

about this statement with reference to the chapter, 'How I taught my Grandmother to read'.

B.Sc Part-I Zoology Hons. Dr. Pritam Kumar
CONCEPT OF PROKARYOTIC & EUKARYOTIC CELLS.

PROKARYOTIC — PRO — BEFORE & KARYON — NUCLEUS

EUKARYOTIC — EU — TRUE & KARYON — NUCLEUS.

Q. Define cell. Give a brief account of its various shape and size. Describe differences b/w prokaryotic and eukaryotic cells.

Ans: — DEFINITION → A cell is the smallest but complete unit of fundamental biological organization as well as function of living organisms, bounded by a semi-permeable membrane and is capable of independent existence and multiplication.

THE CELL (cellula — hollow space)

"Cell is the structural, functional and hereditary unit of life."

ROBERT HOOKE (1665): — Discovery of cell in the form of cellula (empty space) in Cork.

SHAPE — (i) The shape of the cells may be variable or fixed.

(ii) it is variable in case of Amoeba and leucocytes

(iii) The shape of the cells having a fixed shape. So cells vary greatly in their shape.

These may be categorized into following types: —

- <1> Flattened :- Squamous epithelium
- <2> Cuboidal :- Follicles of thyroid gland.
- <3> Columnar :- Inner layer of intestine.
- <4> Discoidal :- Erythrocytes. (different vertebrates)
- <5> Polygonal :- Liver cells, urinary bladder.
- <6> Spindle shaped :- smooth muscles
- <7> Spherical :- Eggs
- <8> Elongated :- Nerve cells.
- <9> Branched :- Pigmented cells.

Size - Cell size also varies greatly. The smallest cells are found in Bacteria (measuring about 1.5 μ to 10 μ). The smallest organism observed is pleuroneumonia like virus Mycoplasma gabiseptum which causes a type of pneumonia in cattle and measures about 0.1 μ in diameter. But viruses are not considered to be cellular in their organisation.

The most cells are microscopic and some of them are large to be seen by naked eye. Such as eggs of birds like duck, hen etc. The egg of ~~an~~ ostrich measures about six inches in diameter around the side and three inches when the ~~egg~~ shell is removed.

In human body cell size ranges from 3-4 μ (leucocytes) to over a meter (nerve cells).

Differences b/w Prokaryotic and Eukaryotic cells

PROKARYOTIC CELLS

EUKARYOTIC CELLS

- | | |
|--|--|
| 1. They lack nuclear membrane | - DNA is covered by |
| ↳ DNA present free in cytoplasm (nucleoid) | Nuclear membrane hence nucleus is present. |
| 2. Membrane bounded organelles are absent | - membrane bounded organelles are present. |

(b) The temptation of money has the power to take away all the virtues. *Macbeth* (Act 1, Scene 3, line 66)

to the play, 'Villa for Sale'.

(3) Chromosome Compound - Chromosome Compound
of only DNA. of protein & DNA.

(4) Ribosomes consists of 80S - Ribosomes consists of 80S
and 30S sub units, and and 40S subunits, and
are of (70S) - Category are of (80S) - Category

(5) Respiration occurs in meso - Respiration occurs in
soma plasma membrane, mitochondria (organelle).
(Involving structure) eg - plants, animals,
eg - Bacteria. Fungi, Algae etc.

(6) Nucleolus and mitotic - Nucleolus and mitotic
apparatus are completely apparatus are present.
absent.

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