MCB 150
The Molecular and Cellular Basis of Life

The Golgi Apparatus

Today’s Learning Catalytics Session ID is:

67018104

Announcements:

• Exam III is Thursday, April 13, from 7:00–9:00 PM
• Review Session next Monday, April 10, from 5:00–7:00 PM in 100 Noyes Lab
• Practice Exam III has been posted to MasteringBiology with a discussion board for questions
• Reminder to submit your exam questions for inclusion in Exam III
Translated/folded/modified proteins are now ready to be sent to the Golgi apparatus for additional processing and sorting.

Vesicles from the ER bud off and approach the Golgi apparatus:

- What starts cytosolic stays cytosolic; what starts lumenal stays lumenal or could be exposed to the extracellular space.

Traffic through the endomembrane system:
The Golgi apparatus:

(a) A Golgi stack in an animal cell

(b) A Golgi stack in an algal cell

Modifications that began in the ER continue in the Golgi:
Modifications that began in the ER continue in the Golgi:

- Bioynthesis of core oligosaccharide for N-linked glycosylation of certain asparagine residues
- Initial processing of core oligosaccharide
- Identification and removal of unfolded proteins
- Attachment of N-acetylgalactosamine to serine or threonine
- First step of phosphorylation of lysosomal proteins
- Removal of mannosyl residue from lysosomal proteins
- Second step of phosphorylation of lysosomal proteins
- Attachment of N-acetylgalactosamine
- Addition of galactose
- Addition of sialic acid
- Attachment of sulfate to tyrosine

Migration through the Golgi complex

Different sugars and modifications act like “zip codes”

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<tr>
<th>N-acetylgalactosamine</th>
<th>Mannose</th>
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Lysosomal protein

UDP → UMP

Mannose-6-phosphate

*THE CELL: A MOLECULAR APPROACH 6e, Figure 10.29*
The Golgi is also a site for further lipid synthesis and processing:

- Transported to the Golgi
- Synthesized in the SER

Plants have Golgi, but with (some) different functions:

- Golgi apparatus
- Vacuole
- Cell wall
- Chloroplasts
Sorting occurs after processing:

Secretion can be either constitutive or regulated: