الجامعة	الانبار
الكلية	التربية للبنات
القسم	علوم الحياة
المرحلة	الاولى
اسم المادة باللغة العربية	حياتية الخلية
اسم المادة باللغة الانكليزية	Cytology
اسم التدريسي	م.م كوثر محمد ناصر
عنوان المحاضرة باللغة العربية	اللايسوسومات
عنوان المحاضرة باللغة الإنكليزية	Lysosomes
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المصادر او المراجع	علم الخلية – عبد الحسين فاضل

Lysosomes

Lysosomes are spherical, membrane-limited vesicles that may contain more than 50 enzymes each and function as the cellular digestive system. Their characteristic enzyme activities distinguish them from other cellular granules.

The enzyme most widely exploited for their identification is acid phosphate, because it occurs almost exclusively in lysosomes. Other enzymes common in lysosomes are ribonucleases, deoxyribonucleases, cathepsins, sulfatases, b-glucuronidase, and phospholipases and other proteases, glucosidases, and lipases.

Lysosomal enzymes usually occur as glycoproteins and are most active at an accidie pH. Lysosomes, occur in various sites and electron densities, their level of activity.

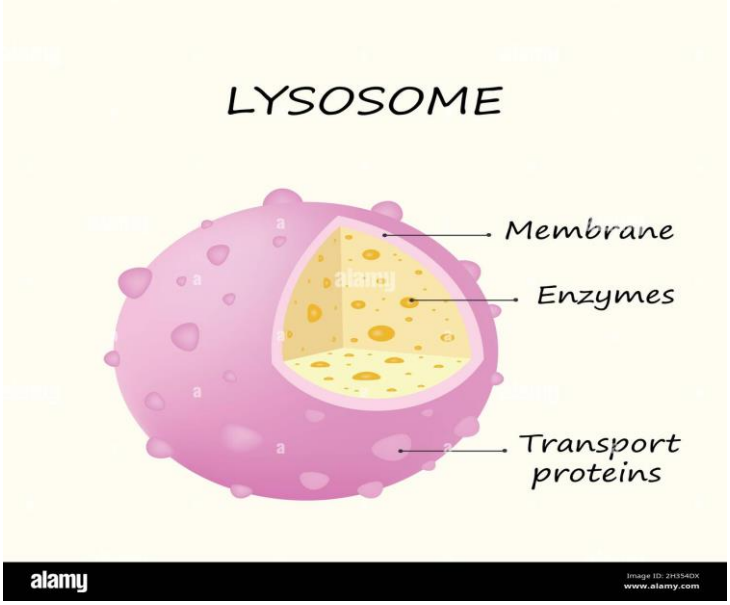
1- **Primary lysosomes** are small (5-8 nm), with electron-dense contents: they appear as black circles in electron micrographs. They are the storage form of lysosomes, and their enzymes are mostly indigestive. Lysosomes enzymes synthesized and core glycosylated in the RER are transferred to the Golgi compels for further glycosylation it is uncertain whether their final packaging

a primary lysosomes occurs in the Golgi complex. The primary lysosomes disperse through the ectoplasm. They are found in most cells but are most abundant in phagocytic cells (macrophages, neutrophils).

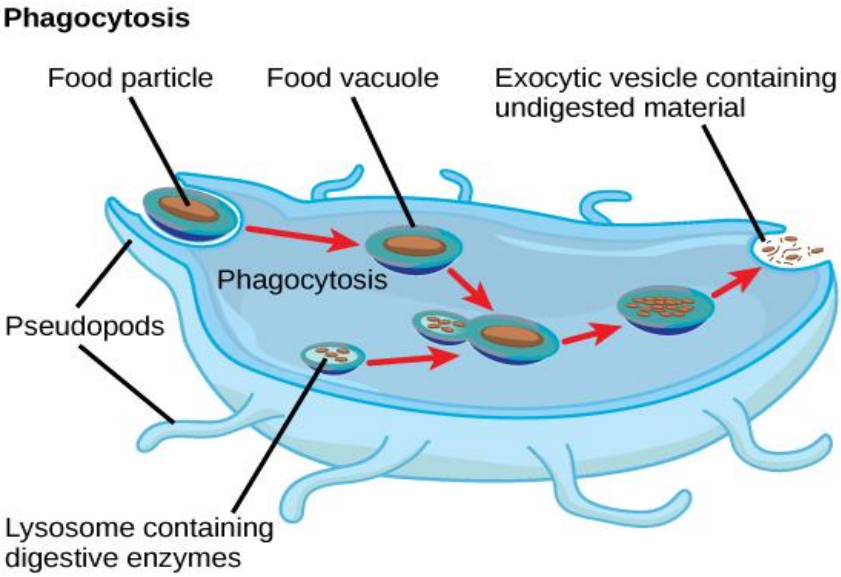
2- **Secondary lysosomes** are larger and less electron-dense and have a mottled appearance in electron micrographs. They are formed by the fusion of one or more primary lysosomes with a phagosome.

