

Exploring life - LESSON (1)

- A. All living things have **seven characteristics** in common.
1. Made of cells
 2. Organization
 3. Growth and development
 4. Reproduction
 5. Response to stimuli
 6. Maintaining internal conditions
 7. Using energy
- B. The first characteristic that living things have in common is what they are **made of**.
- C. **Cells** are called the “building blocks of life” because all living things are made up of cells.
- D. Principles of cell theory

- All living things are made of one or more cells.
- The cell is the smallest unit of life.
- All new cells come from preexisting cells.

Types of microscopes:

1- Light microscopes:

- It uses light and lenses to enlarge an image of an object.
- It can enlarge images up to 1,500 times its original size.
- It is used in school.

2- Electron microscopes:

- It uses a **magnetic field** to focus a beam of **electrons** through an object or onto an object's surface.
- It can **magnify** an image up to 100,000 times or more.
- There are **two main types** of electron microscope:

A. Transmission electron microscopes (TEMs)

- TEMs are usually used to study extremely small things such as cell structures. In a TEM, electrons pass through the object and a computer produces an image of the object

B. Scanning electron microscopes (SEMs)

- SEMs are usually used to study an object's surface. (outside)
In an SEM, electrons bounce off the object and a computer produces a three-dimensional image of the object

How many cells do living things have?

- Living things that are made of only one cell are called **unicellular organisms**.
- Living things that are made of two or more cells are called **multicellular organisms**.

There are two main types of cells:

1. **Prokaryotic cells**
2. **Eukaryotic cells**

<u>Prokaryotic cells</u>	<u>Eukaryotic cells</u>
unicellular organisms	multicellular organisms
Contain genetic materials - how information is transmitted from one generation to the next	Contain genetic materials - how information is transmitted from one generation to the next
Not surrounded by a lining.	surrounded by a lining.
Small	large
Have fewer parts to their cells	Have many parts to their cells (called organelles)
Example: Bacteria	Example: plants, animals, and humans
Some prokaryotes live in small groups called colonies. Some live in extreme climates	

Classifications

Domains and Kingdoms						
Domain	Bacteria	Archaea	Eukarya			
Kingdom	Bacteria	Archaea	Protista	Fungi	Plantae	Animalia
Example						
Characteristics	Bacteria are simple unicellular organisms.	Archaea are simple unicellular organisms that often live in extreme environments.	Protists are unicellular or multicellular and are more complex than bacteria and archaea.	Fungi are unicellular or multicellular and absorb food.	Plants are multicellular and make their own food.	Animals are multicellular and take in their food.