

LE SYSTÈME ENDOMEMBRANAIRE DE LA CELLULE

- The endomembrane system:
comprises the intracellular compartments of a eukaryotic cell, each bounded by a single membrane. These include:
 - The endoplasmic reticulum
 - The Golgi apparatus
 - Endosomes
 - Lysosomes

3. Golgi apparatus

Definition

Location

Structure

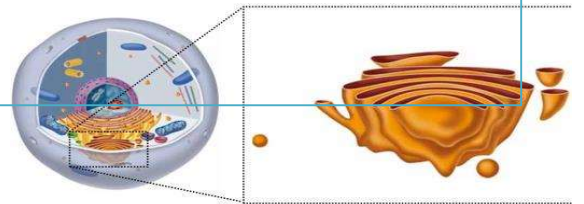
Functions

1

* **Precise location:**

- Near the nucleus
- Between the endoplasmic reticulum (ER) and the plasma membrane (PM)
- Near the centrosome

+ **Interactions:** Cytoskeleton, proteins, etc.



* **Golgi apparatus:**

- Is a membrane-bound organelle
- Originating from the ER (by fusion of transition vesicles).
- It consists of one or more dictyosomes, with an average of 20, though this number varies depending on the physiological state and cell type.
- Each dictyosome is composed of 4 to 8 curved membrane sacs surrounded by vesicles, separated by a hyaloplasmic band, and stabilized by microtubules and actin microfilaments.

2

Structure of the Golgi Apparatus

Each dictyosome can be divided into three different functional regions:

1. Cis-face sacs or CGN (Cis Golgi Network). : **Forming face**

This is the **entry face** for material from the endoplasmic reticulum.

These sacs are supplied with material from the ERGIC (Endoplasmic Reticulum-Golgi Intermediate Compartment).

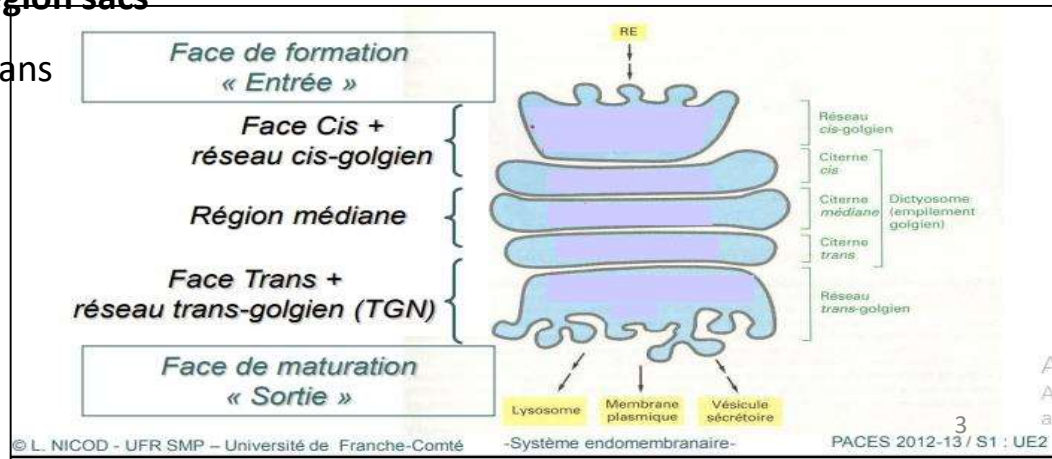
Structure très dynamique

2. Median or intermediate region sacs

3. Trans-face sacs or TGN (Trans Golgi Network):

- Is the **exit face**.

