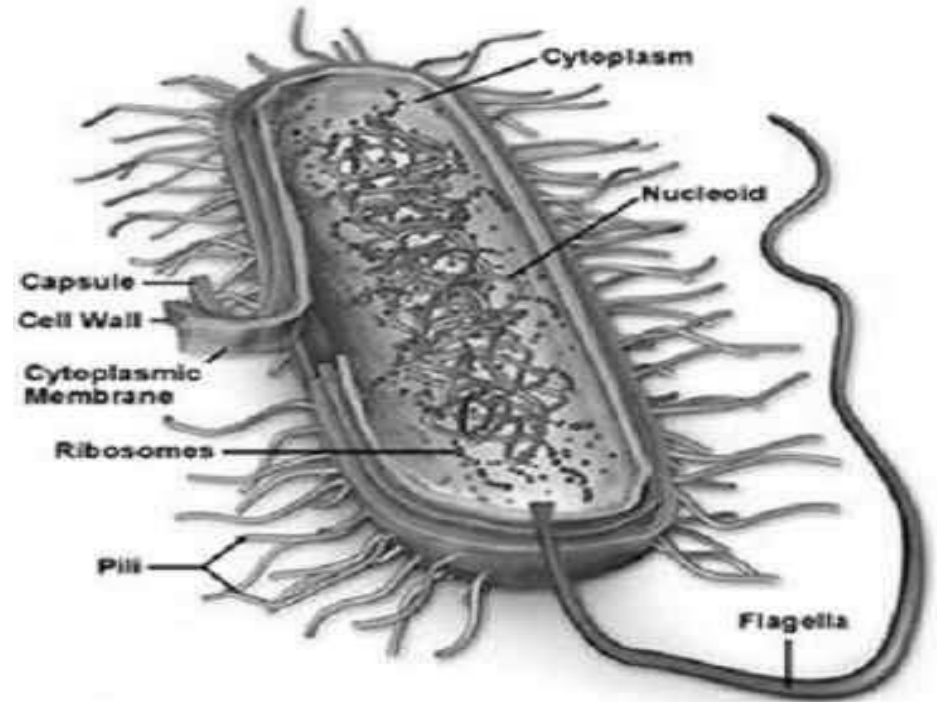
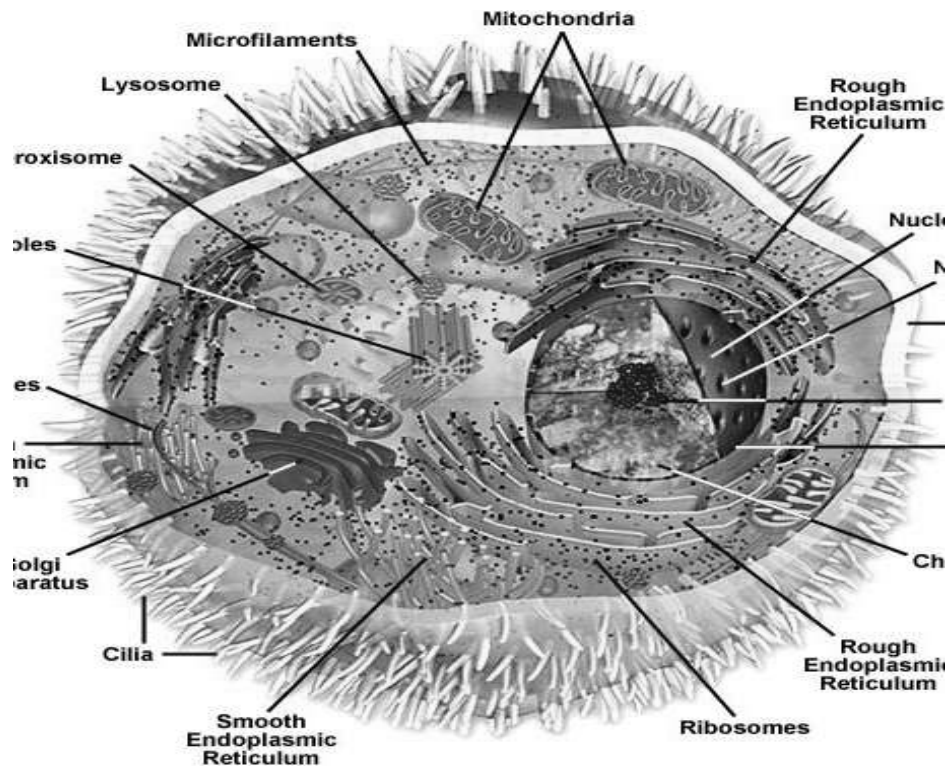
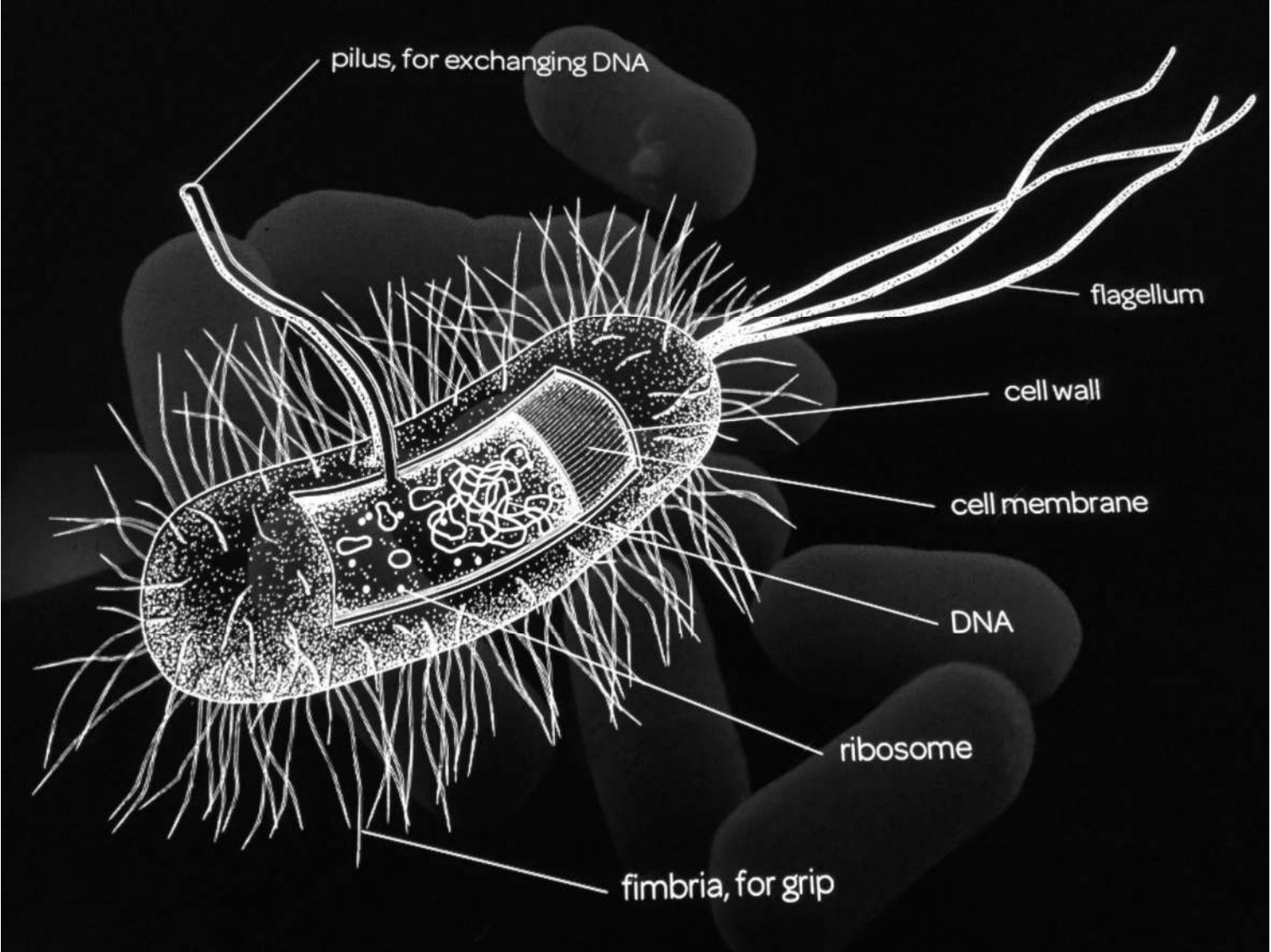
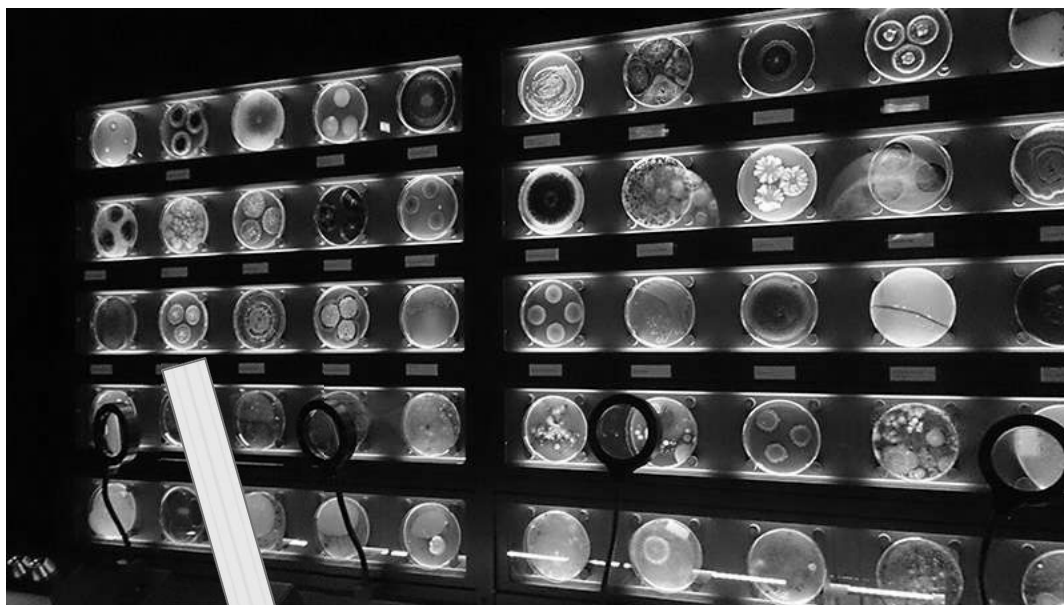


