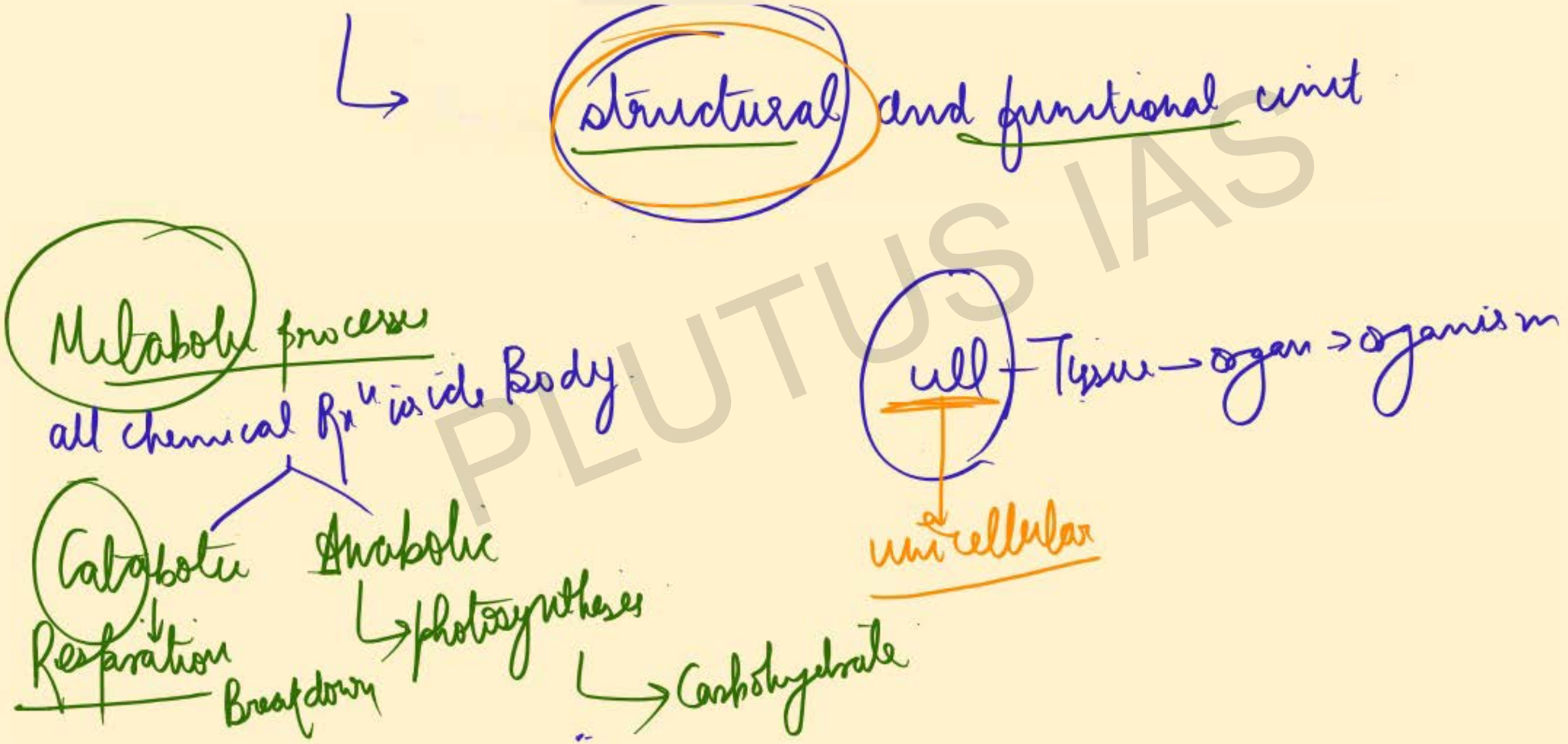
CELL: THE UNIT OF LIFE



Unicellular organisms are capable of (i) independent existence and (ii) performing the essential functions of life. Anything less than a complete structure of a cell does not ensure independent living. Hence, cell is the fundamental structural and functional unit of all living organisms.

