

Unit 1: Introduction to tissue

Lesson 1: *Eukaryote cells and levels of cellular organization-Key*

Activity 1 (30') : Cell

A cell is the basic unit of life. There are two types of cells: prokaryotic and eukaryotic cells. Both cells have a cell membrane that acts like a barrier regulating what material enters or leaves the cell.

Prokaryotic cells are simple, single-celled organisms that lack a nucleus and membrane-bound organelles. Unlike prokaryotic, eukaryotic cells are more complex and are found in plants and animals. They have a lot of membrane-bound organelles (little organs) that float in the cytoplasm. They have nucleus that contains the genetic material which controls all the cell activities. Moreover, inside the **nucleus** there is another structure called **nucleolus** in which ribosomal RNA (rRNA) synthesis and assembly of ribosomal subunits take place. There are ribosomes which can be free in the cytoplasm and others attached to the **rough endoplasmic reticulum**, the function of both ribosomes is the protein synthesis. Inside the cell there is another type of **endoplasmic reticulum**, called **smooth**, because it is not studded with ribosomes since it is mainly concerned with the synthesis of carbohydrate and lipids, and sometimes, with their metabolism. Endoplasmic reticulum is a system of interconnected tubules and cisternae. Another organelle is the **Golgi body**, also called Golgi apparatus, a stack of membranes in the cell that modifies, sorts, and packages proteins from the endoplasmic reticulum. The powerhouse of cells is the **mitochondrion**. Cells that need more energy have more mitochondria.

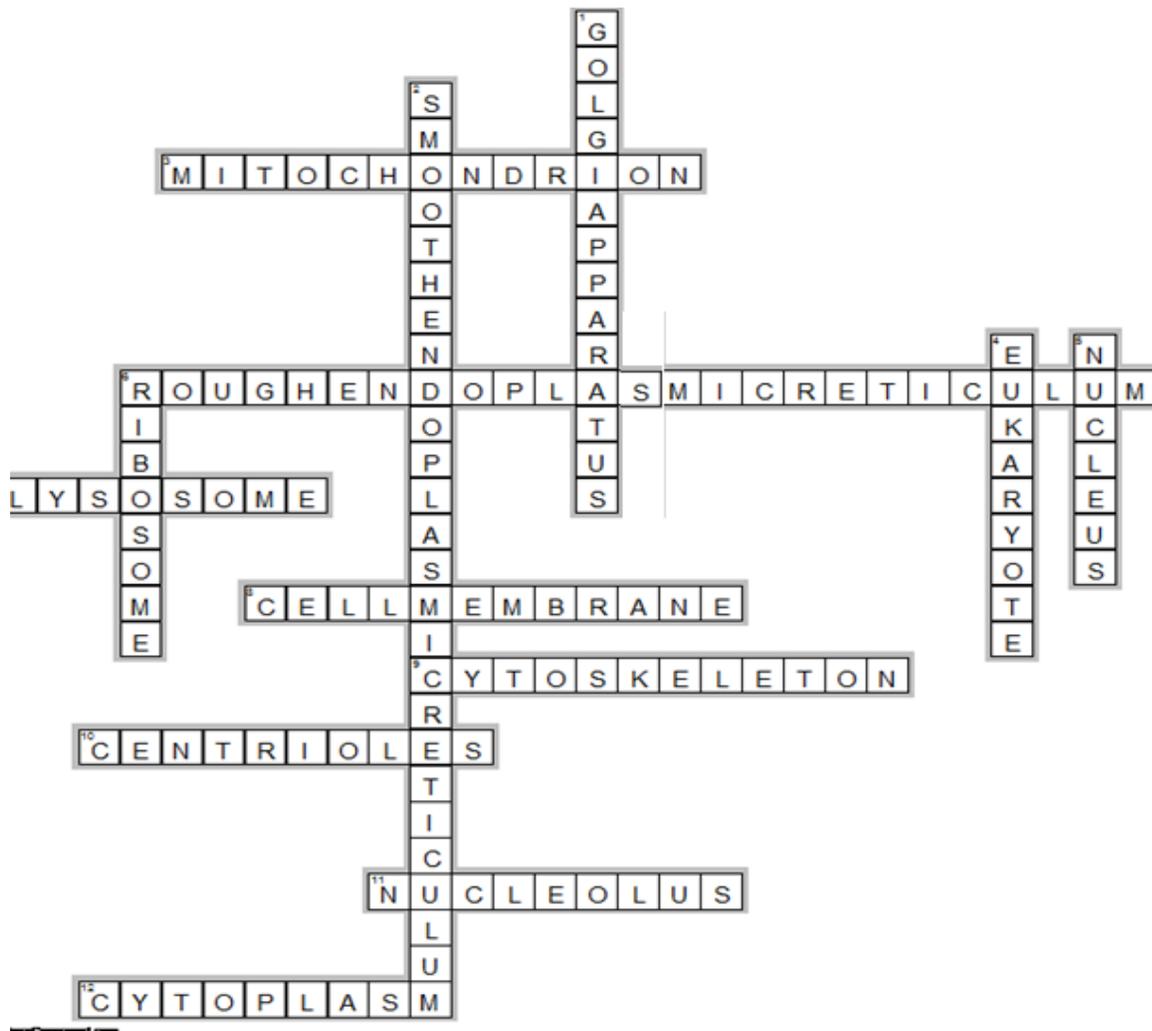
Animal cells have **lysosomes** that are the garbage collectors that take in damaged or worn out cell parts. They are filled with enzymes that break down the cellular debris. All animal cells have two small organelles known as centrioles that play an important role in cell division and cell movement. The cells maintain their shapes through a cytoskeleton. It is a complex network of interlinking filaments and tubules that extend throughout the cytoplasm, from the nucleus to the plasma membrane.

