Unit 1: Introduction to tissues

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

Activity 1 (30'): Cell

Step 1. In pairs, read the following text and underline the cell organelles

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.

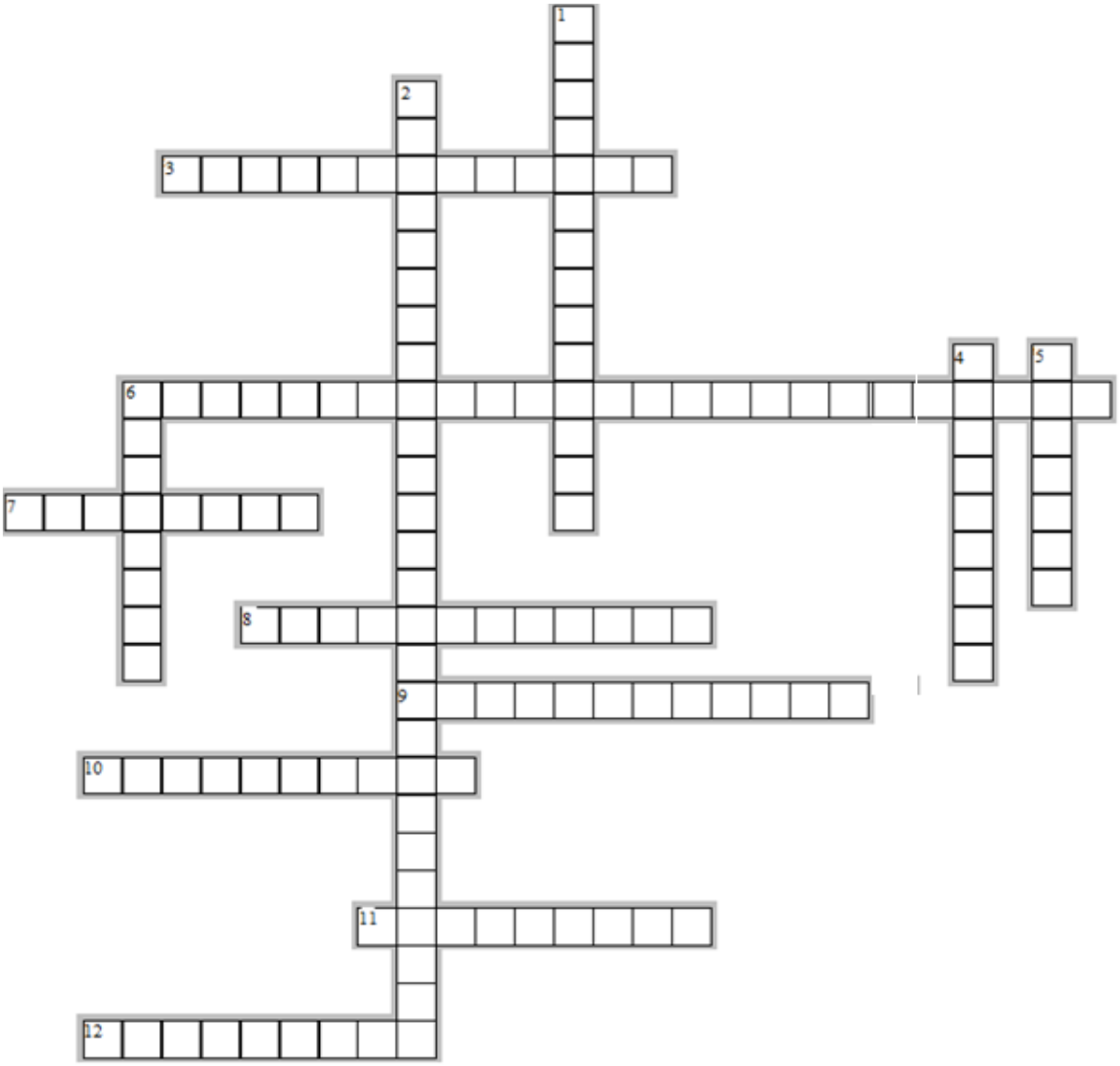
Animal cells have lysosomes that are the garbage collectors that take in damaged or worn out cell parts. They are filled with enzymes that break down the cellular debris. All animal cells have two small organelles known as centrioles that play an important role in cell division and cell movement. The 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. In pairs, complete the crossword puzzle using the words in the text*