DISCOVERY OF CELL; {1sss)

Robert Hook

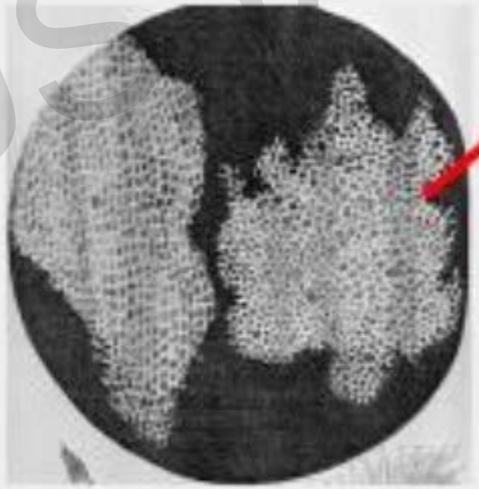
Bark → cells

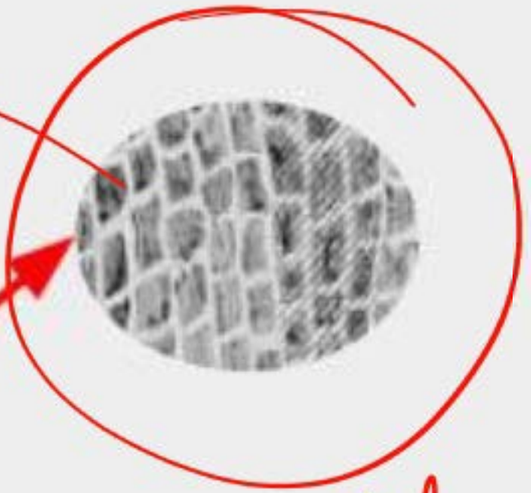
↓

Work

(Hrad)

Cell





cellula

t.ftaograpt,ia' llustrating the tiny cells of cork Hooke saw der 1Mma-os.oope

2. Anton Van Leeuwenhoek (1674)

Live

→ discovery of living cell

3. Robert Brown (1831)

Nucleus

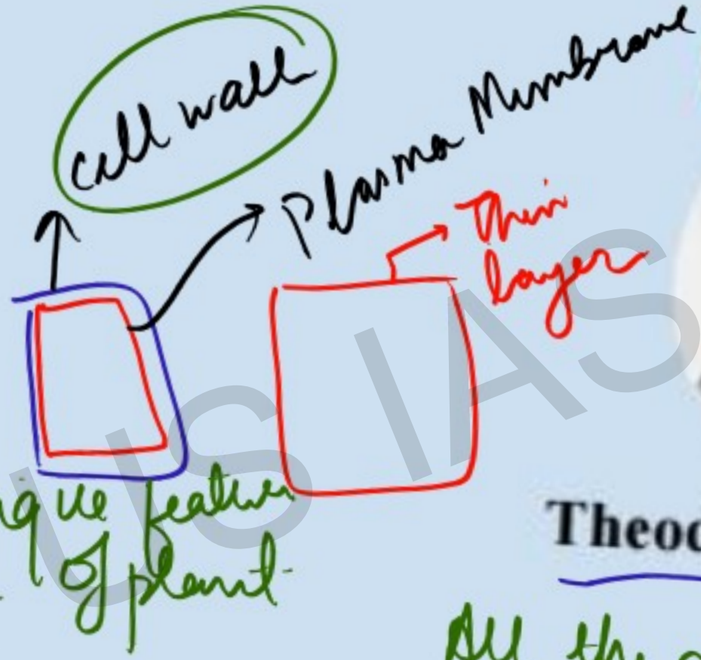
CELL THEORY

(1838)

Matthias Schleiden

German Botanist

→ All the plants are made up of cells & group of cells called Tissues



(1839)

Theodor Schwann

Zoologist

All the animals are made up of cells & group of cells

(1855)

→ Cells divide to form new cells from pre-existing cells

'Omnis cellula - e - cellula'

Rudolf Virchow

CELL THEORY

(1) All the organisms are made up of cells and group of cells

(2) Cells arise from pre-existing cell

Robert Hooke
Observes cork (dead) cell under microscope

(1665)

Robert Brown
Discovered Nucleus

(1831)

