GOLGI APPARATUS

By Jeffrey Shutter

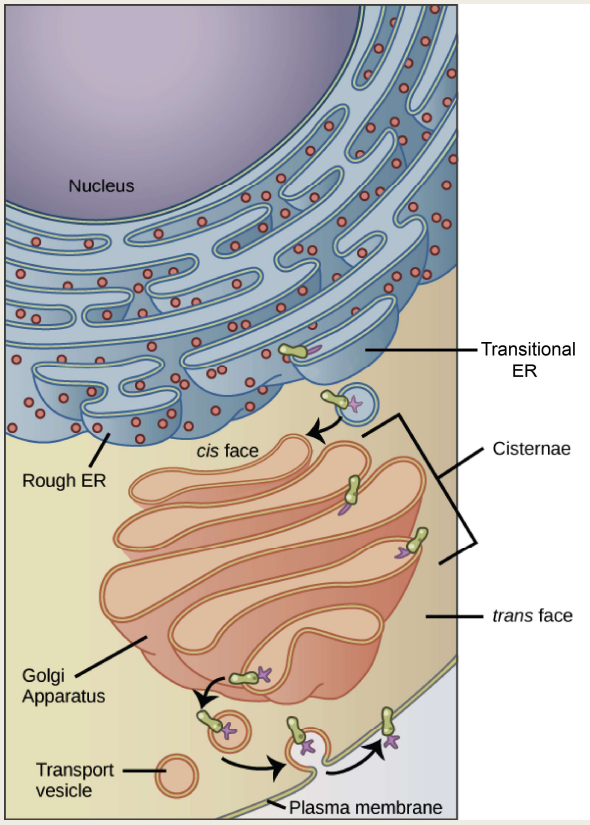
Major Processes

- Within the Golgi apparatus or body, the main function is to process and package macromolecules synthesized by the cell.[1]
- In charge of synthesis, modification, sorting and secretion of cell products.[1] -
  -Transport of lipids, proteins
- The Golgi body takes proteins and lipids from the ER and modifies them inside its apparatus, which contains 5 sections which are the cis, cis-medial, medial, trans-medial and trans faces.[2] Each section has different enzymes to modify the lipids and proteins passing through it. It then stores them and then sends them off to other locations in the cell.[3]
  -the cis face receives the molecules and the trans sends them off
- Within the body are flattened membrane stacks called cisternae and vesicles. These stacks contain enzymes that act to modify the products of the ER by catalyzing the addition or removal of sugars from cargo proteins (glycosylation), the addition of sulfate groups (sulfation), and the addition of phosphate groups (phosphorylation).[2] Vesicles, however, are concentrated around the Golgi body and act as transport devices for the products.[3]
- The Golgi is also responsible for creating lysosomes and synthesizing carbohydrates by adding proteins to polysaccharides. [1]

Interaction

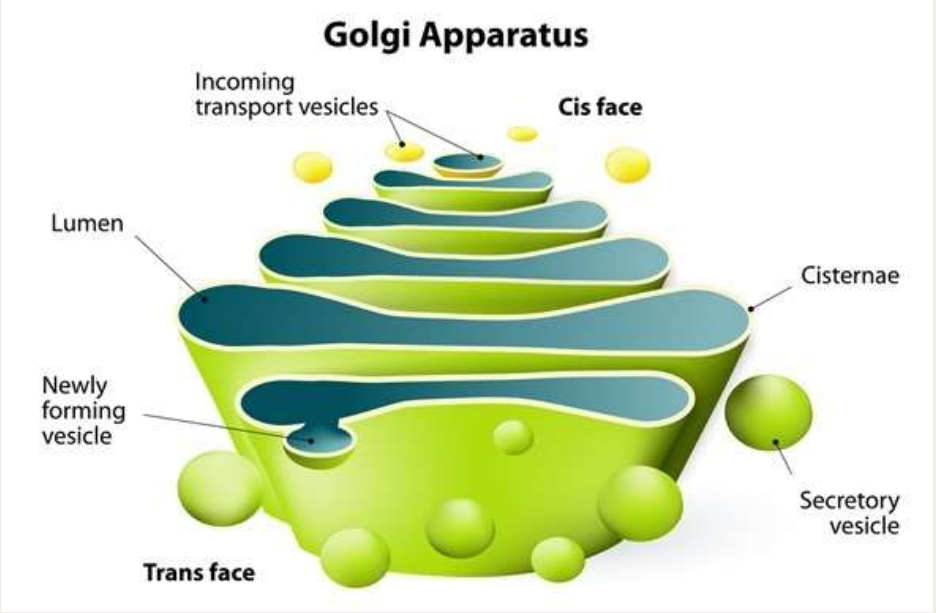
- The Golgi body takes lipids and proteins from the RER of the cell.[1]

