

Organelles and compartmentalization

Define organelle.

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Which three structures are not considered organelles?

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Which invention made it possible to study the function of individual organelles?

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What is the advantage of separating the nucleus from the cytoplasm?

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Why are lysosomal enzymes kept in a compartment?

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Why is the intermembrane space of a mitochondrion small?

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What is the role of cristae?

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Where are the photosystems of a chloroplast?

The cell wall, the cytoskeleton and the cytoplasm.

A discrete subunit of a cell that is adapted to perform a specific function.

mRNA can be modified after transcription before it meets ribosomes for translation.

The ultracentrifuge, used for cell fractionation.

So a high proton concentration builds up quickly, giving a steep gradient for ATP production.

They are hydrolytic enzymes that would digest the cell's own components if free in the cytoplasm.

In the thylakoid membranes, which have a large surface area.

Folds of the inner membrane that give a large surface area for electron transport chains and ATP synthase.

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What is compartmentalized in the stroma?

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Why does the nuclear membrane need pores?

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What happens to the nuclear membrane in mitosis and meiosis?

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Contrast the proteins made by free ribosomes and by ribosomes on the rER.

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What is the role of the Golgi apparatus?

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What is the role of clathrin?

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Give two functions of vesicles.

So mRNA can leave the nucleus and proteins needed inside the nucleus can enter.

The enzymes and substrates of the Calvin cycle.

Free ribosomes: proteins retained in the cell. rER ribosomes: proteins for transport within the cell or for secretion.

It breaks into vesicles so spindle microtubules can reach the chromosomes, then re-forms afterwards.

It forms a lattice coat on the cytoplasmic side of a membrane that curves it into a bud, forming a vesicle.

Processing proteins from the rER, for example adding carbohydrate, and packaging them into vesicles for secretion.

Any two: carrying proteins from rER to Golgi; secretion by exocytosis; lysosomes; taking material in by endocytosis.