Schwann
Bodies of animals are composed of cells and products of cells

(1839)

Cell Theory

(1674)

Anton Van Leeuwenhoek
First saw and described live cell

(1838)

Matthias Schleiden
plants are composed of different kinds of cells which form the tissues

(1855)

Rudolf Virchow
cells divided and new cells are formed from pre-existing cells (**Omnis cellula-e cellula**)

Cell Components

1. Nucleus → Genetic Material
   - Have well defined → Eukaryotic cell
   - Absent / Not developed → Prokaryotic cell (Primitive)
2. Plasma Membrane → Present in Both (True)
3. Cytoplasm :- hub for chemical Rxn
4. Organelles
   - Membrane bound organelles: Mitochondria, Chloroplast, ER, Golgi, Lysosome, Vacuole
   - Absent in Prok but not in Euk
5. Ribosome → non-membranous
   - Prok → 70S
   - Euk → 80S

Prokaryotic

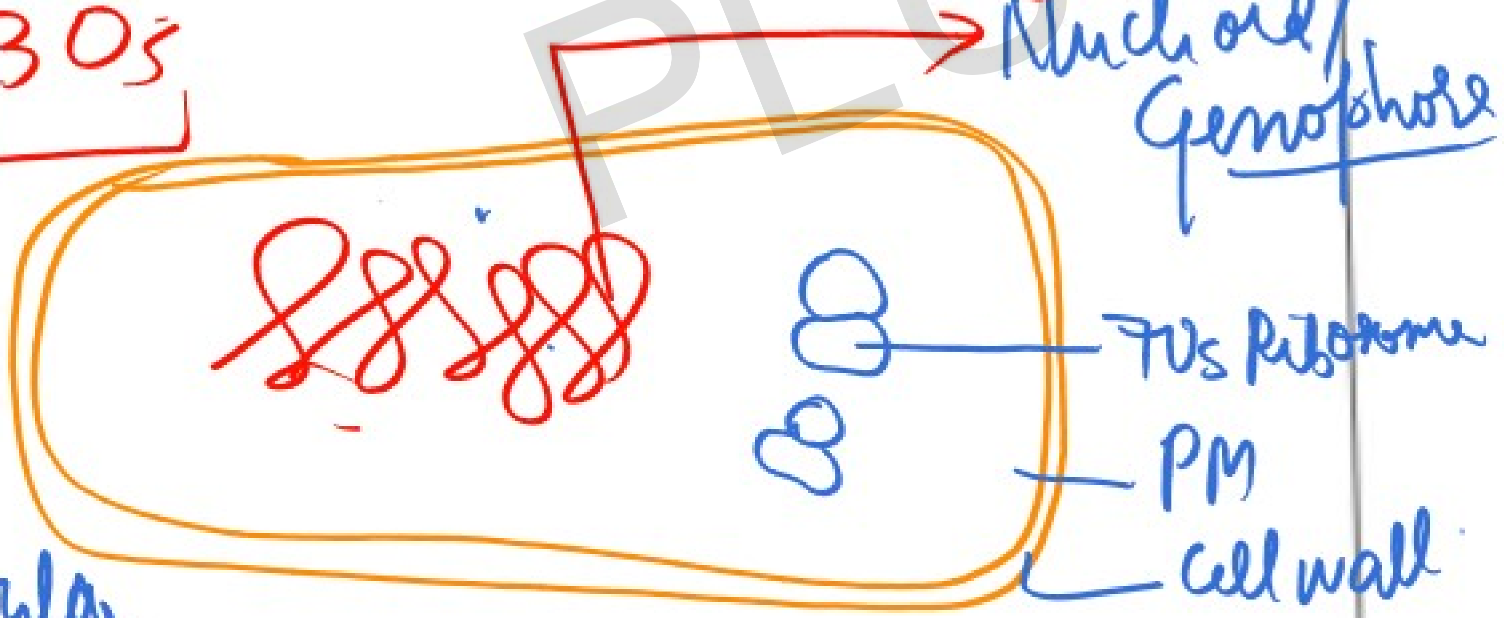
→ Well defined nucleus → Absent

→ Absence of membrane bound organelles.