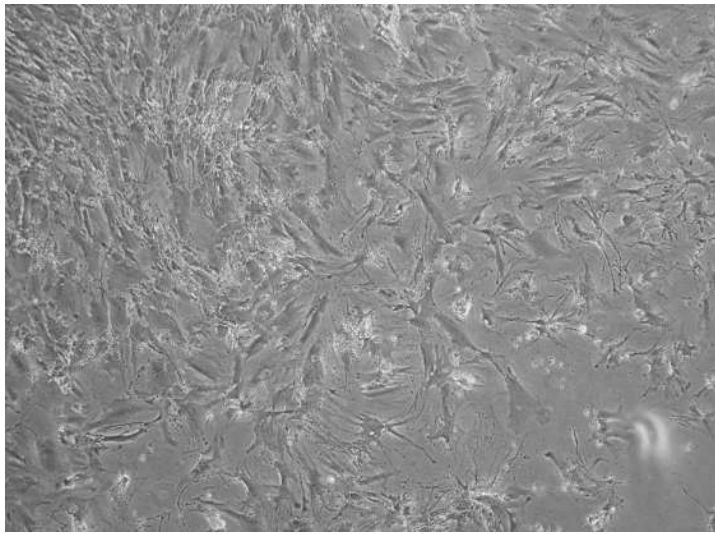
CHM 425  
CYTOLOGY FOR CHEMIST  
PART I

# eukaryotes vs prokaryotes

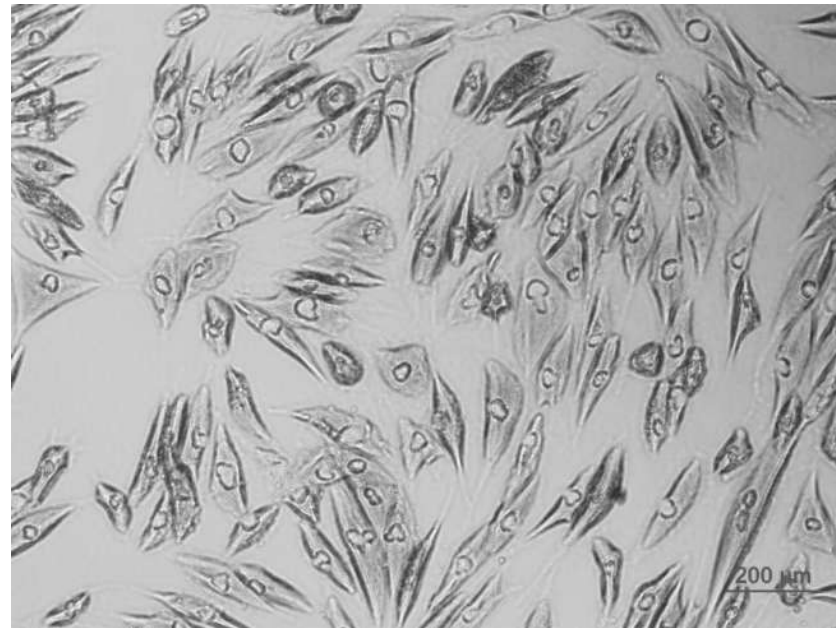








What are these cells ?

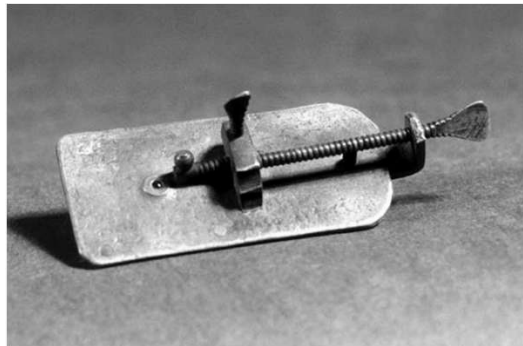


# All living things are composed of cells

- Prokaryote – a cell without organelles
- Eukaryote – cell with defined organelles
