Lysosomes

Lysosomes are ultra-structural particles of the cell containing hydrolytic enzymes responsible for digestion. Though these are common in animal cell, but these are also found in the lower plants, such as euglenoids, slime moulds and some saprophytic fungi. They are so called because they contain lytic or destructive enzymes. Enzymes, if released, can digest cell and hence lysosomes are sometimes called suicide bags.

Structure

Lysosomes are globular or granular in appearance of 0.2-0.5µm size without any characteristic shape or structure. These are bounded by a single lipoprotein membrane containing enzymes in crystalline form. The enzymes present are phosphatase, nuclease, lipase, protease, glycosidase, sulfates, amylase etc. Membrane is impermeable to substrates of the enzymes contained in the lysosome. Certain substances, called labializes, cause instability of lysosome membrane, leading to release of enzymes from lysosome. Other substances, called stabilizers, have stabilizing action on the membrane. It prevents uncontrolled digestion of cell contents and thus prevents autolysis.

Lysosomes show polymorphism in different cell types. There are two basic types of lysosomes. Golgi complex buds off primary lysosomes containing hydrolytic enzymes. Phagosomes arising by endocytosis and fuses with primary lysosome to form secondary lysosome (Fig. 2.61).

Incomplete digestion results in residual bodies. Lysosomes sometimes include intracellular part like mitochondria or endoplasmic reticulum for digestion is called auto-phagosome.

Function:

Lysosomes contain digestive enzymes involved in the digestion of intracellular and extracellular particles. Primary lysosomes secrete hydrolases outside by exocytosis, resulting in degradation of extracellular material (extracellular digestion). Saprophytic fungi utilize this for nutrition.

Digestion of substances within the cell is called intracellular digestion. Intracellular digestion involves autophagy. Heterophagy is the intake of exogenous material into the cell by endocytosis and subsequent breakdown of this material by enzymes in secondary lysosomes. Autophagy brings about digestion of its own material on the death of cell or with cellular injury.

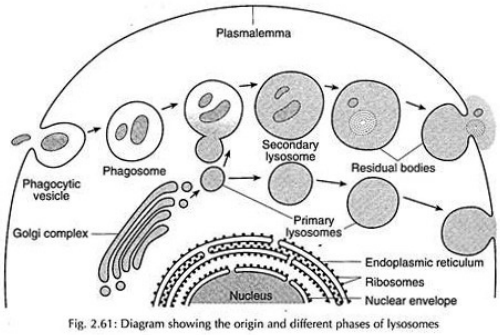

Fig. 2.61: Diagram showing the origin and different phases of lysosomes

Source: http://www.biologydiscussion.com/lysosomes/lysosomes-meaning-structure-and-function-with-diagram/38571

Further Reading: https://www.ivyroses.com/Biology/Organelles/Lysosomes.php