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Cell: Chapter Introduction

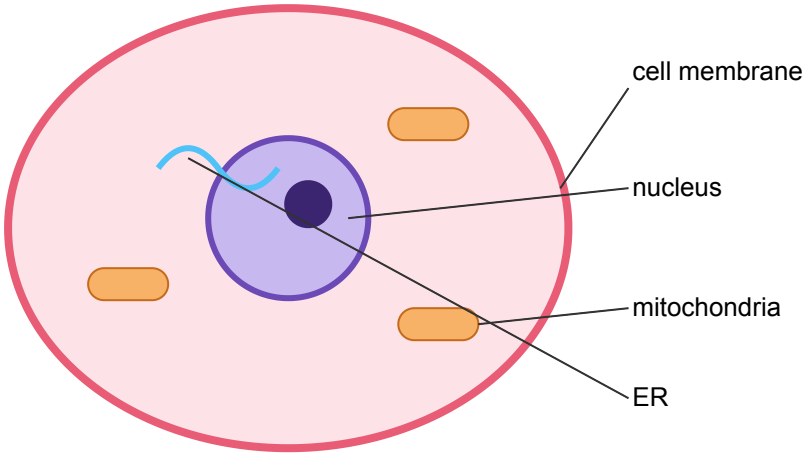
1. You began as one cell

Every human life starts as a **single cell**. It divides again and again, and an adult body has **trillions** of cells. Every living thing is made of cells: a tree, an elephant and you are made of many cells, while an **amoeba** or a bacterium is just **one cell**.

2. Discovery

In **1665 Robert Hooke** looked at a thin slice of **cork** under his microscope. He saw tiny box-like compartments, like little rooms, and called them **cells** (Latin *cella* = a small room). Cork cells are dead; Hooke saw their empty walls. Later, Leeuwenhoek saw living cells, and better microscopes revealed what is inside.

3. Inside a cell



Part	Job
Cell membrane	Outer boundary; lets some substances in and out (selectively permeable)
Nucleus	Controls the cell; holds the genetic material
Mitochondria	Release energy from food
ER, vesicles	Make and carry materials inside the cell

4. Cell division

A cell makes new cells by **dividing**: 1 → 2 → 4 → 8 … After n rounds, one cell becomes 2^n cells. This is how one cell grows into a whole body.

5. Cell theory

1. All living things are made of one or more cells.
2. The cell is the basic structural and functional unit of life.
3. New cells arise only from pre-existing cells.

Solved example

Q. A cell divides once every 20 minutes. How many cells are there after 1 hour, starting from one cell?
A. 1 hour = 3 divisions, so 2^3 = **8 cells**.

Practice questions

1. (MCQ) Hooke observed cells in (a) onion peel (b) cork (c) cheek cells (d) a leaf
2. (Very short) Name a unicellular organism.
3. (Very short) Which part controls the activities of the cell?
4. (Short) State the cell theory.
5. (Short) Why are cells called the building blocks of life?
6. (Numerical) How many cells are formed from one cell after 4 rounds of division?

Answer key

1. (b) cork.
2. Amoeba (or a bacterium).
3. The nucleus.
4. All living things are made of cells; the cell is the basic unit of life; new cells arise from pre-existing cells.
5. All living things are built from cells, and every life process happens in cells.
6. $2^4 = 16$.

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