→ 70(S) Ribosome present.

S → Svedberg's unit of sedimentation coefficient.

50s 30s



→ Capsule

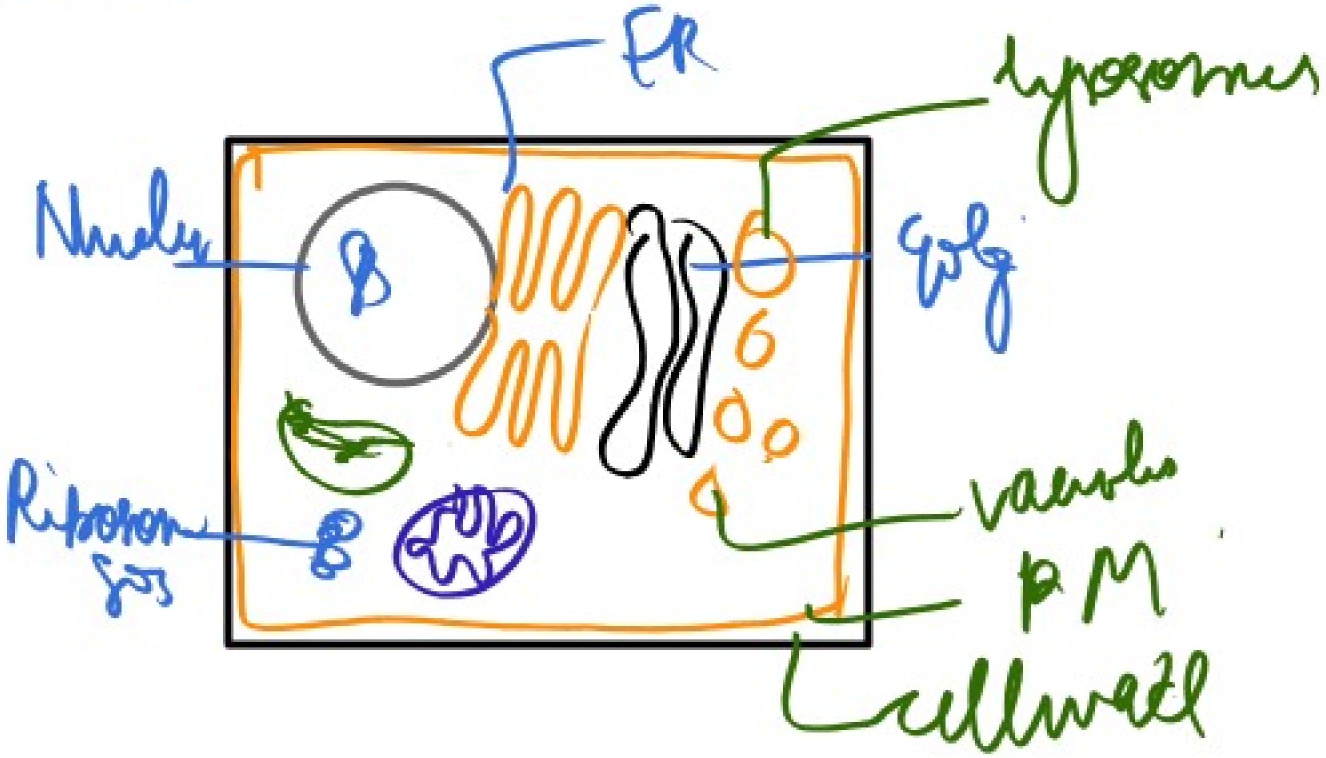
Eukaryotic

→ Well developed nucleus present.

→ Memb. bound organelles present.

→ 80s subunit of Ribosome present.

