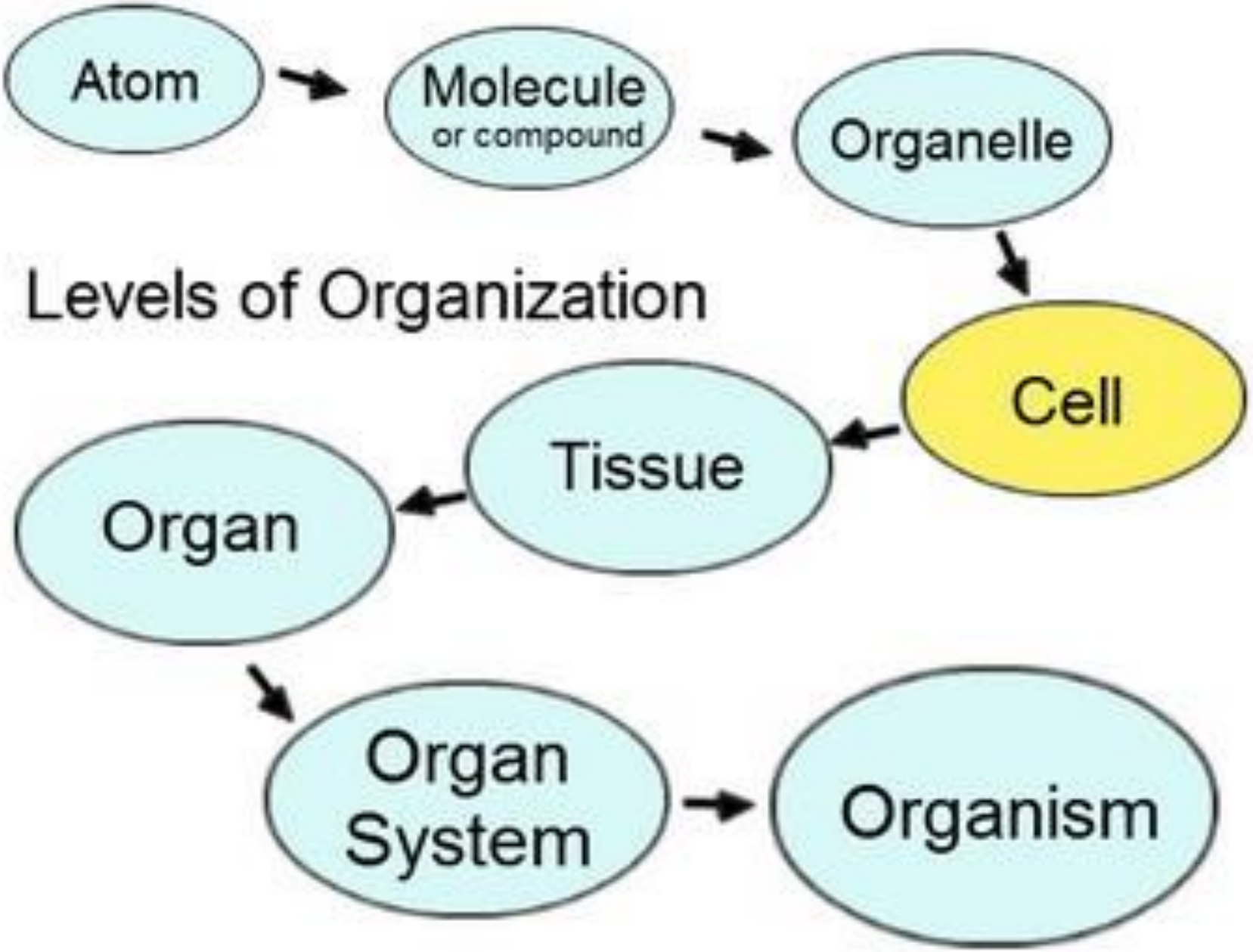
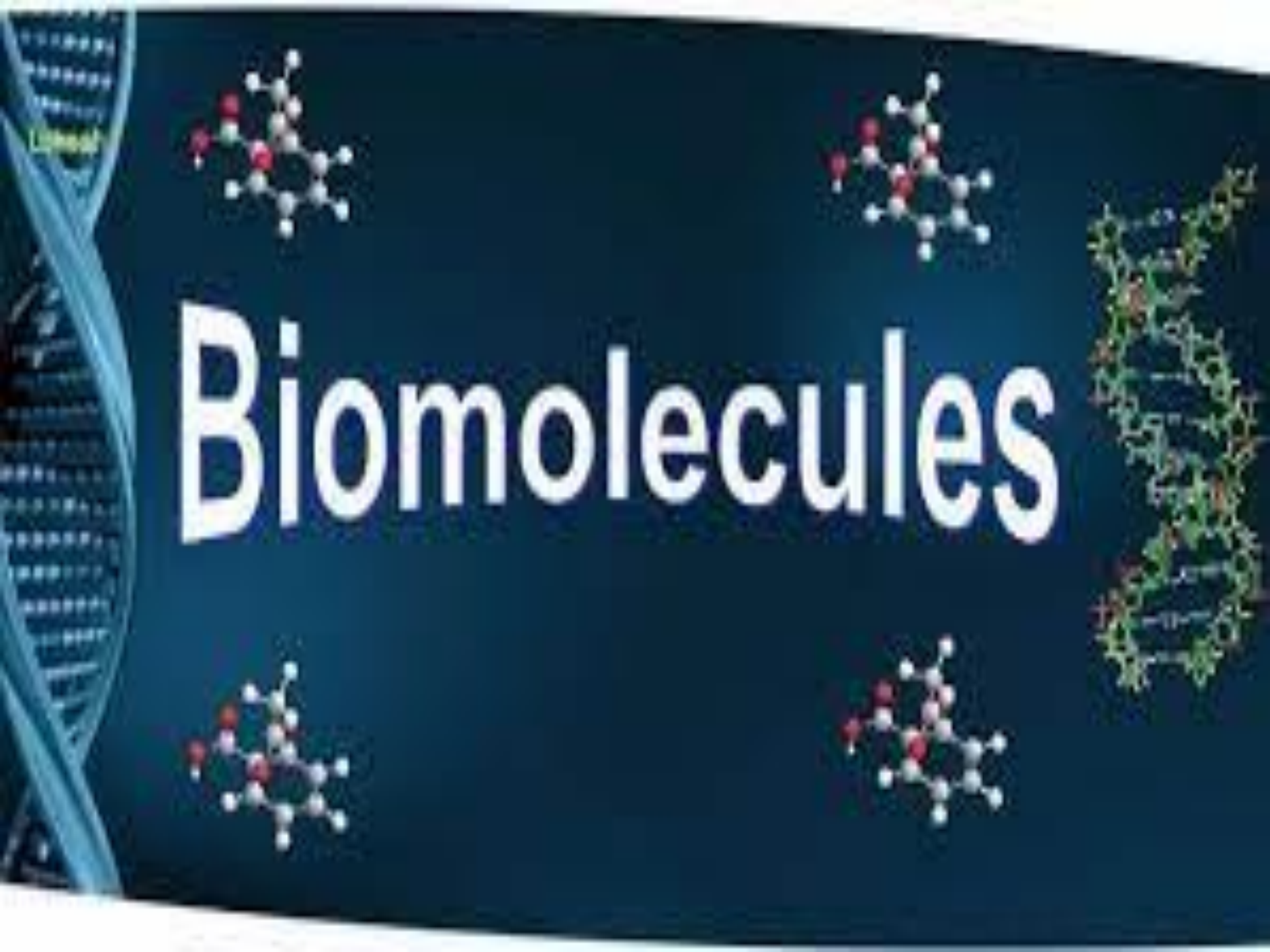
سلول شناسی، جلسه اول:

