless of what is going on *outside* the cell
 - ➔ Is permeable – allows substances to move in and out of the cell
2. All cells have a nucleus or nucleoid
 - ➔ DNA is in a membranous sac in the cell interior (nucleus) OR...
 - ➔ There is simply an interior region where the DNA is located (nucleoid)

3. All cells have a cytoplasm
 - ➔ Everything between the plasma membrane and the region of DNA
 - ➔ Consists of semi fluid matrix and other components

Kinds of Cells

1. Eukaryotic cells

- ☺ Cytoplasm contains organelles: these are tiny sacs and other compartments bounded by membranes
- ☺ Have a nucleus –the defining feature of eukaryotic cells – the nucleus is encased in its own membrane

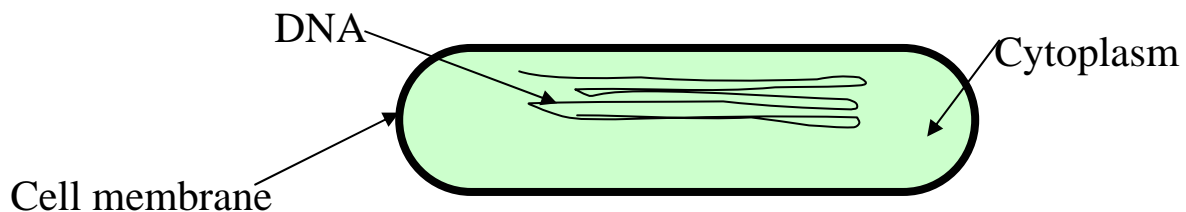


2. Prokaryotic cells

- ☺ Do not have a nucleus – have a nucleoid instead

So what's the difference between a nucleus and a nucleoid????

There is no membrane that surrounds the nucleoid. It is just inside the cytoplasm.



- ☺ The only prokaryotic cells are bacteria!

So all other organisms . . .

Consist of ONE to TRILLIONS of
EUKARYOTIC cells!!

**Let's take a closer look at the
CELL MEMBRANE**

- **There are two layers or sheets of lipid molecules**
- **We call this the *lipid bilayer***
- **This membrane gives structure to the cell**
- **It serves as a barrier to water soluble substances**