- Unicellular - composed of one cell
- Multicellular - composed of more than one cell.

# Founding Fathers of Cytology

- Leeuwenhoek- (1600's) made the first simple microscope. Magnifying glass. First to see bacteria, protozoa.



**Antonie van Leeuwenhoek  
(1632-1723)**

Tab 2

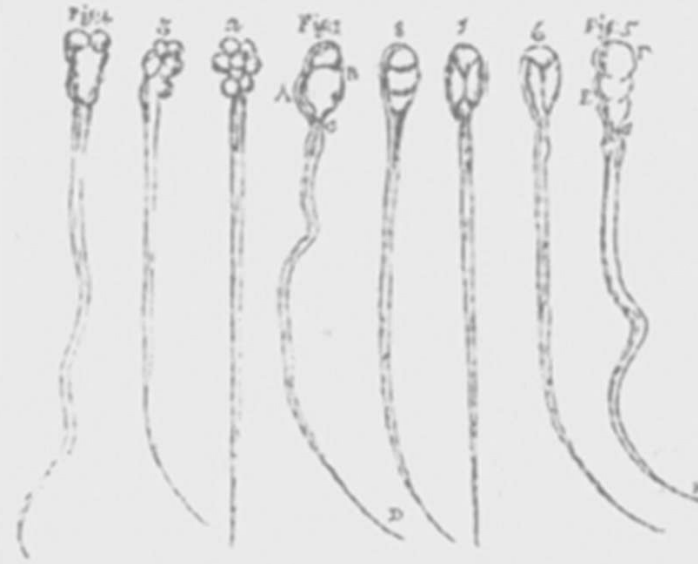
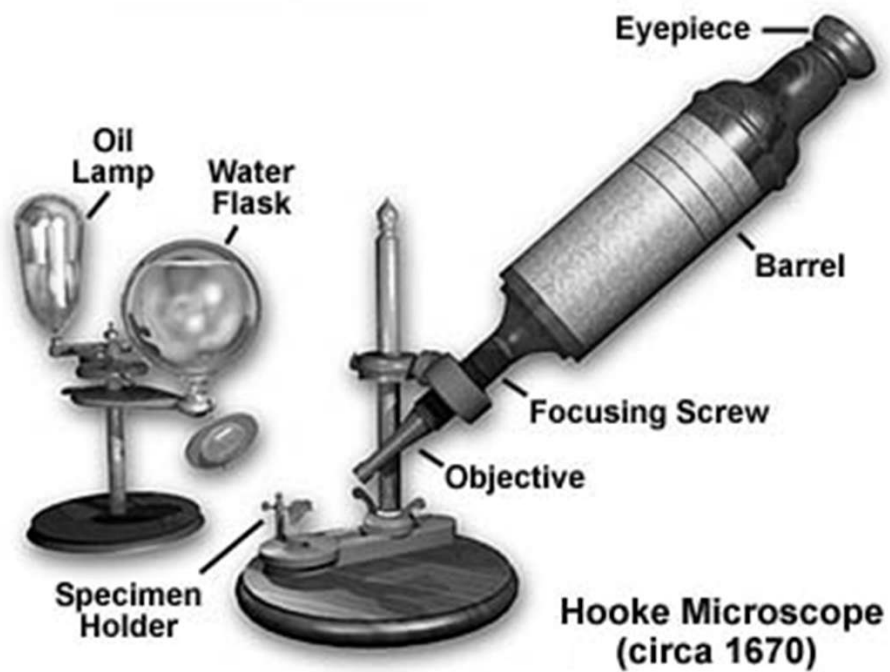