۱- سازمان یافتگی زیستی

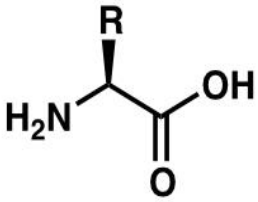
۲- زیست مولکول ها

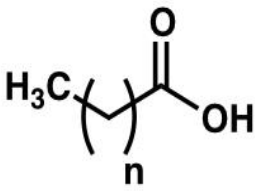

Atom
Molecule
or compound
Organelle
Levels of Organization
Cell
Tissue
Organ
Organ
System
Organism

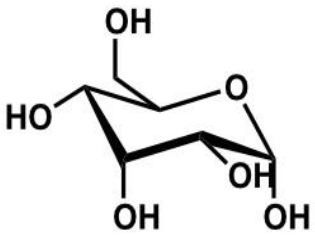

Biomolecules

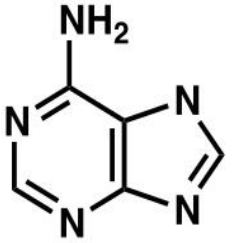
Classes of Biomolecules

- Proteins
  (amino acids)
- Nucleic Acids – DNA & RNA
  (nucleotides)
- Carbohydrates
  (monosaccharides)
- Lipids
  (fatty acids)
- Vitamins and Cofactors
- Metabolites









amino acids

fatty acids

carbohydrates

nucleobases

glycerol

mono-saccharides

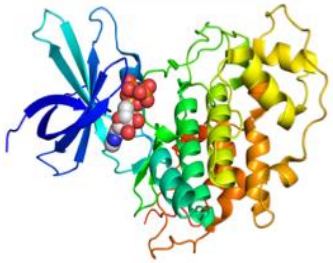
nucleotides

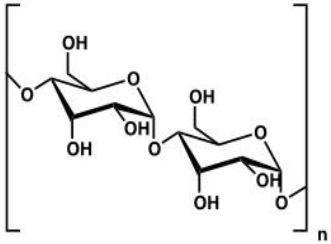
proteins

phospholipids

poly-saccharides

DNA / RNA

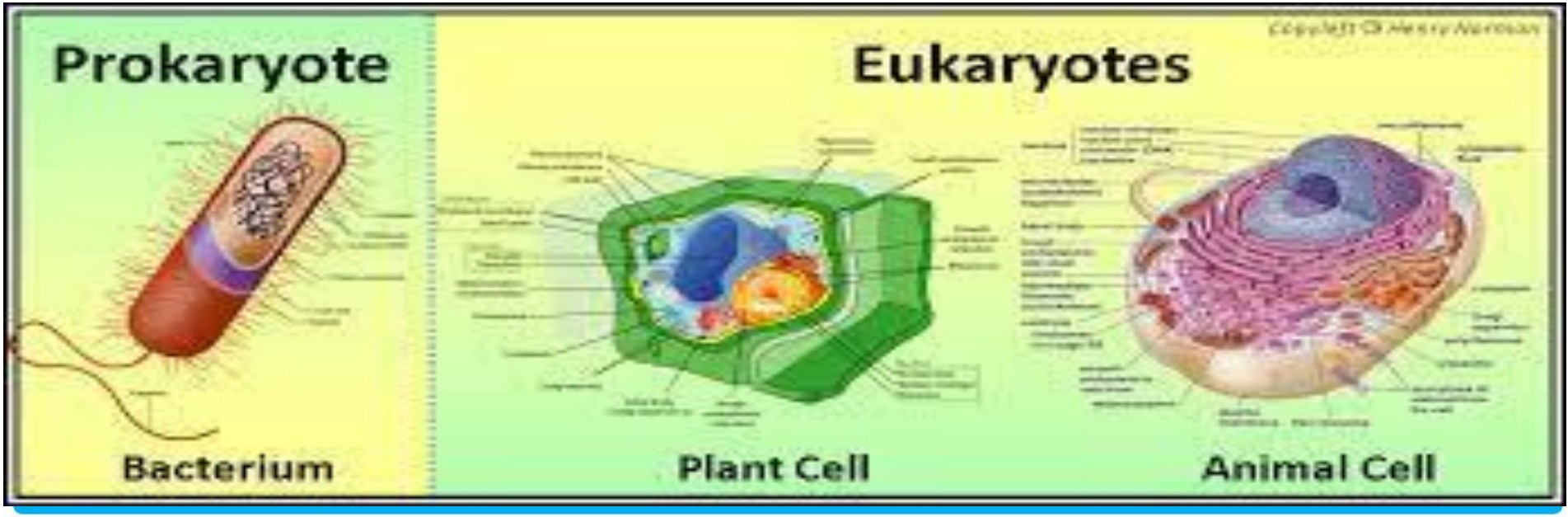




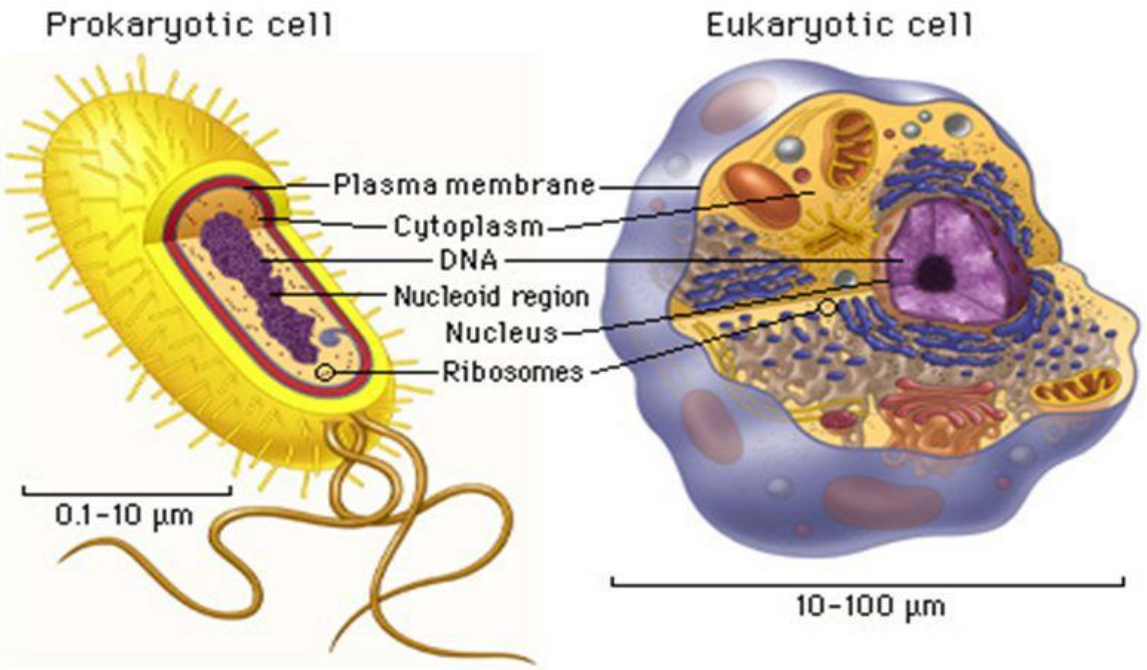
سلول شناسی، جلسه دوم:

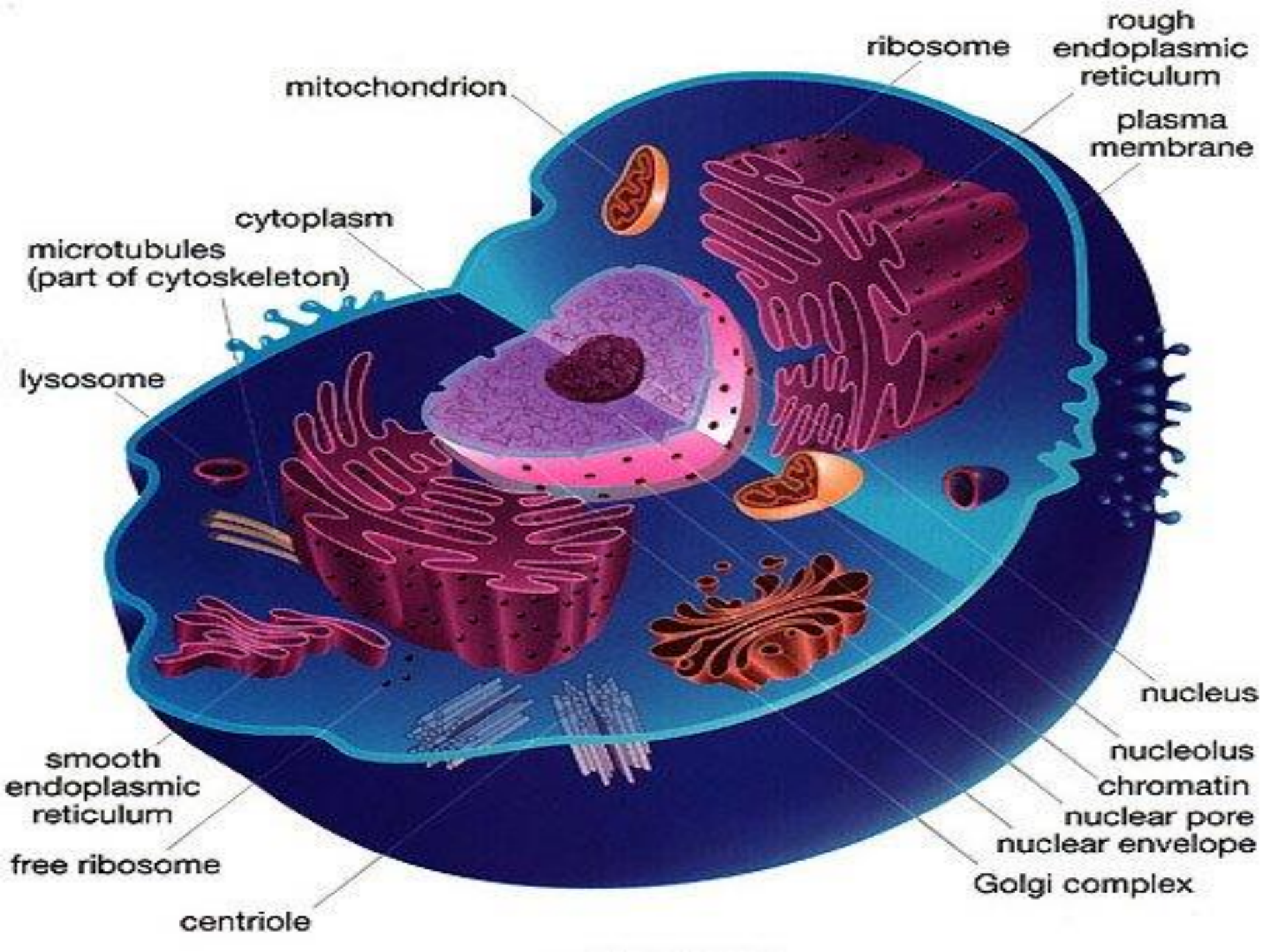
۱- نگرشی برسلول

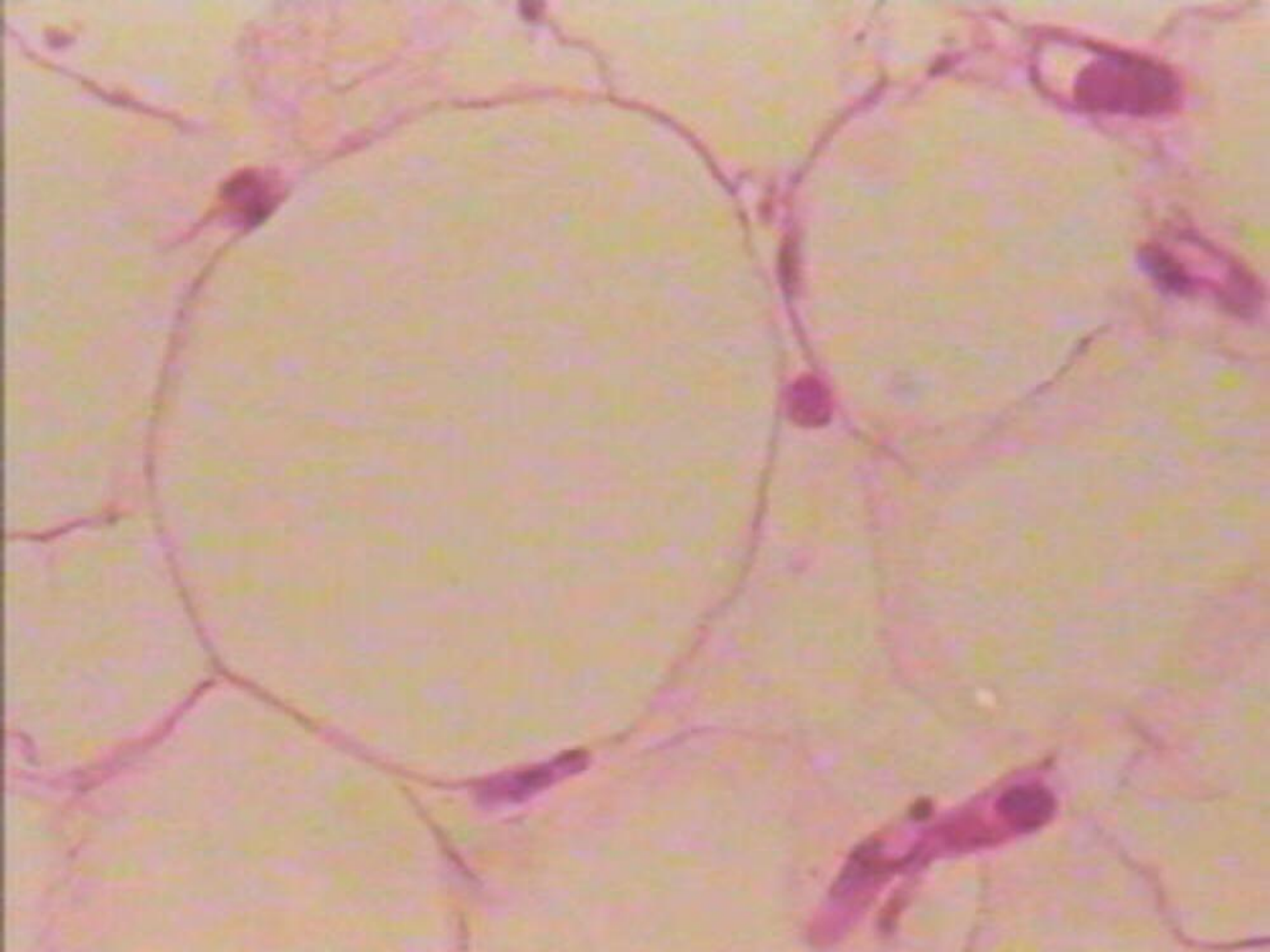
۲- سلول های پروکاریوتیک و یوکاریوتیک

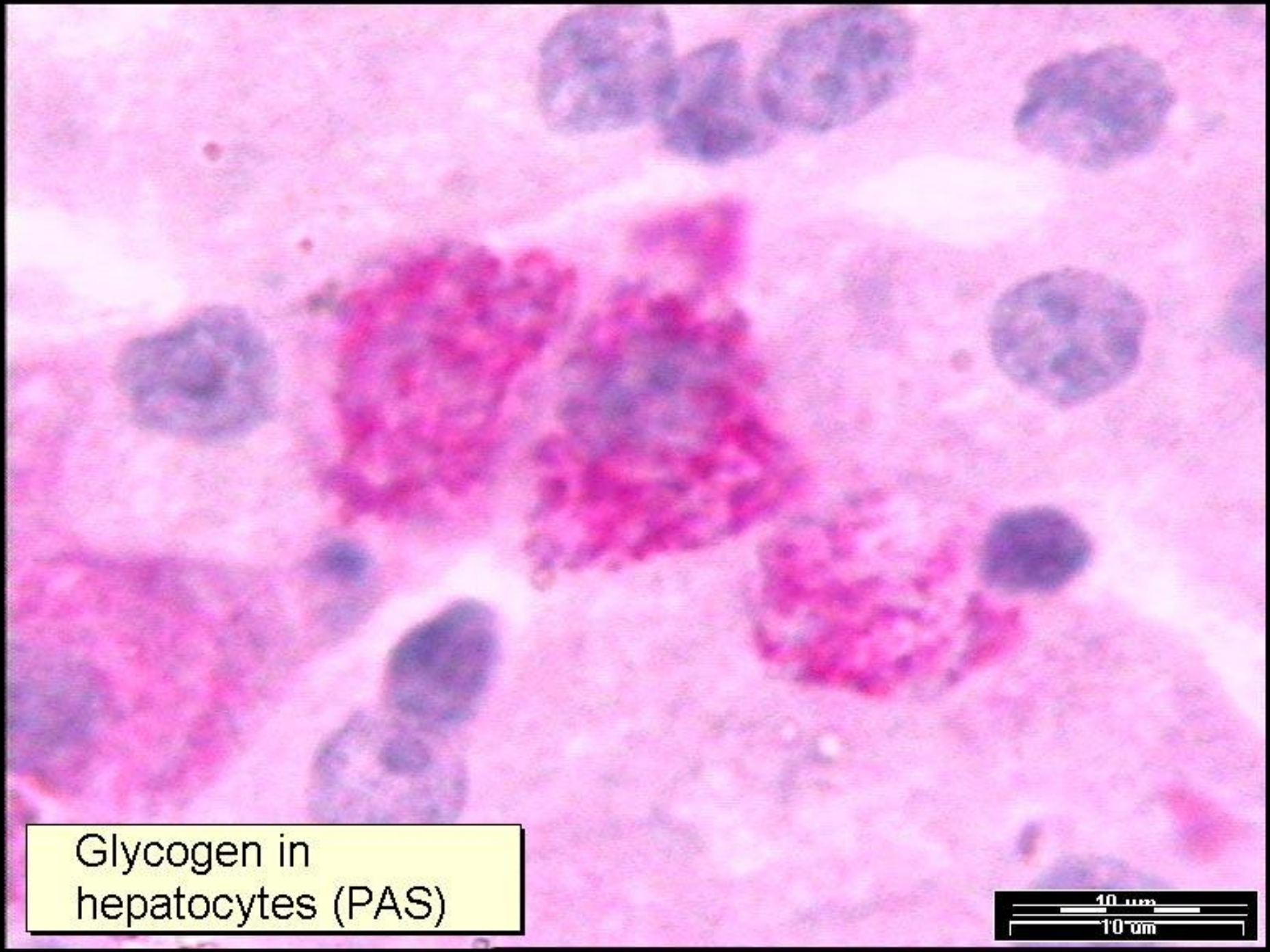


- **Prokaryotic Cells:**
  - **Cells without a nucleus.**
  - **Example = Bacteria**
- **Eukaryotic Cells**
  - **Cells with a nucleus.**
  - **Example = Plant + Animal Cells**