Their primary function is the digestion of products of heterophagy and autophagy; when the lysosomal enzymes mix with the phagosome contents, they become active, Lysosomal enzymes also catabolize certain products of cell synthesis, thus regulating the quality and quantity of secretory material.

Secondary lysosomes occur Fusion throughout the cytoplasm in many ells, in members that reflect the cell's Lysosomal and phagocytic activity. Residual bodies are membrane -limited inclusion of varying size and electron density associated with the terminal phases of lysosome function . They contain in digestible materials such as pigments, crystals, and certain Lipids .



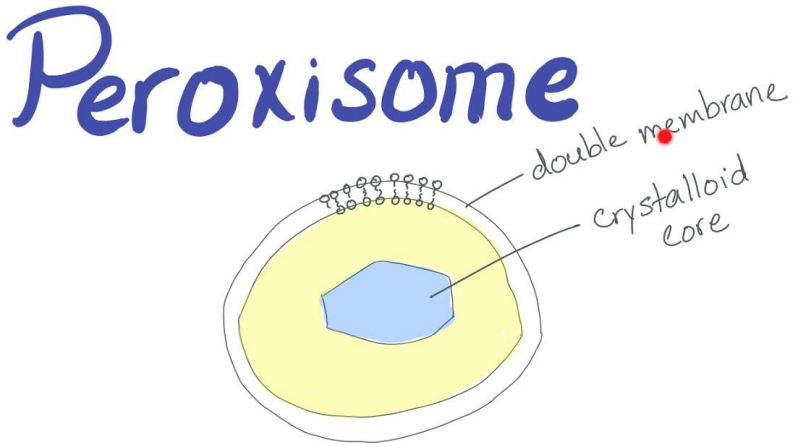
Lysosom



Peroxisomes

Peroxisomes are membrane limited, enzyme-containing vesicles somewhat larger than primary lysosomes. Peroxisomes function in hydrogen peroxide metabolism. They contain oxidase, hydroxyamid oxidase, and d-amino acid oxidase, which produce hydrogen peroxide capable of killing bacteria; they also contain catalase, which oxidize: various substrates and uses the hydrogen removed in the process to convert the toxe hydrogen peroxide to water.

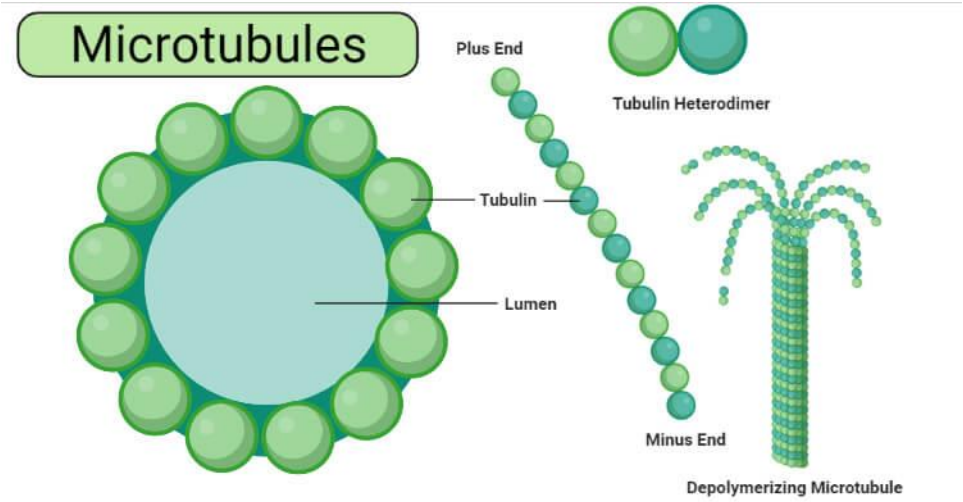
Peroxisomes also participate in gluconeogenesis by assisting in the b- oxidation of fatty acids. They are found dispersed in the cytoplasm or in association with the SER