60s 40s



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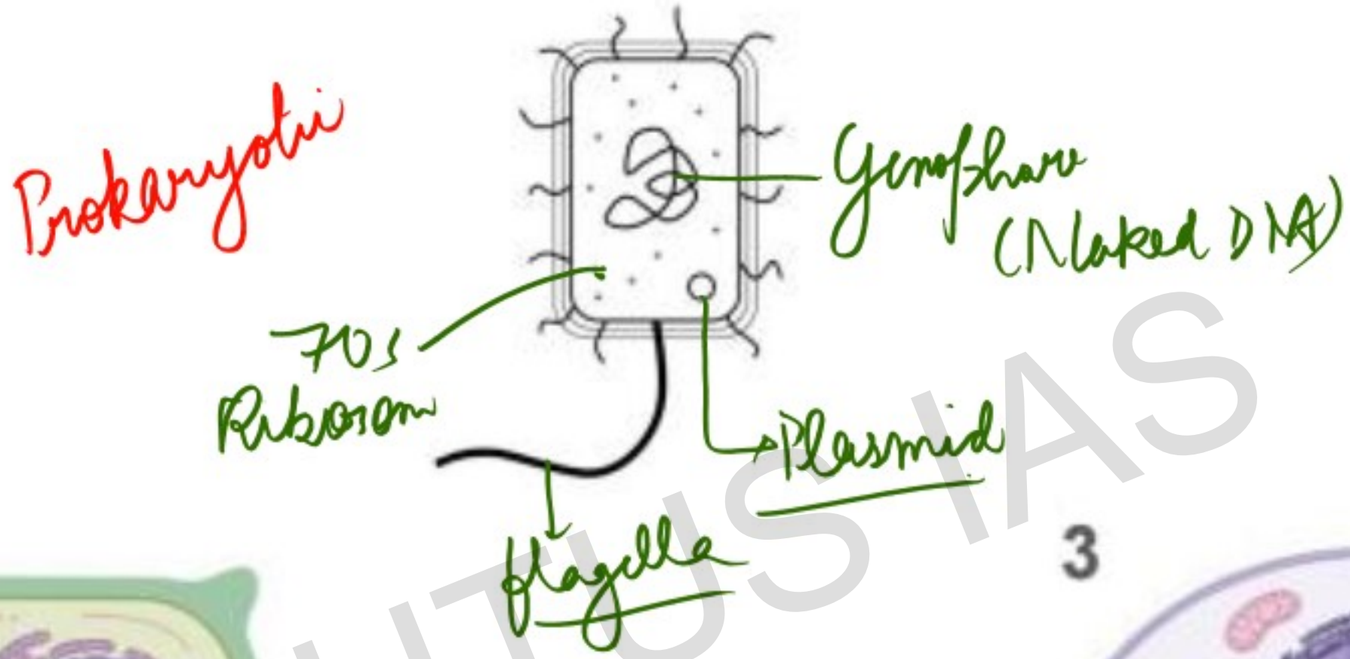

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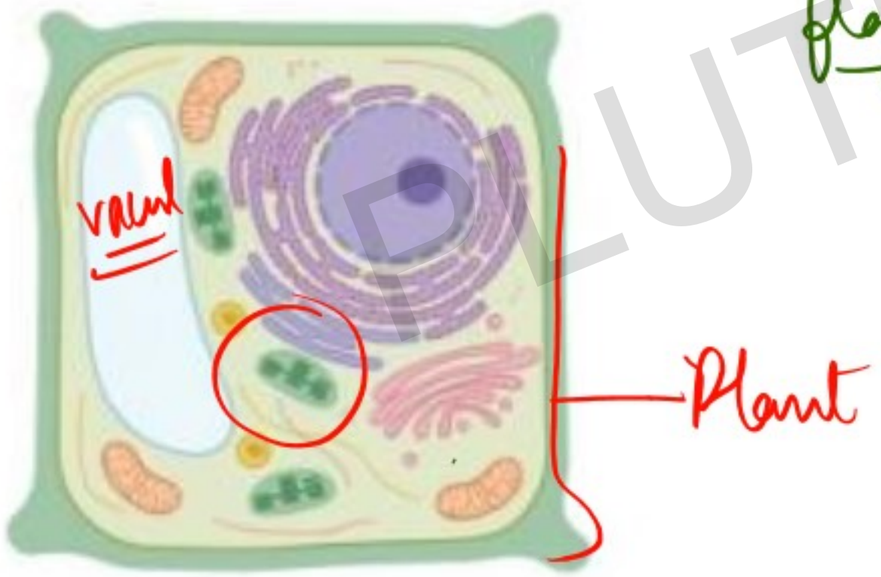