ribosome
rough endoplasmic reticulum
mitochondrion
plasma membrane
cytoplasm
microtubules (part of cytoskeleton)
lysosome
nucleus
nucleolus
chromatin
nuclear pore
nuclear envelope
Golgi complex
smooth endoplasmic reticulum
free ribosome
centriole



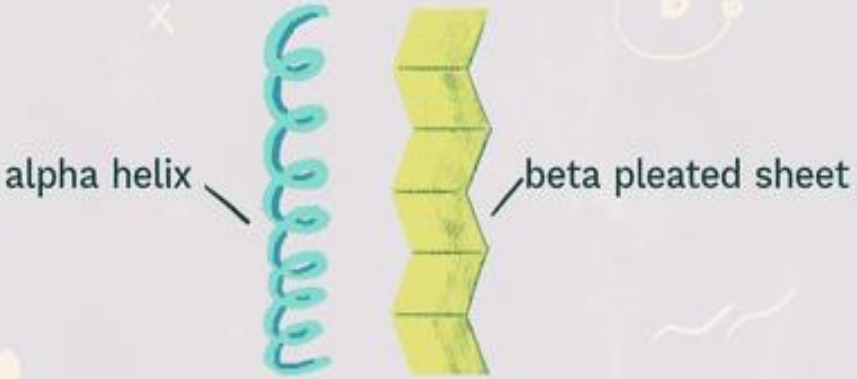

Glycogen in
hepatocytes (PAS)
10 µm
10 µm

سلول شناسی، جلسه سوم:

عملکردهای تخصصی پروتئین های سلولی

Types of Protein Structures

Primary Structure



Secondary Structure

Tertiary Structure

Quaternary Structure

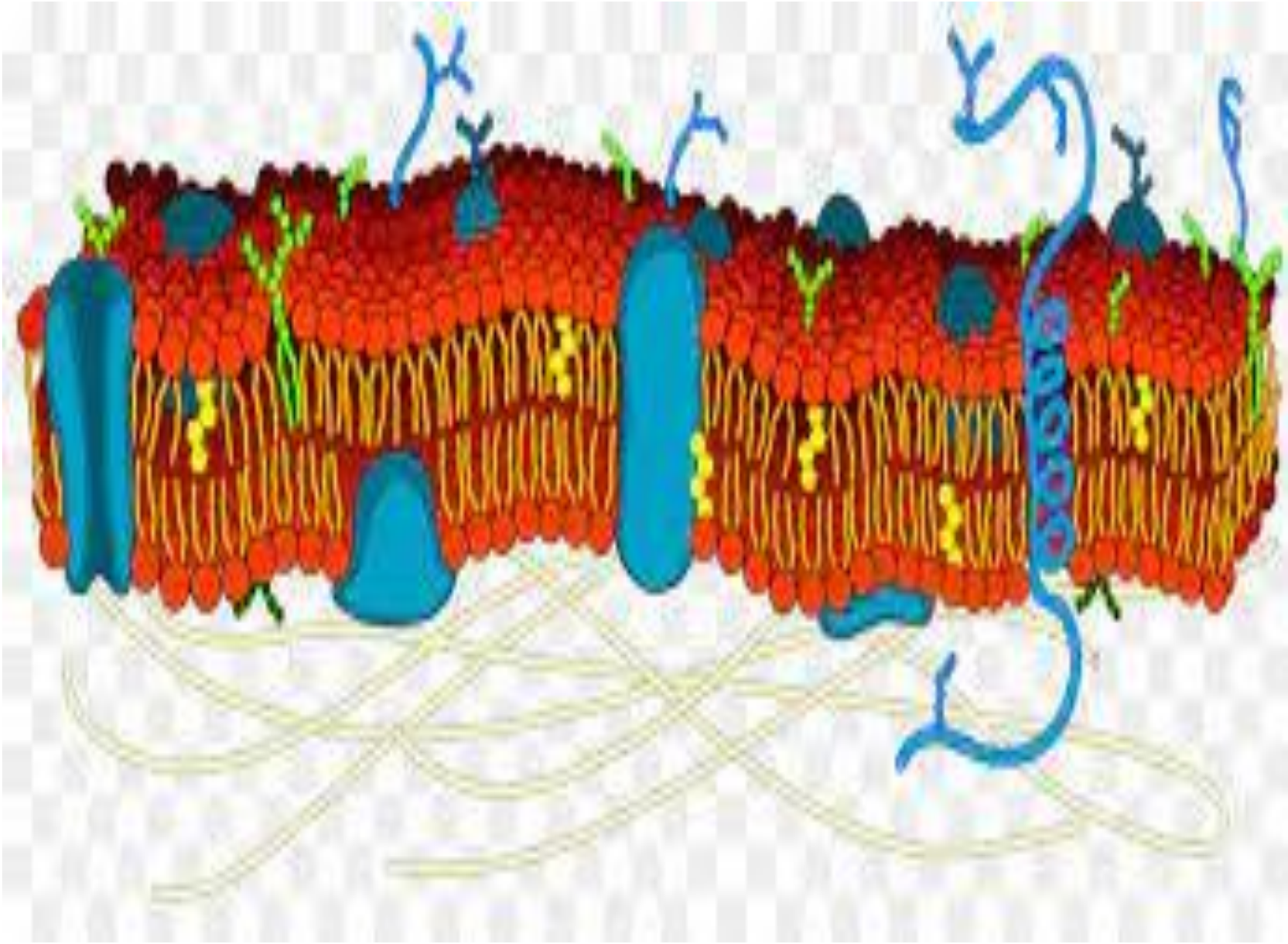
The function of proteins

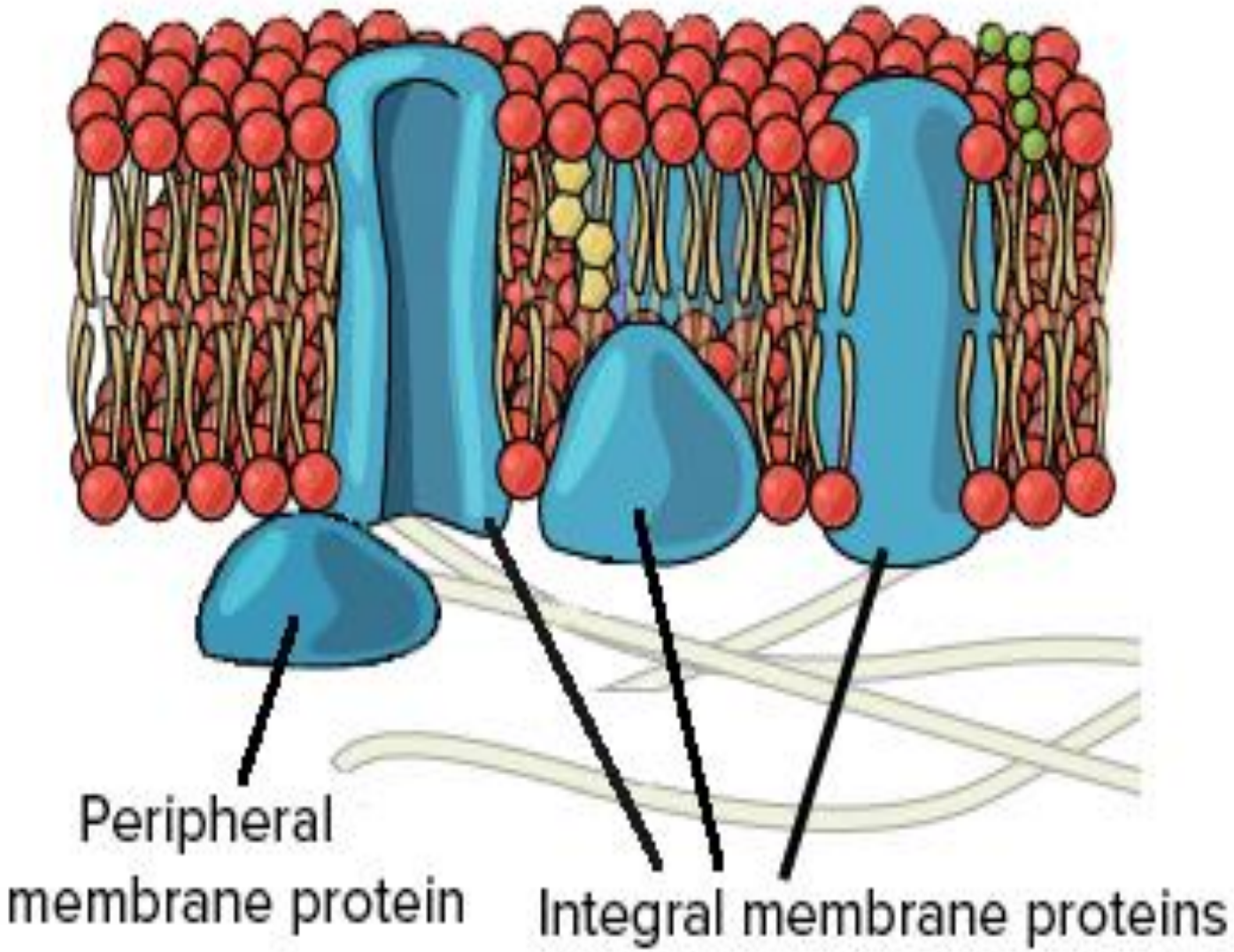
Enzymes	**Biological catalysts.**
Antibodies	**They fight off infection.**
