

VEER KUNWAR SINGH UNIVERSITY - ARA

B.Sc.

ZOOLOGY (HONOURS) -

PART - III

PAPER - VI

FROM

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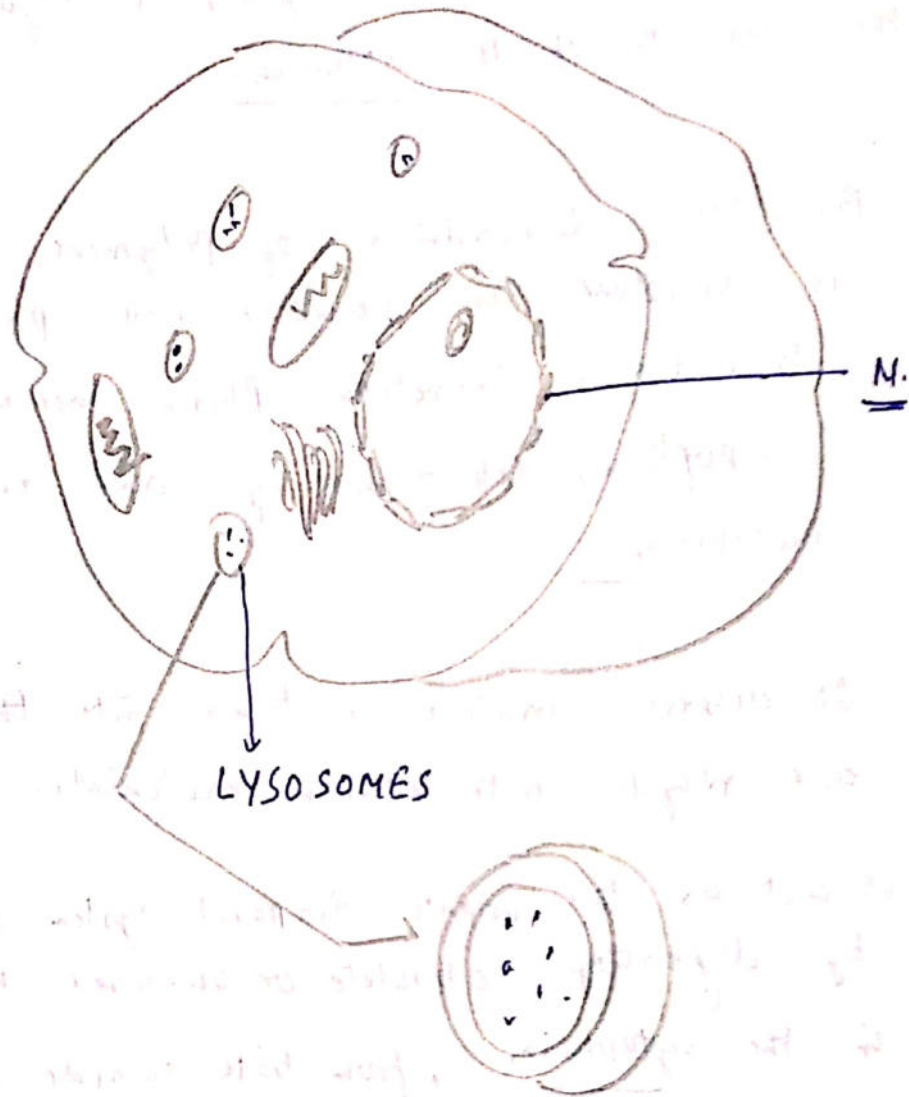
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# LYSOSOME

(1)

B.Sc. Part-3<sup>rd</sup>

Paper-VI



- o It's a membrane bound organelle -
- o Found in - many animal cells
- o Spherical - vesicles -, contain - hydrolytic enzyme that can break down many kinds of - Biomolecules
- o Has specific composition, of both its - membrane protein, and its luminal protein

(2)

- The lumen's pH ( $\approx 4.5 - 5.0$ ) is optimal for the enzymes involved in hydrolysis, analogous to the activity of the stomach.
- Besides degradation of polymers, the lysosome is involved in various cell-processes including - Secretion, Plasma membrane repair, apoptosis, cell signalling and energy metabolism.
- It digests materials taken into the cell and recycles intracellular materials.
- It act as the waste disposal system of the cell by digesting obsolete or un-used materials in the cytoplasm, from both inside and outside the cell.
- Discovered by - Christian de Duve, Received Noble Prize in - Physiology or Medicine - 1974
- contain - more than 60 different enzyme and have more than 50 membrane protein
- Enzymes of the lysosome are synthesized in

(2)

In the rough R.R.

1. The enzymes are imported from the Golgi apparatus in small vesicles, which fuse with large acidic vesicles
  2. Enzymes destined for lysosomes are specifically tagged with the molecule Mannose 6-phosphate, so they are properly sorted into acidified vesicles
  3. Synthesis of lysosomal enzymes is controlled by Nuclear gene.
    - ⊙ Mutation in the genes for these enzyme are responsible for more than 30, different human genetic disorder, which are collectively known as LYSOSOMAL STORAGE DISEASE
    - ⊙ These genetic defects are related to several neurodegenerative disorders  
Cancers, Cardiovascular disease are aging-related disease
- End -
- Next Day - DNA final