



Inside the eukaryotic cell is an organelle called endoplasmic reticulum which is responsible for packaging and sending proteins and lipids around the cells. It is an interconnected network of flattened membranes enclosed tube-like structure known as cisternae. Not to be confused with Golgi apparatus.

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There are two types of endoplasmic reticulum:

1. Rough Endoplasmic Reticulum
2. Smooth Endoplasmic Reticulum

Rough Endoplasmic Reticulum (RER)

This is the type of endoplasmic reticulum that has ribosomes attached to it. The presence of ribosomes on rough endoplasmic reticulum enables it to package protein for use in the cell and outside the cell.

Smooth Endoplasmic Reticulum (SER)

This is the type of endoplasmic reticulum that does not have ribosome attached to it. This type of endoplasmic reticulum packages lipids, phospholipids and steroids used inside and outside the cell. Ovaries, testes and sebaceous glands have abundant smooth endoplasmic reticulum in them. Sarcoplasmic endoplasmic, a type of smooth endoplasmic reticulum found in the muscle cells help to store calcium ions which interacts with contractile proteins using ATP to aid easy muscle contraction and relaxation.

Endoplasmic reticulum is connected to the nuclear membrane and other organelles that make up the Endomembrane system, a group of different membranes suspended in the cytoplasm in eukaryotes.

Organelles that makeup the endomembrane system include:

- Nuclear envelope
- Endoplasmic membrane
- Golgi apparatus
- Vesicles
- Lysosomes

Each of the above listed organelles transports proteins and lipids within the cells.

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