Maturing face

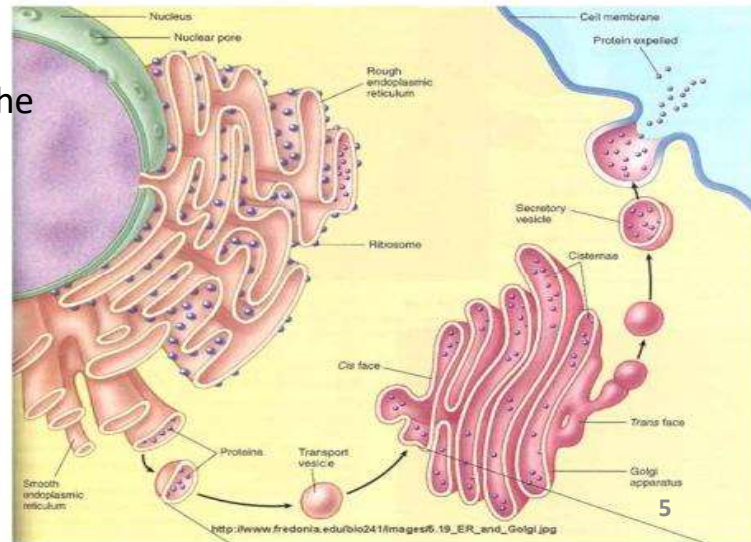
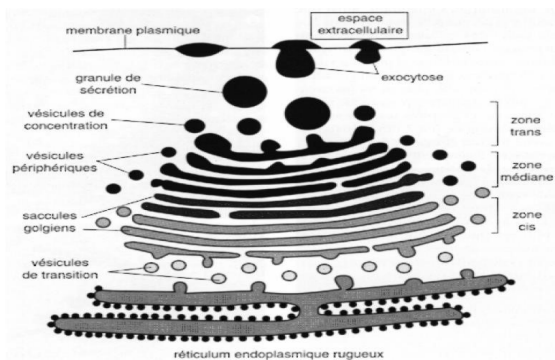


Vesicles Associated with Dictyosomes

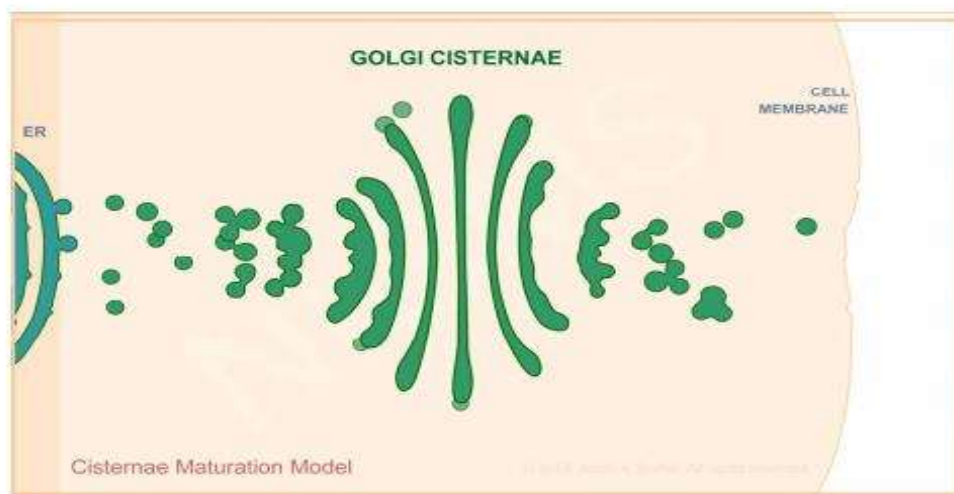
Transport between ER, Golgi, and Vesicles

1. Vesicles originating from the rough ER, but without ribosomes (Vesicle formation) (diameter 50 nm).
2. Fusion of vesicles with the dictyosomes or cisternae of the Golgi on the Cis side.
3. Progression of the contents, particularly proteins, from the Cis side to the Trans side.
4. Budding of vesicles, some surrounded by a protein structure (clathrin-coated vesicles) on the Trans side.

transport of vesicles from one compartment to another depends on microtubules (see Cytoskeleton)



Dynamique du Golgi



Functions of the Golgi Apparatus

- **[Receives + Modifies + Exports]**
- **Protein Maturation** synthesized in the ER:
 - Post-translational modifications.
- **Membrane Trafficking** to and from the plasma membrane:
 - Secretion and endocytosis.
- **Protein Sorting and Targeting:**
 - Retrograde transport to the ER.
 - Targeting to lysosomes.
(*The Golgi as the cell's sorting center*)
- **Cellular Storage Site for Ca^{2+} .**