- The Golgi body sends its products to one of three locations[4]
  - Inside the cell to lysosomes
  - The plasma membrane
  - Outside the cell



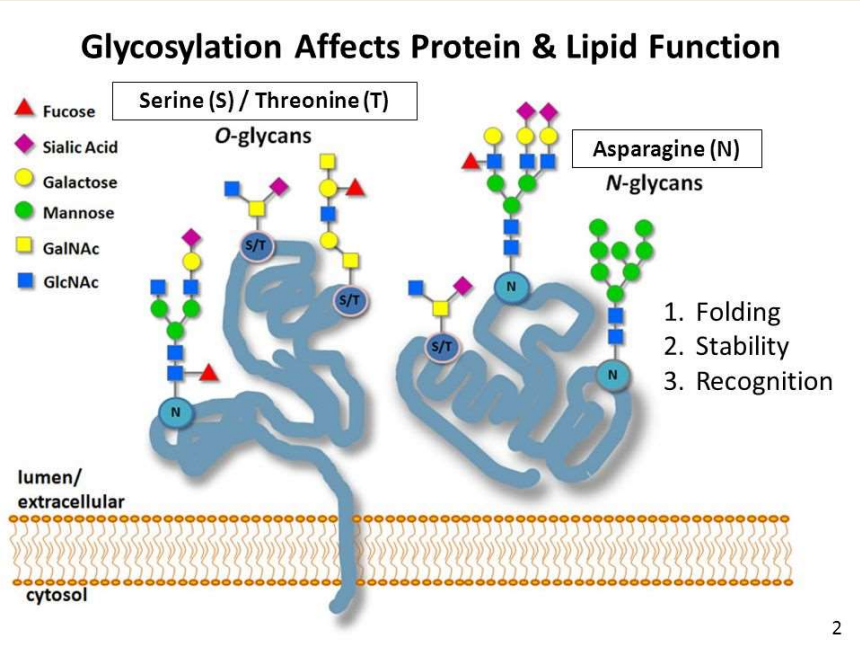
Structure

- The Golgi body's structure consists flattened membrane stacks called cisterna which have internal spaces called lumen.[3]
  - Inside these cisterna and their lumen are where the enzymes that modify the proteins and lipids are able to reside.
- The body's structure has a cis face and a trans face[3]
  - The cis face, being located near the ER is able to take in the molecules for modification and the trans face, being located at the end of the body is able to send off the molecules through vesicles.
- Also has vesicles that are able to transport the macromolecules to and from the body.[1]
- (Cisterna Maturation Model)[2]



Molecules Used and Produces

- The Golgi body uses:[2]
  - *Proteins from the RER*
  - *Lipids from the RER*
  - *Glycosylation enzymes*
  - *Phosphorylation enzymes*
  - *Sulfation enzymes*
- And produces:[3]
  - *Modified and destined proteins and Lipids*
  - *Lysosomes*
  - *Carbohydrates*



Citations

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- 2. (n.d.). Retrieved September 19, 2017, from https://www.nature.com/scitable/topicpage/how-do-proteins-move-through-the-golgi-14397318
- 3. The Structure and Function of the Golgi Apparatus (Golgi Body). (2017, March 06). Retrieved September 19, 2017, from http://www.brighthub.com/science/genetics/articles/22922.aspx
- 4. Golgi Apparatus. (n.d.). Retrieved September 19, 2017, from http://bscb.org/learning-resources/softcell-e-learning/golgi-apparatus/