Hands- on glossary

Studded with sth : If something is studded with many objects of the same type, those objects are arranged regularly across it, or across the surface of it.

Worn out: can no longer be used because it is so old or because it has been damaged by continued use

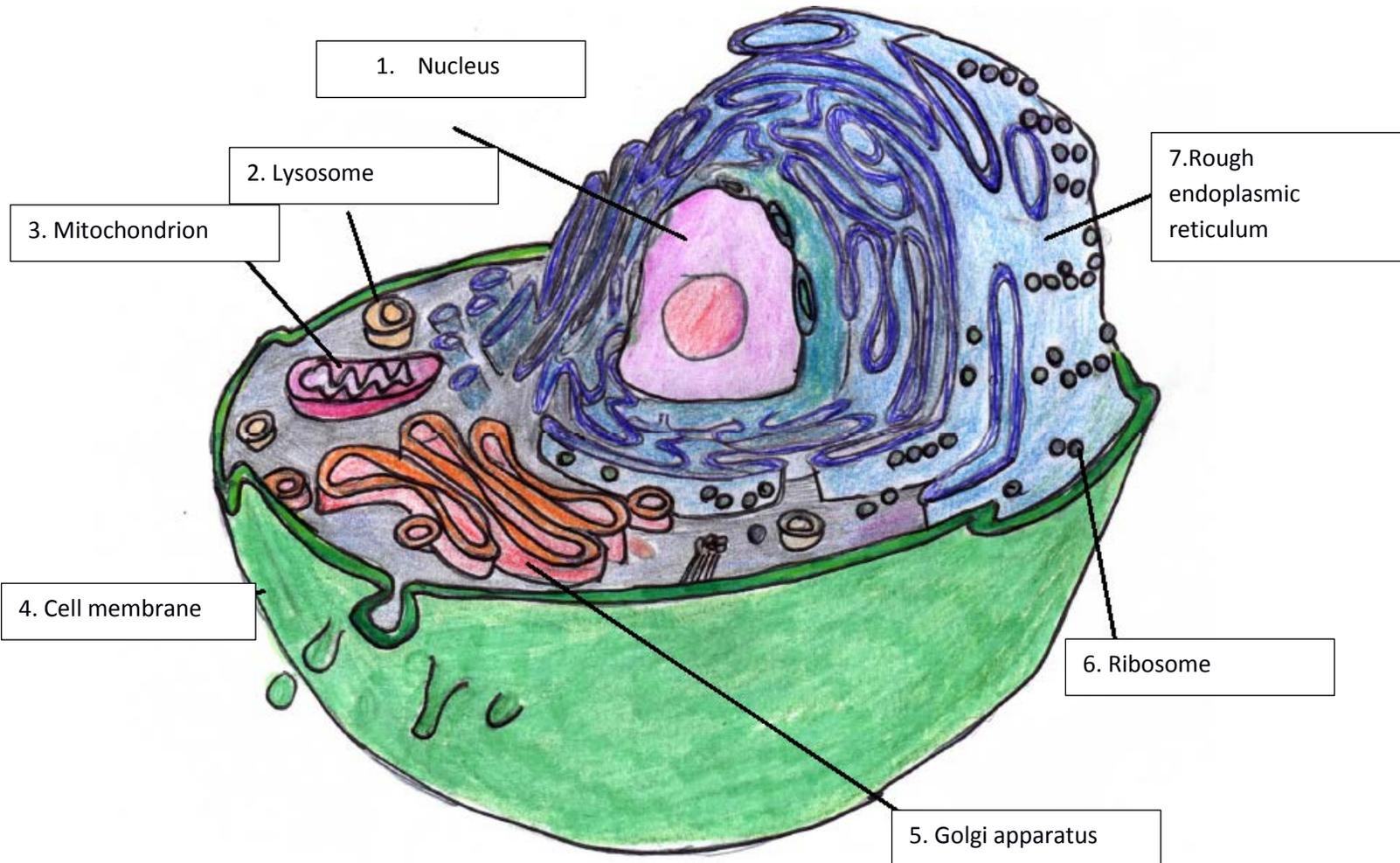
Step 2 Complete the crossword puzzle using the words on the text