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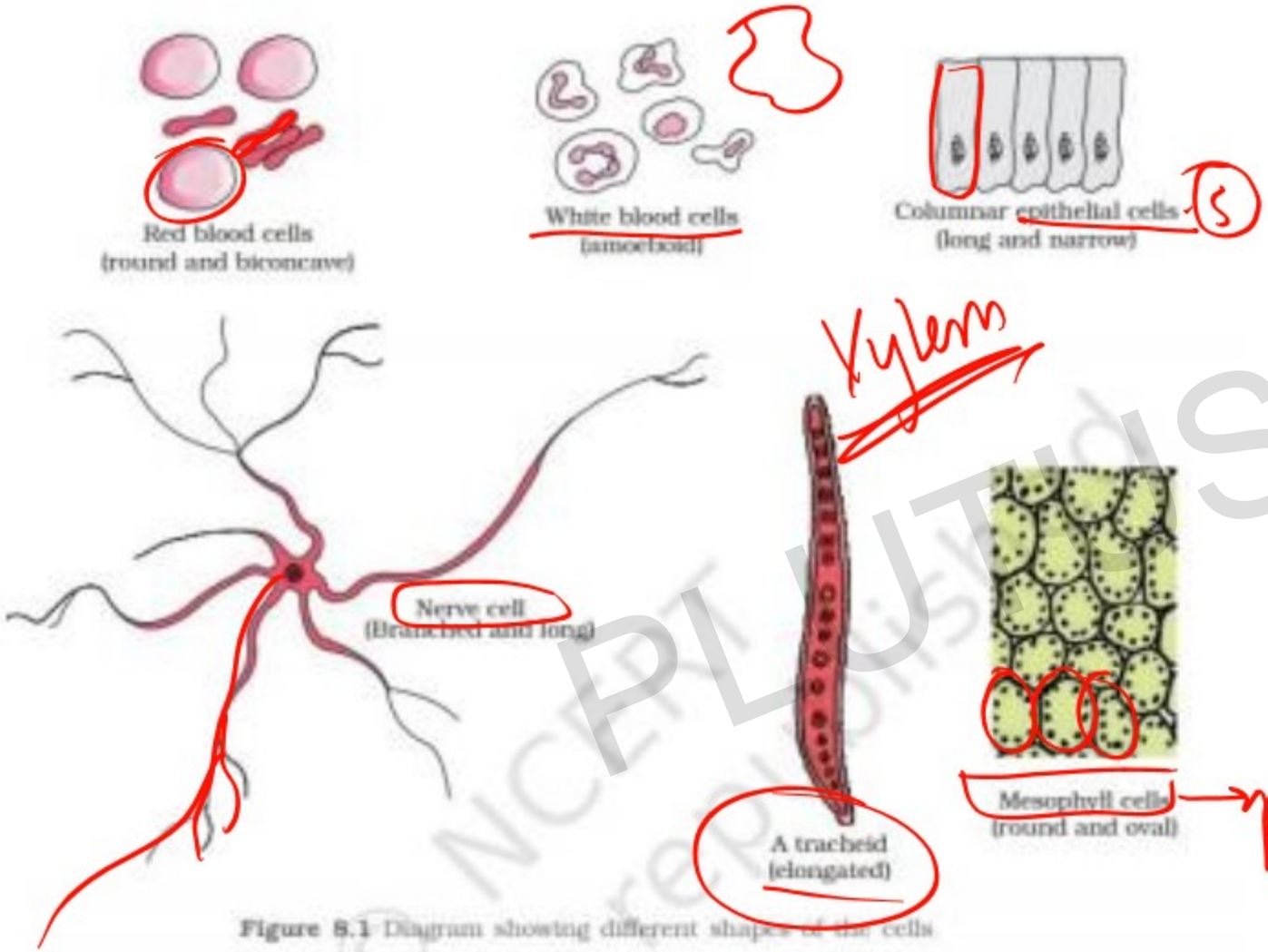

Figure 8.1 Diagram showing different shapes of the cells

Xylem

Smallest → Mycoplasma

largest cell → Ostrich egg

photosynthesis

Prokaryotic Cell