

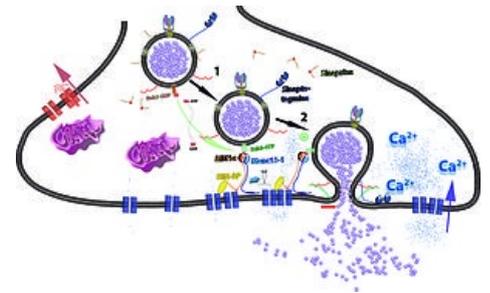
Exocytosis

Exocytosis is a continuous process in which the cell secretes larger particles (eg macromolecules) directly into the extracellular matrix through the cell membrane (plasmalemma). A membrane vesicle (vesicle) containing the secretion travels to the membrane, merges with it and subsequently releases the internal contents into its surroundings. The opposite process, i.e. the uptake of substances, is called endocytosis. Both complementary processes are collectively referred to as cytos.

In general, the uptake and release of substances is one of the most important functions of the cell membrane.

Progress

A **vesicle**, eg with proteins synthesized in the granular endoplasmic reticulum, is processed in the Golgi complex and **acquires** there a **limiting membrane**. Subsequently, thanks to *v-SNARE*-proteins (on the surface of vesicles) and *t-SNARE*-proteins (on the surface of membranes), it travels towards the part of the cell membrane from which it is to be excluded (**SNARE** is soluble **N**-ethylmaleimide-sensitive fusion-protein attachment-protein **receptor**). Once it approaches at least 1.5 nm, it **sticks**, its membrane becomes part of the plasma membrane and the contents are released from the cell. Initiation of this reaction often occurs only after being triggered by a specific signal.



Water must be removed from the hydrophilic ends of the membranes to achieve the minimum distance necessary for fusion. It is an **energy disadvantageous process**, an active transport requiring an energy input.

Numerous types of cells are equipped with transporters that consume ATP, which expel from the cells their own or foreign potentially harmful substances "that have penetrated into the cytoplasm. Such transporters play an important role in e.g. the intestine or the liver, as well as in the central nervous system. They were discovered, among other things, on tumor cells, which, due to the increased expression of such pumps, become resistant to cytostatics and thus escape the effect of chemotherapy. One example is MDR-1-protein (multi-drug-resistance), also referred to as P-glycoprotein-1. These export pumps belong to the family of ABC transporters (ABC = ATP-binding cassette).^[1]

Meaning

Exocytosis serves the cell as a secretion mechanism for its products. We distinguish two types of secretion - **constitutive** and **regulated**.

- **constitutive** secretion means that the cell secretes essentially **continuously**, eg plasma cells secreting immunoglobulins or cells secreting intercellular substance. The product of these cells are mainly enzymes and other types of variously modified proteins.
- **regulated** secretion represents the type when the cell secretes only **upon a certain stimulus'** (local or central). Often, cells with this type of secretion store their secretory material in ``secretory granules or vesicles. *A special example in the central or peripheral nervous system is the secretion of neuromediators stored in synaptic vesicles.*

Links

Related Articles

- Biological membrane and transport of substances through the biological membrane
- Endocytosis
- Active transport
- Passive transport

External links

- Video - Exocytizing Cell (youtube.com) (https://www.youtube.com/watch?v=U9pvm_4-bHgy%7C)

References

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