Crossword made by the author using Eclipse Crossword

Across

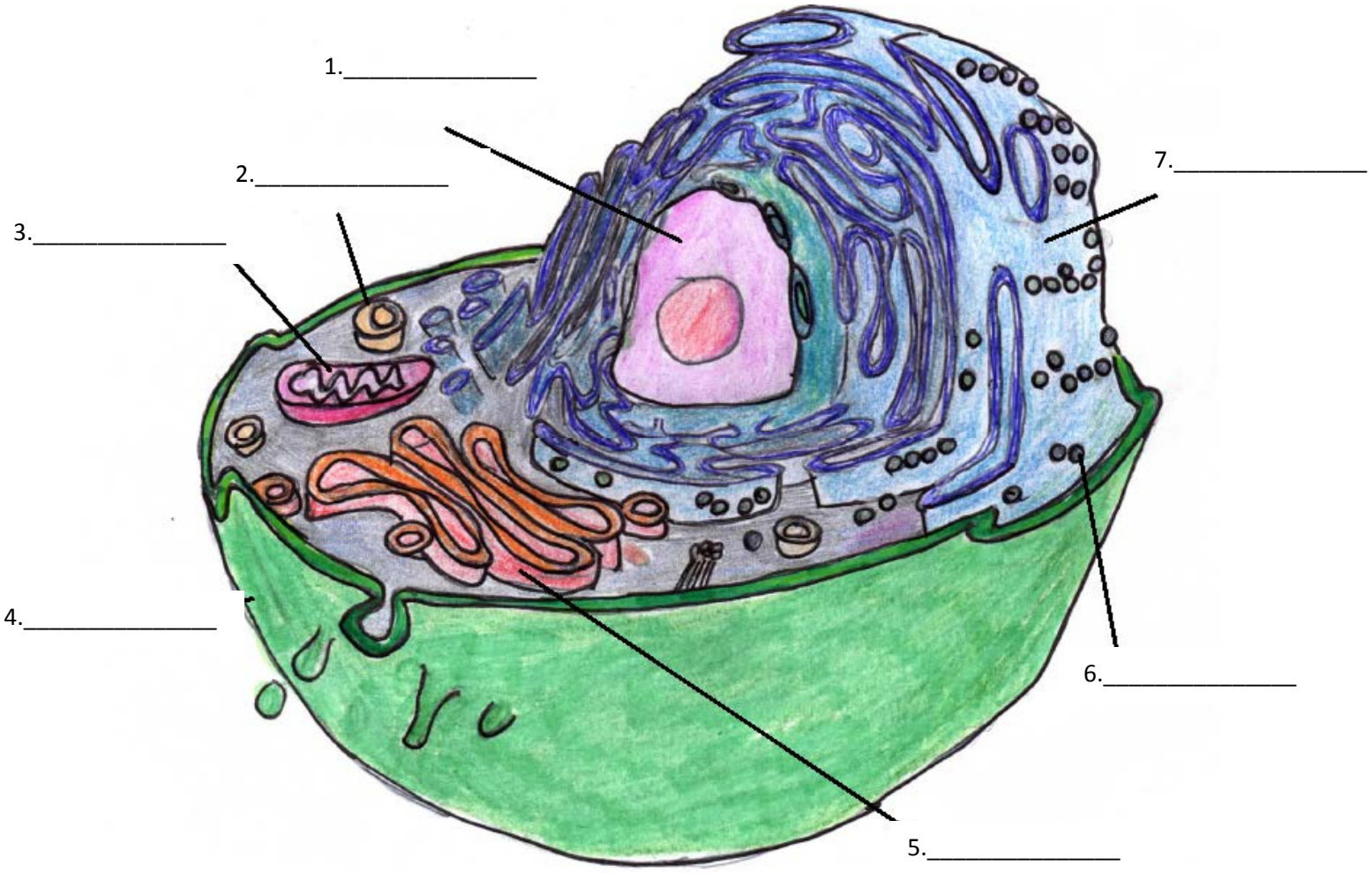
3. Cell organelle in which chemical reactions occur to produce ATP
6. It is made up of membranes which have ribosomes attached to it.
7. Cell organelle that contain hydrolytic enzymes needed to break down certain materials in the cell
8. The semi-permeable membrane that surrounds the cytoplasm of a cell.
9. It is a structure that helps cells maintain their shape and internal organization
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

Down

1. It is responsible for transporting, modifying, and packaging proteins and lipids into vesicles
2. It is a subset of the endomembrane system of the endoplasmic reticulum. It is associated with the production of fats and steroids hormones.
4. Any cell or organism that possesses a clearly defined nucleus
5. In cells, structure that contains the DNA
6. It is the site of protein synthesis

Step 3. In pairs, label the figure using the following terms:

Cell membrane *Golgi apparatus* *Rough endoplasmic reticulum* *Nucleus* *Ribosome* *Mitochondrion* *Lysosome*



Drawing made by the author

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

In pairs, match the words below with the drawings and then put them in order from the smallest to the largest level of structural organization in human body based on your knowledge.

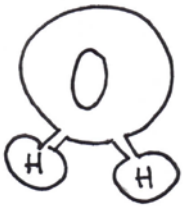
Cell	Atom	Organ	Organ system
Organism	Molecule	Tissue	Macromolecule

a)_____

b)_____

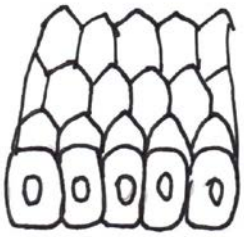
c)_____

d)_____



e)_____

f)_____



g)_____

h)_____

i)_____

Drawings made by the author

1st_____ 2nd_____ 3rd_____

4th_____ 5th_____ 6th_____

7th_____ 8th_____ 9th_____

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)

Word	Definition
1. Cell membrane	A. The material within a living cell, excluding the cell nucleus
2. Prokaryote	B. Levels of organization in the human body
3. Cytoplasm	C. A continuous membrane system that forms a series of flattened sacs within the cytoplasm
4. Cell, tissue, organ, organ system	D. Unicellular
5. Endoplasmic reticulum	E. It is made up of a series of flattened, stacked pouches called cisternae
	F.is present in bacteria, fungi, algae and plant cell
	G. outside boundary of the cell

Example: 1.H

1. 2. 3. 4. 5.