

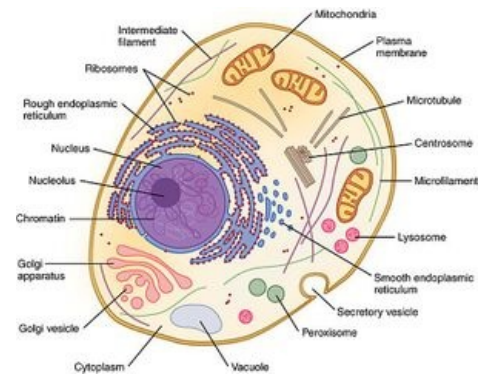
Structural organization of the cell, overview of cell components

Structural Organization of the cell - overview of cell components

The cell represents the smallest structural and functional unit of an organism capable of independent existence, originating from other cells through cell division, also known as proliferation. It consists of a nucleus and cytoplasm, housing organelles enclosed by the plasma membrane. These organelles can be categorized as membranous and non-membranous.

Membranous organelles:

1. **RER** (Rough endoplasmic reticulum) is responsible for synthesizing proteins via polyribosomes, destined for secretion from the cytosol.
2. **SER** (Smooth endoplasmic reticulum) contributes to the synthesis of phospholipids and steroid hormones, detoxifies toxins, and facilitates calcium release, particularly prevalent in muscle cells where it forms the sarcoplasmic reticulum.
3. **Golgi apparatus** plays a pivotal role in modifying and packaging proteins synthesized in the RER.
4. **Lysosomes** function as sites for intracellular digestion.
5. **Mitochondria** are essential for aerobic respiration and ATP production.
6. **Peroxisomes** house enzymes crucial for lipid metabolism.
7. **Nucleus**, the central organelle of the cell, contains genetic material.



Non-membranous organelles:

1. **Ribosomes** that are not attached to any membrane, known as free-floating ribosomes, synthesize proteins for cellular use.
2. **Centrosome** consists of a pair of centrioles and serves as an organizing center for microtubules.
3. **Cytoskeleton** comprises microtubules, actin filaments, and intermediate filaments.

References

- JUNQUIERA, Anthony – MESCHER, . *Junqueira's Basic Histology*. 16. edition. McGraw Hill LLC, 2001. 576 pp. ISBN 1260462978.