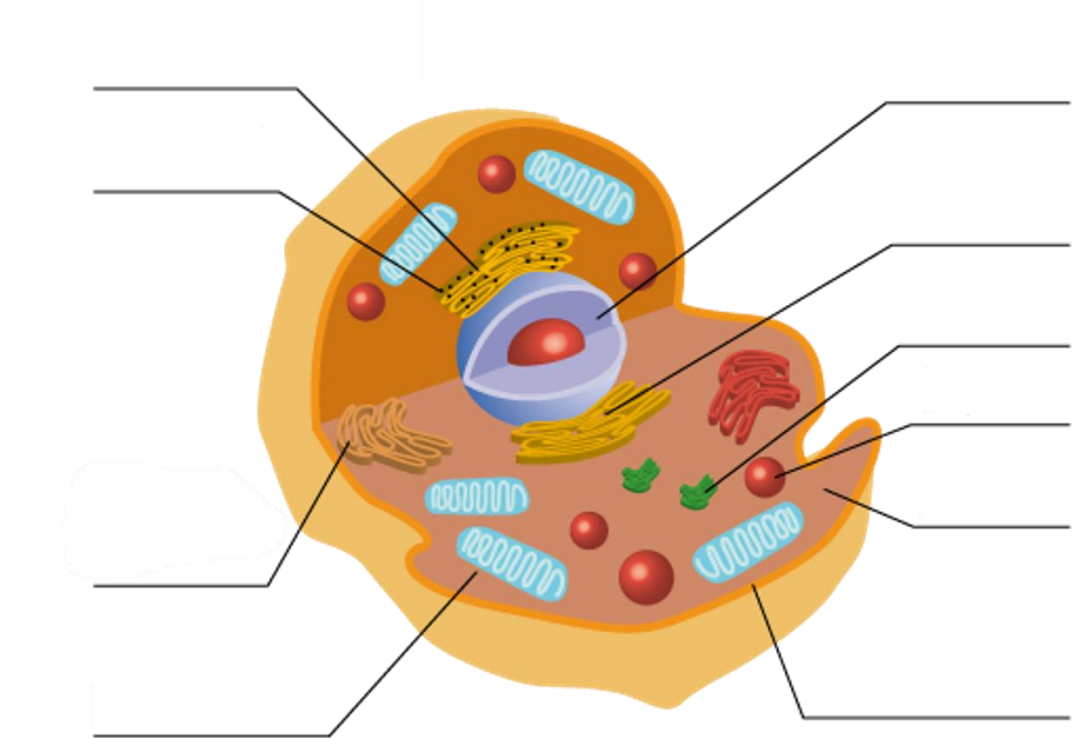


CELL AND METABOLISM

EXERCISE 1

Fill in the diagram below



EXERCISE 2

Associate the structure with its function(s):

<ul style="list-style-type: none"> ● Cytosol ● Cytoskeleton ● Rough endoplasmic reticulum ● Golgi apparatus ● Mitochondrion ● Nucleus 	<ul style="list-style-type: none"> ○ Glycolysis ○ Proteins sorting ○ Krebs cycle ○ Storing of genetic information ○ Respiratory chain ○ Microtubules, microfilaments ○ Cell support and motion ○ Protein synthesis ○ ATP production
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EXERCISE 3

- 1- What are the main roles of membrane proteins?
- 2- What cellular exchanges are essential for the life of the cell?
- 3- Fill the following text with: *enzymes-hormones, hepatic, degradation, energetic substrate, phospholipids, oxygen, carbon, mitochondria, anabolism, glucose, muscle fiber, annex, glycogen, lipolysis, hydrogen.*

- _____:
 - macromolecule made of glucose.
 - stock: _____ in muscle fibers and in _____ cells.
 - reaction of glycogene _____ to release glucose: **glycogenolyse**.
 - Glucose: essential _____: catabolism in the cytoplasm (without _____) and in mitochondrias (presence of oxygen).
- **Lipids**: essentially made of _____ and _____
 - Stock: triglycerides = glycerol + fatty acids in _____ and in cells of fat.
 - Reaction of triglyceride degradation to release fatty acids: _____.
 - Fatty acids: energetic substrate: catabolism in _____.
 - Lipid bilayer of _____ in the cell membrane.
- **Protids**: proteins
 - Macromolecule of amino-acids.
 - _____ in the cytoplasm: protein synthesis (in ribosomes).
 - Membrane protein and _____.
 - Energetic substrate _____: catabolism in mitochondrias.

EXERCISE 4

Ion	Intracellular concentration (mmol/L)	Extracellular concentration (mmol/L)
Na ⁺	7	144
K ⁺	160	4
Ca ²⁺	10 ⁻⁵ -10 ⁻⁴	2
Cl ⁻	7	120
HCO ₃ ⁻	8	27
Protéine <u>anionique</u> (chargée négativement)	155	5

- 1- What is your main observation concerning ions distribution?
- 2- What type of transport will this encourage? Take the example of Na and K. Explain the characteristics and functions of this kind of transport.
- 3- Actually, this unequal distribution remains unchanged even though the previous transport exists. What other type of transport allow for maintaining this concentration gradient?

EXERCISE 5

- 1- Give the definition of ATP.
- 2- Schematize the reaction of ATP degradation; give its name, and the name of the enzyme that is involved in this reaction. What does this allow in a muscle fiber? Why is it important to resynthesize ATP?