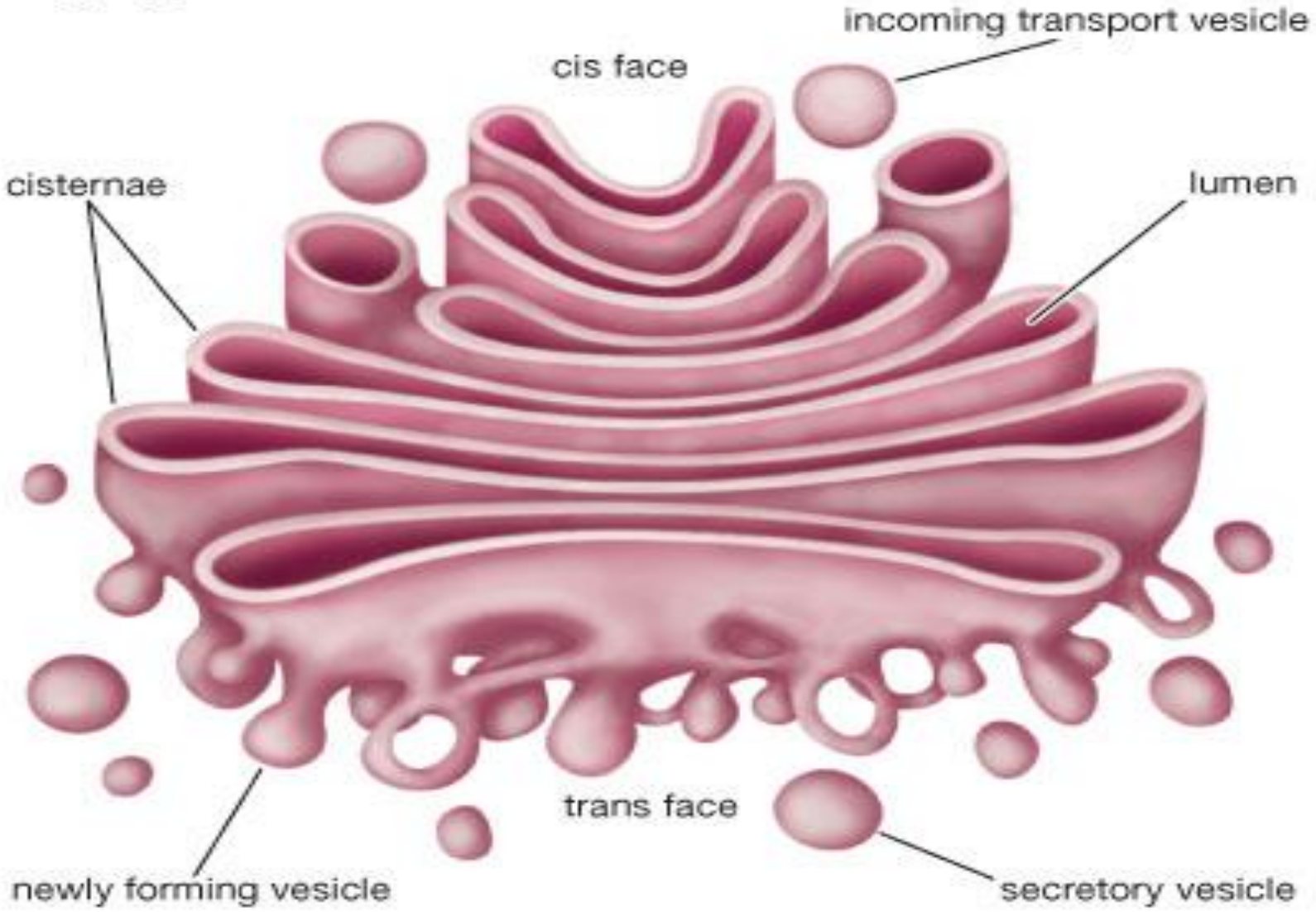
Golgi bodies

- **An organelle in eukaryotic cells consisting of stacks of flat membranous sacs that modify, sort, route products of ER.**
- **Nearly all eukaryotic cells have characteristic clusters of membrane-surrounded vesicles called Golgi bodies.**
- **Stack of flattened vesicles, each surrounded by a single membrane.**
- **Near the ends of the Golgi vesicles are much smaller spherical vesicles that are pinched off from the edges of the large ones.**

Golgi apparatus



- **In mammalian cells the Golgi complex is usually positioned centrally in the cell, close to the nucleus.**
- **One animal cell usually contain a single Golgi apparatus. but number vary from cell to cell and from animal to animal. (Nerve cells ,liver cell and oocytes have multiple Golgi apparatuses).**
- **Golgi stack has two poles:**

  a) Cis face (receiving side of Golgi apparatus - receive vesicles containing ER products)

  b) Trans face (shipping side of Golgi apparatus)

Function:

- **It modify, finishes, sorts and ships cell products**
- **Products of the ER usually modified during their transit from the cis face to the trans face of the Golgi.**
- **In the case of the secretory pathway it both receives newly synthesized proteins from the ER, and subsequently exports these same proteins to the lysosomal system and the cell surface.**

- **During transit through the Golgi complex key modifications are made to most proteins, including changes to their glycosylation profile, sulfation, phosphorylation, and also proteolytic cleavage.**
- **The Golgi bodies receive certain cell products from the endoplasmic reticulum and "package" them into secretory vesicles, which find their way to the outer plasma membrane of the cell and fuse to it.**
- **The fused portion may then open to discharge the vesicle contents to the exterior, a process called exocytosis.**

1 Protein-containing vesicles pinch off rough ER and migrate to fuse with membranes of Golgi apparatus.

2 Proteins are modified within the Golgi compartments.

3 Proteins are then packaged within different vesicle types, depending on their ultimate destination.

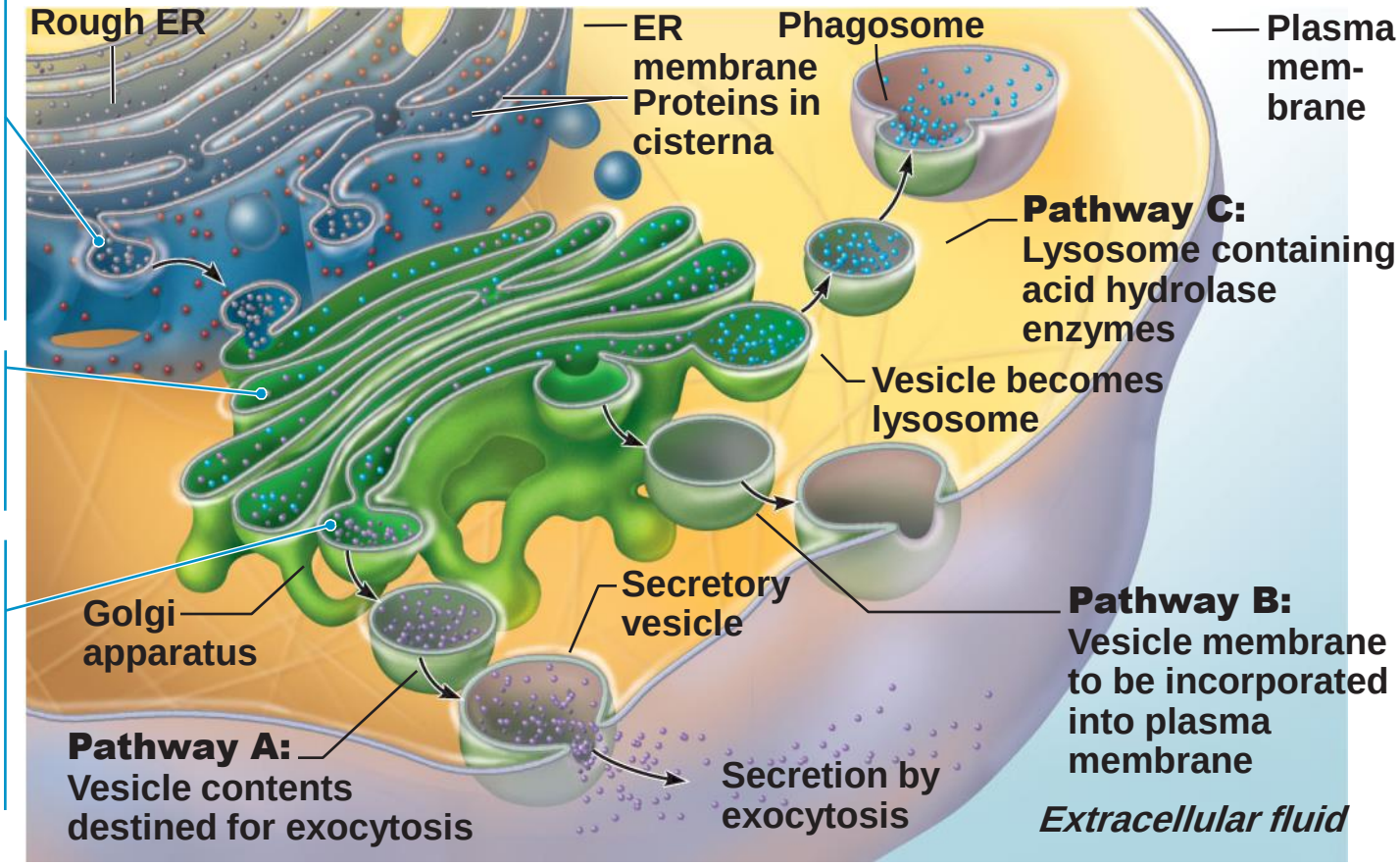


Figure 3.20

Diseases:

- **Disruption of specific transport steps between the endoplasmic reticulum (ER), Golgi complex, lysosomal system and the plasma membrane all can have dramatic consequences on the cell and are being linked to hereditary diseases.**

Example of the diseases:

- **Dyschromatosis universalis hereditaria, in which all mutations led to retention of a protein in the Golgi complex.**

- **Macrocephaly, in which gross changes in Golgi complex morphology.**

- **Cutis laxa, due to abnormal glycosylation of a protein.**