Across	Down
3. Cell organelle in which chemical reactions occur to produce ATP	1. It is responsible for transporting, modifying, and packaging proteins and lipids into vesicles
6. It is made up of membranes which have ribosomes attached to it.	2. It is a subset of the endomembrane system of the endoplasmic reticulum. It is associated with the production of fats and steroids hormones.
7. Cell organelle that contain hydrolytic enzymes needed to break down certain materials in the cell	4. Any cell or organism that possesses a clearly defined nucleus
8. The semi-permeable membrane that surrounds the cytoplasm of a cell.	5. In cells, structure that contains the DNA
9. It is a structure that helps cells maintain their shape and internal organization	6. It is the site of protein synthesis
10. They are cylindrical structures that are important during cell division	
11. It is inside the nucleus; it is the site of ribosome biogenesis	
12. The jelly-like fluid that fills a cell	

Step 3 Label the figure, using the following terms:

Cell membrane Golgi apparatus Rough endoplasmic reticulum Nucleus Ribosome
Mitochondrion Lysosome



Activity 2 (10') Levels of organization in human body

Match the words below with the drawings and then put in order from the smallest to largest level of body organization based on your knowledge.

Cell	Atom	Organ	Organ system
Organism	Molecule	Tissue	Macromolecule



a) organ



b) macromolecules

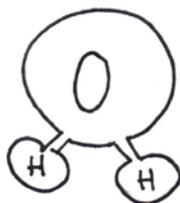


c) _____

cell



d) organelle

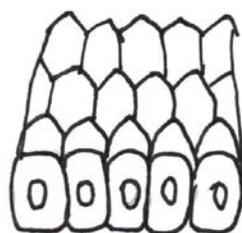


e) _____

molecule



f) organ system



g) tissue



h) Organism



i) atom

1st atom 2nd molecule 3rd macromolecule 4th organelle 5th cell 6th tissue

7th organ 8th organ system 9th organism

Activity 3 (10’): Peer/self -assessment

Match the words with their definitions and then check your answer with your partner. (There are two extra definitions you do not need)

3A- 4B- 2D- 1G - 5A