Transport	**Move materials around** **Ex. hemoglobin for O_2.**
Regulatory	**As hormones, they control metabolism.**
Structural	**coverings and support** **skin, tendons, hair, nails, bone.**
Movement	**muscles, cilia, flagella.**

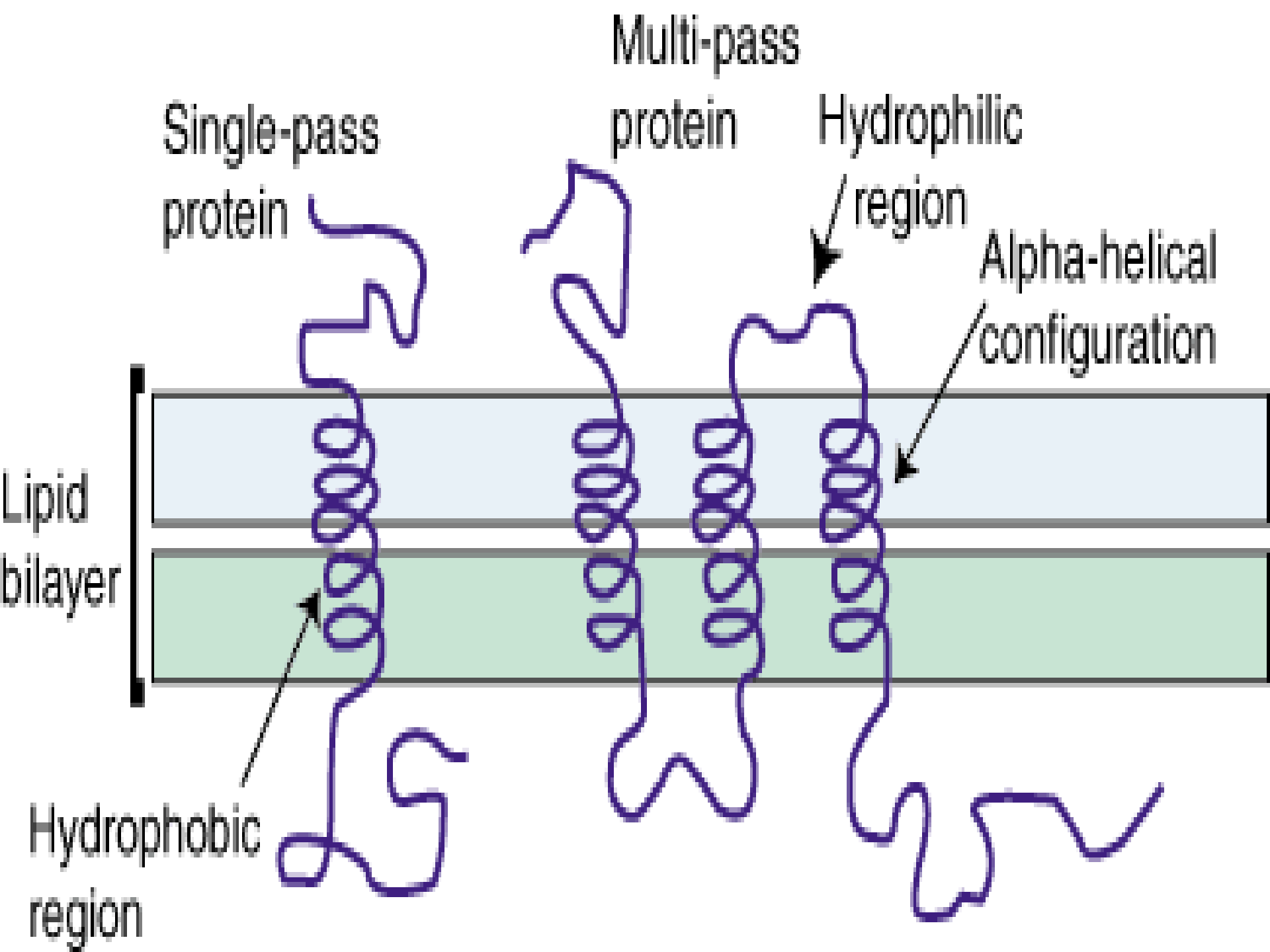
سلول شناسی، جلسه چهارم:

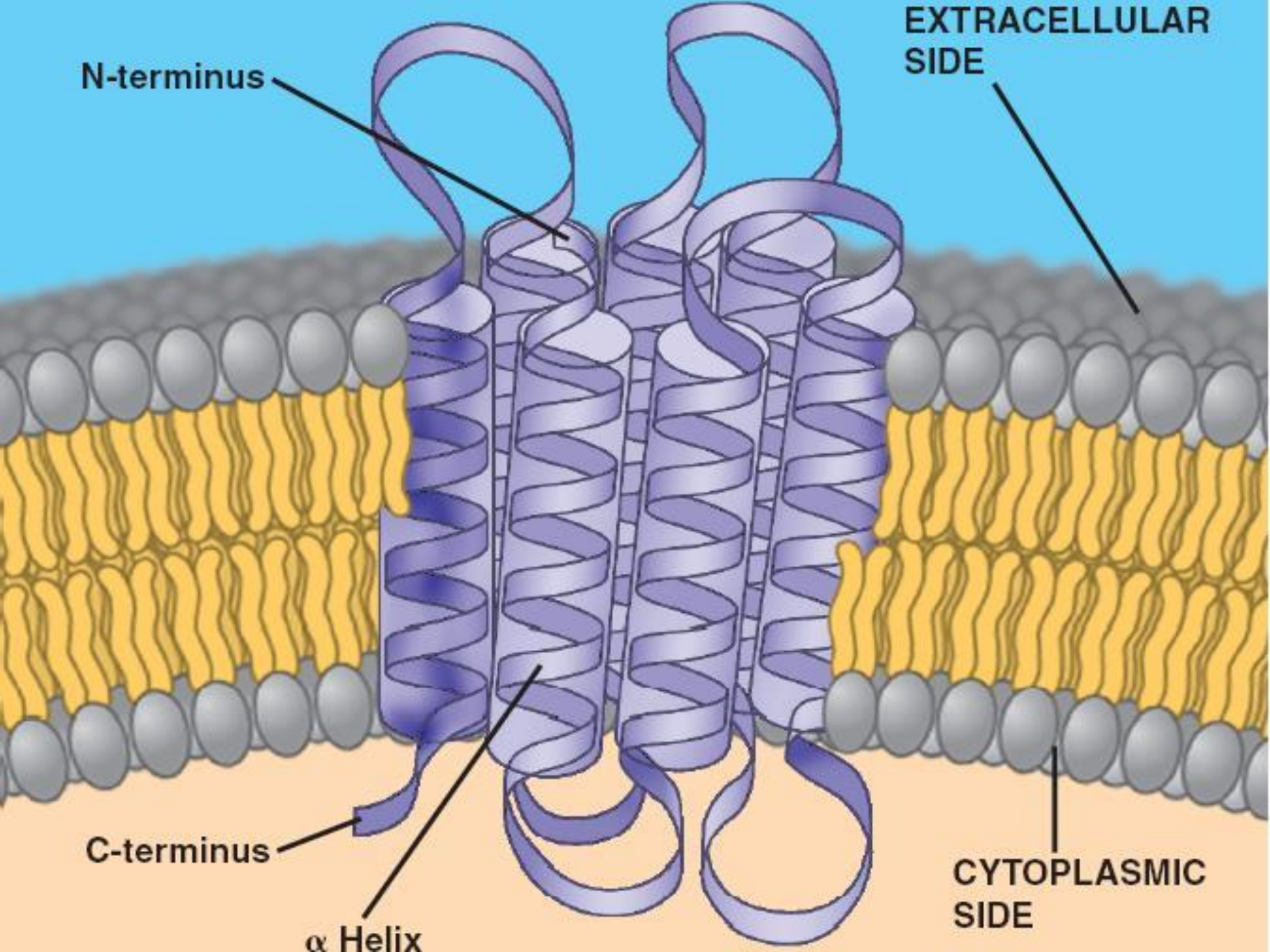
۱- غشاهای زیستی

۲- غشای پلاسمایی




Peripheral
membrane protein
Integral membrane proteins


Multi-pass
protein
Single-pass
protein
Hydrophilic
region
Alpha-helical
configuration
Lipid
bilayer
Hydrophobic
region


N-terminus
EXTRACELLULAR SIDE
C-terminus
α Helix
CYTOPLASMIC SIDE