FIGURE 1.7 Leeuwenhoek's drawings of spermic animalcules. From Antoni Leeuwenhoek, "The observations of Mr. Antoni Leeuwenhoek, on animalcules cr-  
winked in the water." *Phil. Trans. Roy. Soc.*, 1679.

Spermatozoa by Anton Van Leeuwenhoek published in  
Philosophical Transactions, 1678.

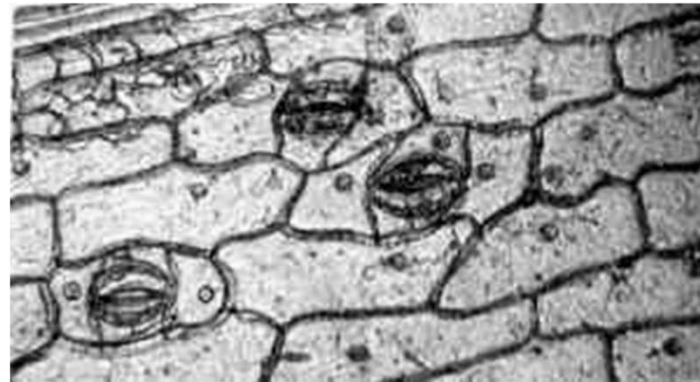
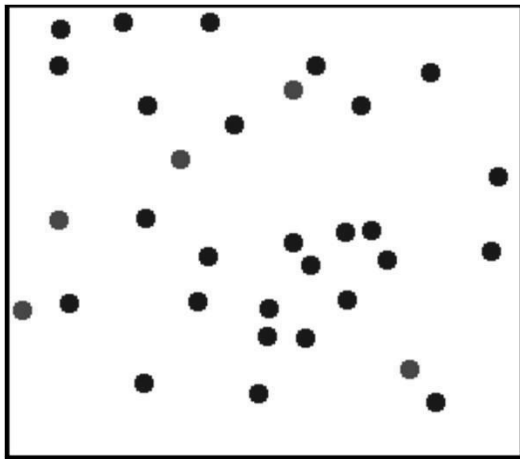


- Hooke- 1655 made compound microscope with two lenses. First to see “cell” in slices of cork.



Robert Hooke  
(1635-1703)

Brown- 1831 concluded that all plant cells contain a nucleus.



-- Robert Brown --



- Schleiden 1838 - German botanist who concluded that “all plants are made of cells”.
- Schwann 1839 - German zoologist who concluded that “all animals are made of cells”.
- Virchow 1855 concluded that “all cells arise from preexisting cells”.

# THE CELL THEORY

- 1. All living things are made of cells. (basic structure).

(Büyün canlılar hücrelerden meydana gelir)

- 2. All cells carry out life functions. (basic function)

(Hücrelerin canlılarda belirli bir işlevi vardır)

- 3. All cells come from pre-existing cells.

(Tüm hücreler kendinden önceki hücrelerden köken alır)

# EXCEPTIONS to the CELL THEORY

1. Where did the first cell come from?
2. VIRUSES? Can reproduce inside a host but outside it shows no sign of life.
3. Mitochondria and chloroplasts contain genetic material and can reproduce.

# How many cells are in the Human Body

- Approximately 65 trillion cells make up the adult human body



# Levels of organization

- Cell- basic unit of life.
- Tissue- group of cells performing the same function. Lung tissue
- Organs- group of tissues performing the same function. Lung, heart
- Organ system- group of organs that perform the same function.ex. Respiratory system
- Organism- group of organ systems working together.