Microtubules

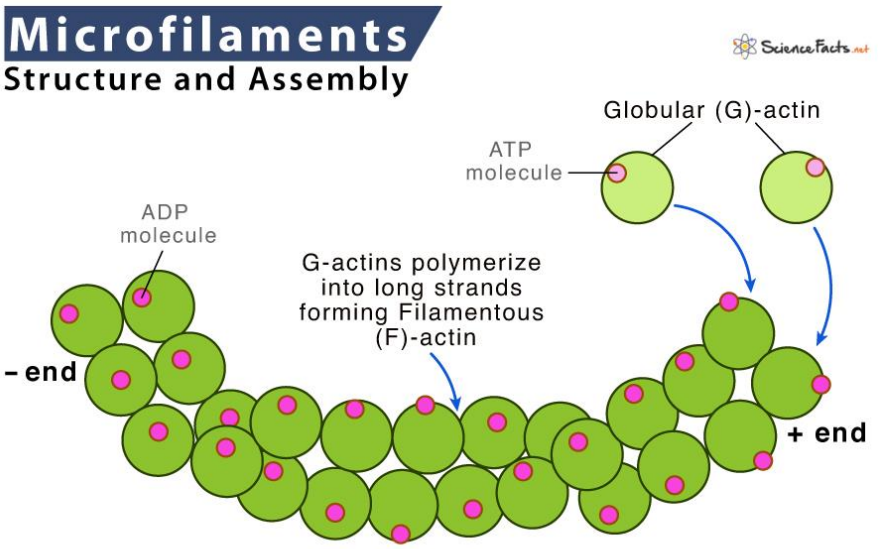
Microtubules are the thickest components of the cytoskeleton, with diameters of 24 of nm. They are fine tubular structures of variable length, with dense walk (5 om thick) and a clear internal space (14 nm in internal diameter). The walls are composed of subunits called tubulin heterodimers, each of which consists of one a-tubulin and one b-tubulin protein molecule. The tubulin heterodimers are arranged in protofilaments.

Thirteen of these threadlike polymers of a-and b-tubulin align parallel to one another to form the wall of each Microtubule Microtubules increase in length by adding new heterodimers to one end, called the nucleation site.



Microfilaments

Microfilaments are the thinnest cytoskeletal components (3-7 nm wide), They are usually composed of one of several types of actin protein. In striated muscle cells, actin filaments form a stable Pura crystalline in association with filaments of myosin. Actin filaments in offer cells are less stable and con dissociate and reassemble, These changes are regulated in part by calcium ions and cyclic AMP and by actin-binding proteins in the ectoplasm, Microfilaments are contractile, but to contract, they usually interact with myosin. In muscle cells, myosin forms thick filaments. In muscle cells, it exists in soluble form. In nonmusicale cells, microfilaments are generally distributed as an irregular meshwork throughout the cytoplasm.



Centrioles

A centriole is a cylindric group of microtubules, 130 nm in overall diameter and 350-500 nm long, containing ¥ microtubule triplets in a pinwheel array, Each microtubule in a triplet shares a portion of the wall of the neighboring microtubule.

Ag interphase (nondividing) cell has a pair of adjacent continues with perpendicular

long axes, each surrounded by several electron-dense satellite, of pericentriolar bodies. Other ectoplasmic Microtubules originate from the petrodollar bodice and radiate into the cytoplasm. Centrioles are the structural organizers of the cell. Centriole duplication is a prerequisite for cell division, and during mitosis the centrioles organize the microtubules of the mitotic spindle. Lection Between cell divisions, centrioles are wear the nucleus, often surrounded by Golgi complexes, The Centrioles and associated Golgi composes constate the cell cytometer, which appears as a clear Zone near the nucleus. During the S Phase of interphase, each centriole duplicates by giving rise to a procentriole that grows at right angels to the original, during mitosis, the new centriole pairs migrate to opposite cell

poles

to organize the spindle.