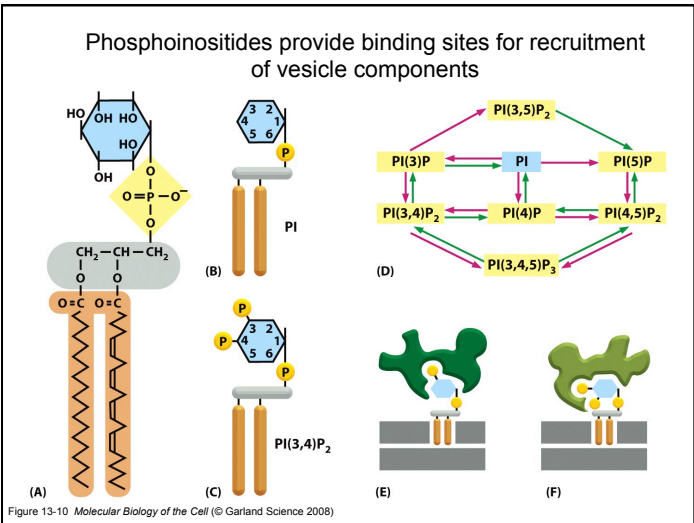
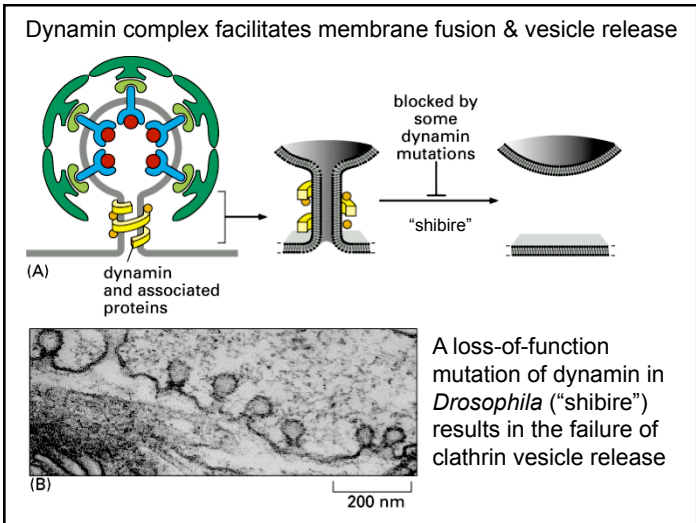
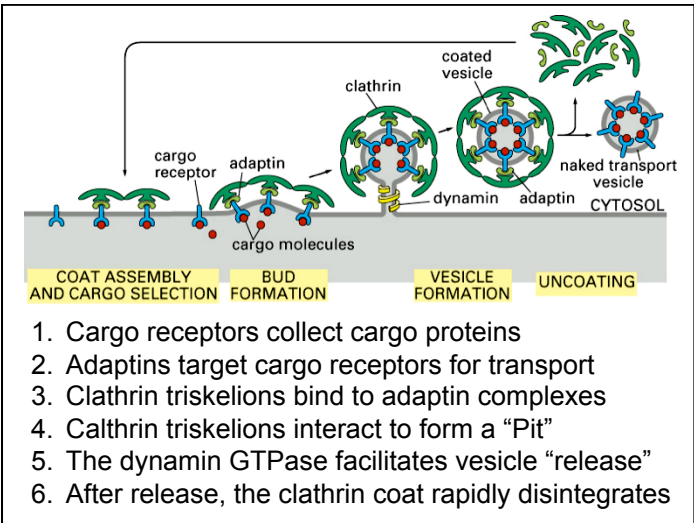
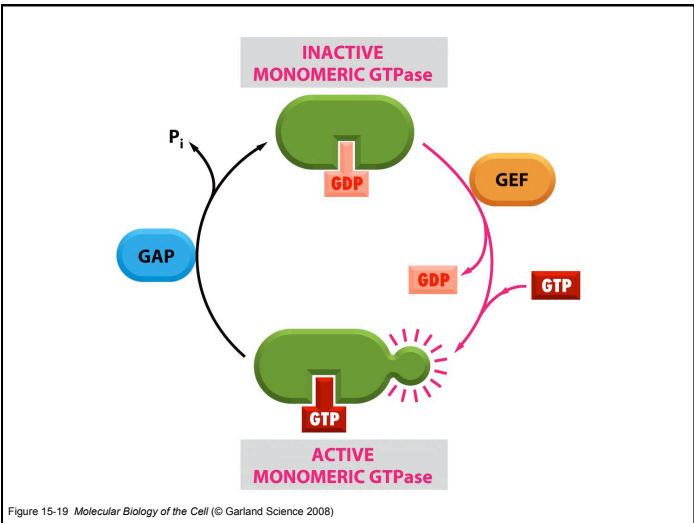
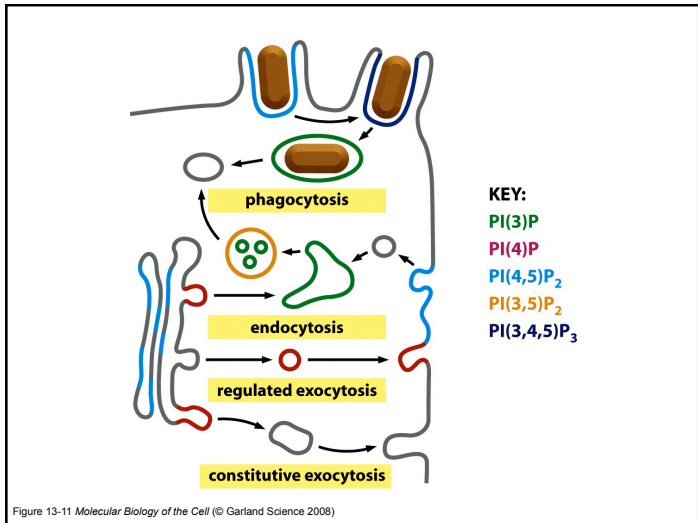
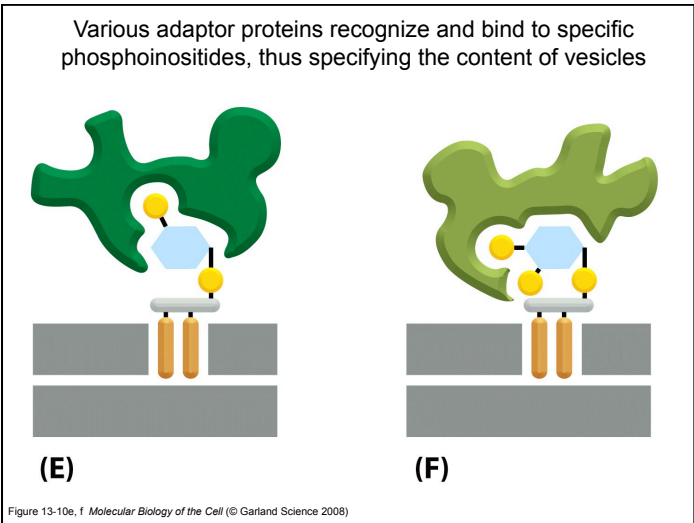
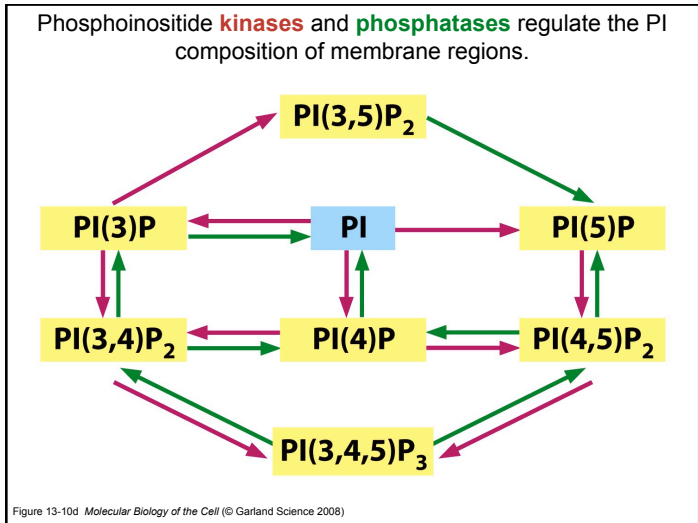


Exam 2  
 Wednesday, Mar 4 !!!  
 Lectures 7 - 11  
 Chapters 11, 12 & 13  
 50 multiple choice questions





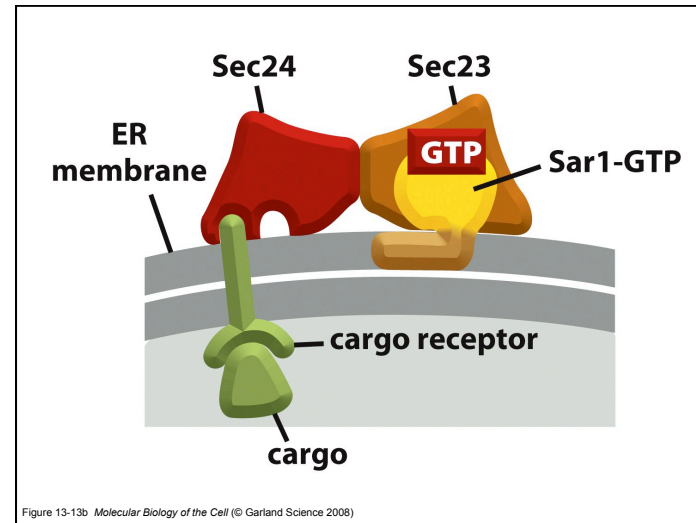
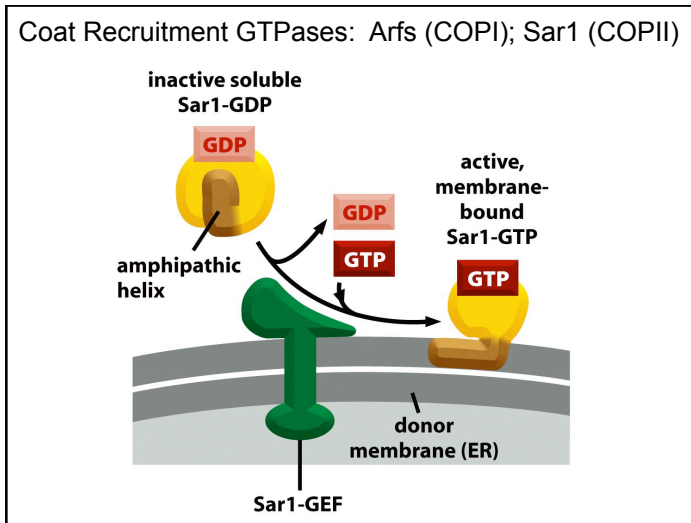


Figure 13-13b Molecular Biology of the Cell (© Garland Science 2008)

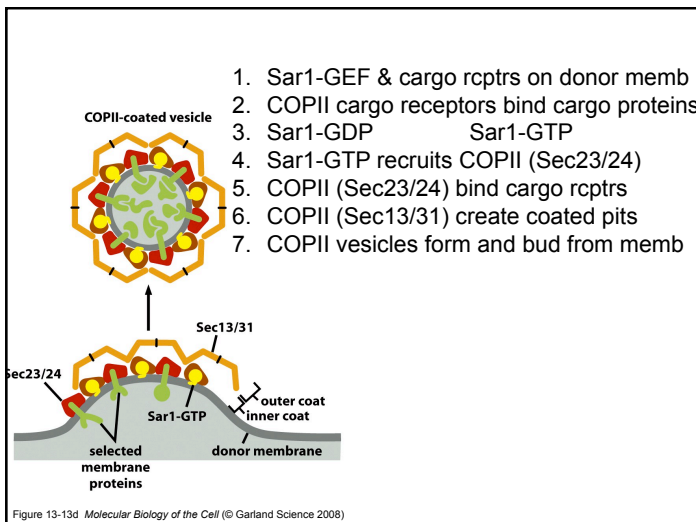


Figure 13-13d Molecular Biology of the Cell (© Garland Science 2008)

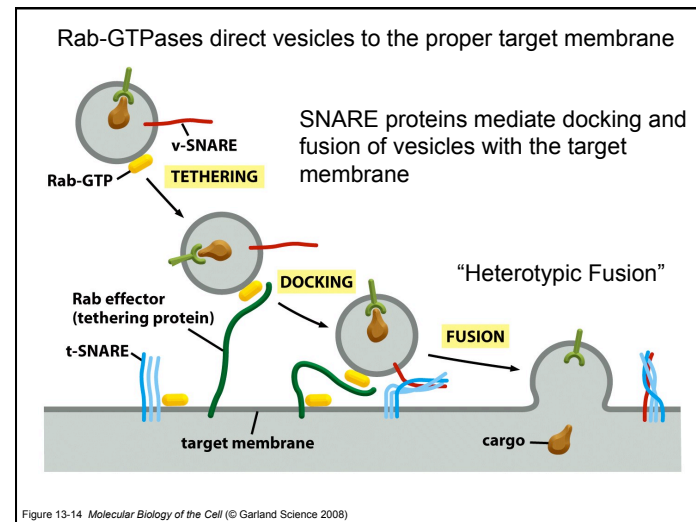


Figure 13-14 Molecular Biology of the Cell (© Garland Science 2008)

Over 60 members of the Rab-GTPase family in humans  
 All membranes/organelles have at least one Rab-GTPase

Table 13-1 Subcellular Locations of Some Rab Proteins

PROTEIN	ORGANELLE
Rab1	ER and Golgi complex
Rab2	<i>cis</i> Golgi network
Rab3A	synaptic vesicles, secretory granules
Rab4/Rab11	recycling endosomes
Rab5A	plasma membrane, clathrin-coated vesicles, early endosomes
Rab5C	early endosomes
Rab6	medial and <i>trans</i> Golgi cisternae
Rab7	late endosomes
Rab8	early endosomes
Rab9	late endosomes, <i>trans</i> Golgi network

Table 13-1 Molecular Biology of the Cell (© Garland Science 2008)

Rab-GEFs activate Rab-GTPases, which become membrane associated and recruit necessary “effector proteins”

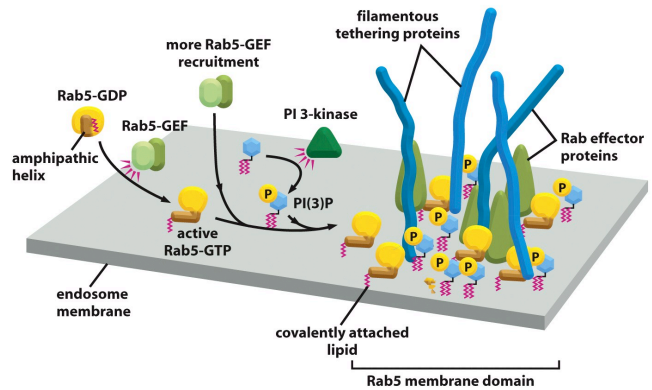


Figure 13-15 Molecular Biology of the Cell (© Garland Science 2008)

V-SNAREs and t-SNAREs form strongly bound complexes that facilitate vesicle docking and fusion

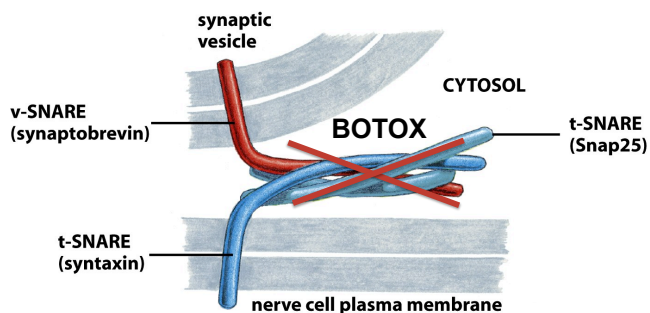
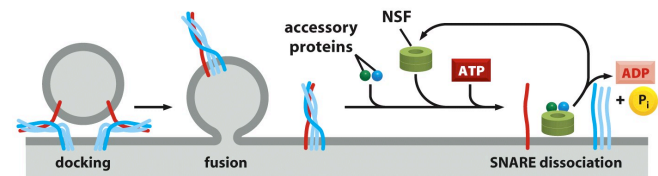


Figure 13-16 Molecular Biology of the Cell (© Garland Science 2008)

SNARE complexes require ATP hydrolysis to “pry” them apart



NSF = N-ethylmaleimide Sensitive Factor  
 SNAP = SyNaptosome-Associated Protein  
 SNARE = SNAP and NSF Attachment REceptors

Figure 13-18 Molecular Biology of the Cell (© Garland Science 2008)

HIV fuses with T-cell

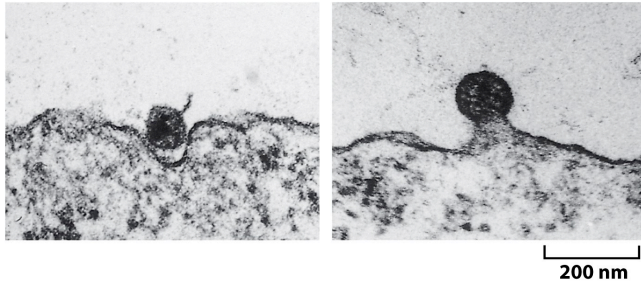


Figure 13-19a Molecular Biology of the Cell (© Garland Science 2008)

Enveloped viruses (e.g., HIV) exploit the SNARE mechanism to gain access to host cells

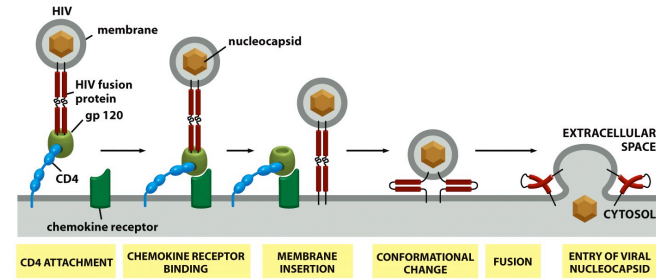
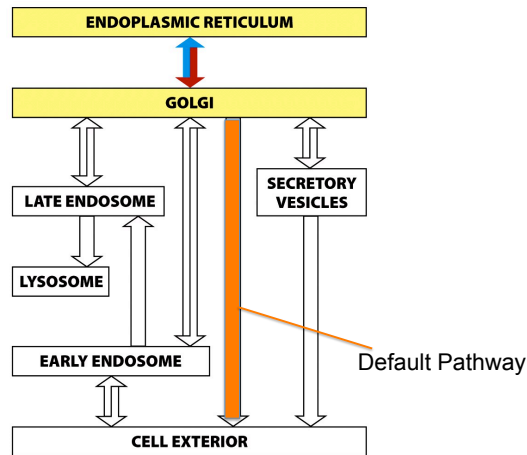


Figure 13-19b Molecular Biology of the Cell (© Garland Science 2008)



Page 766 Molecular Biology of the Cell (© Garland Science 2008)

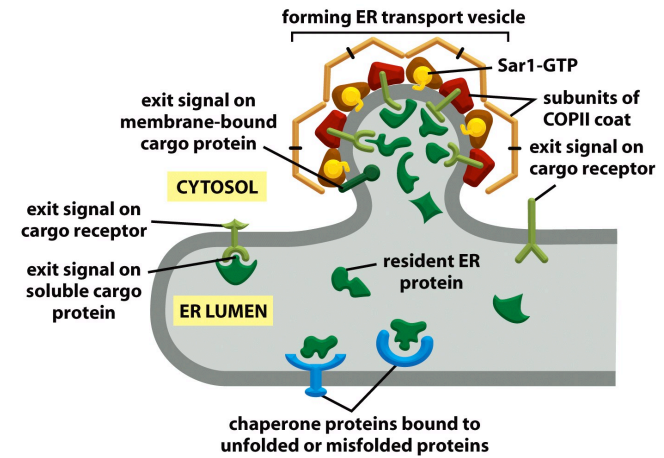
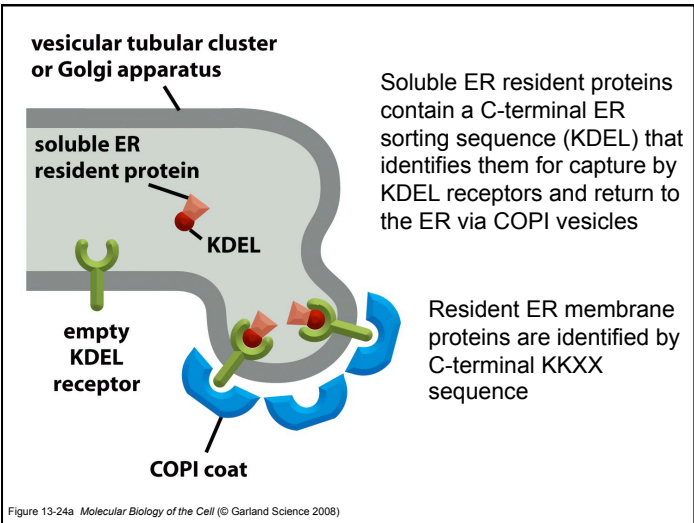
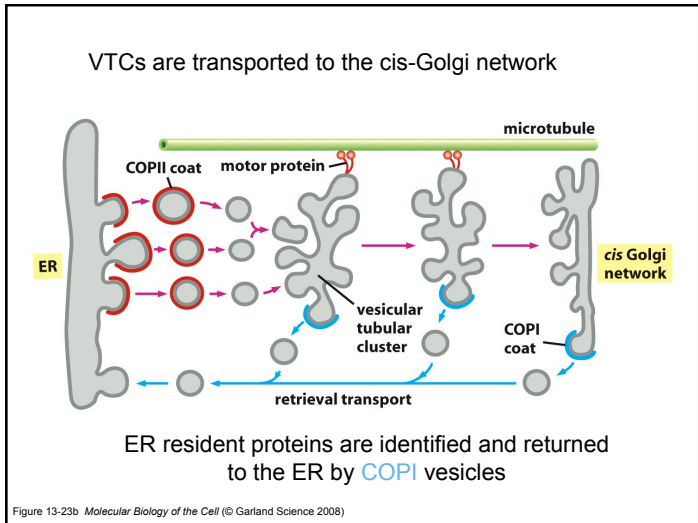
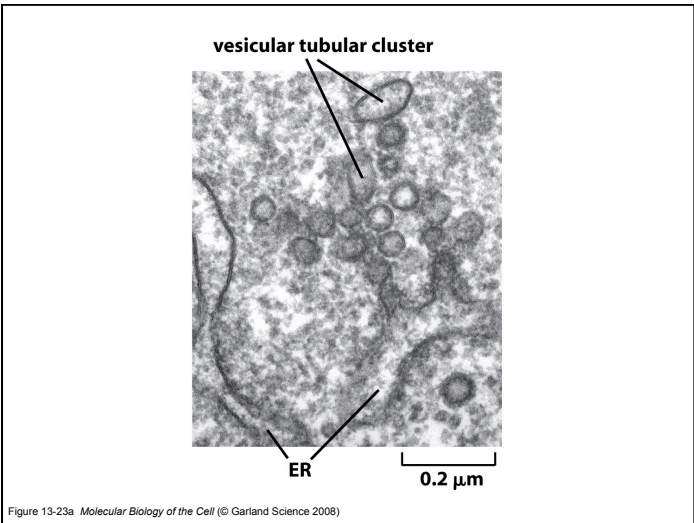
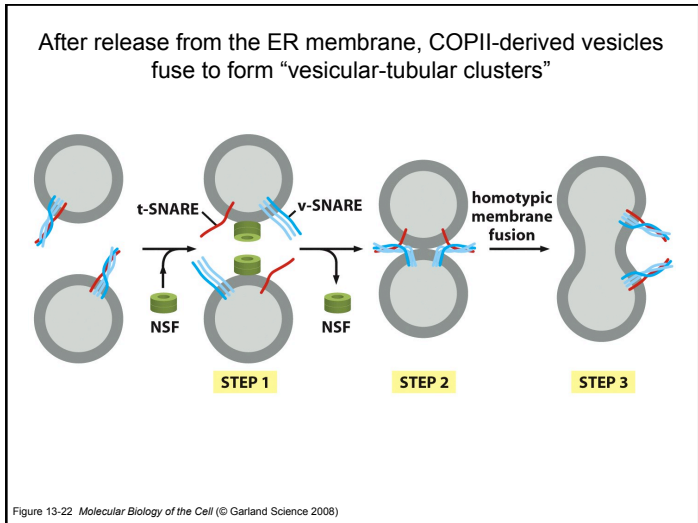
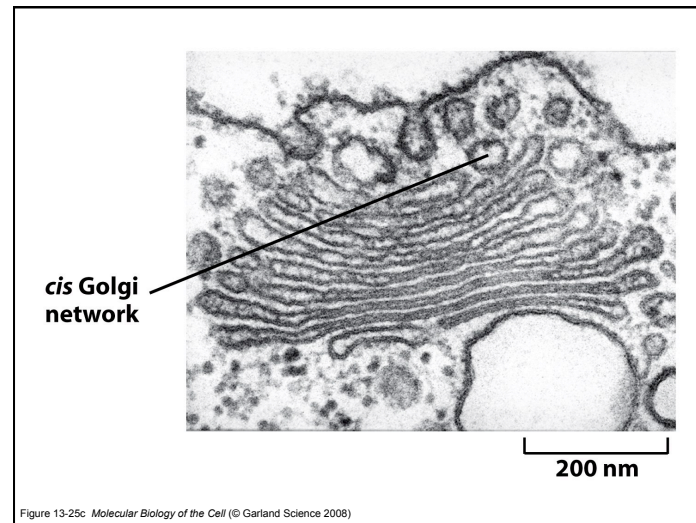
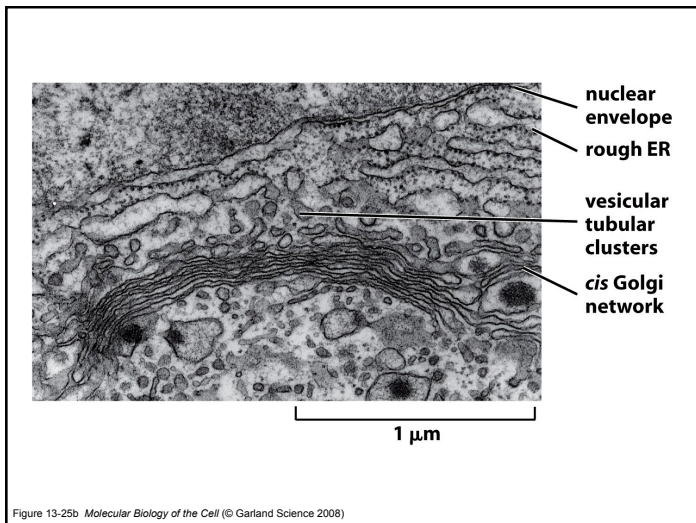
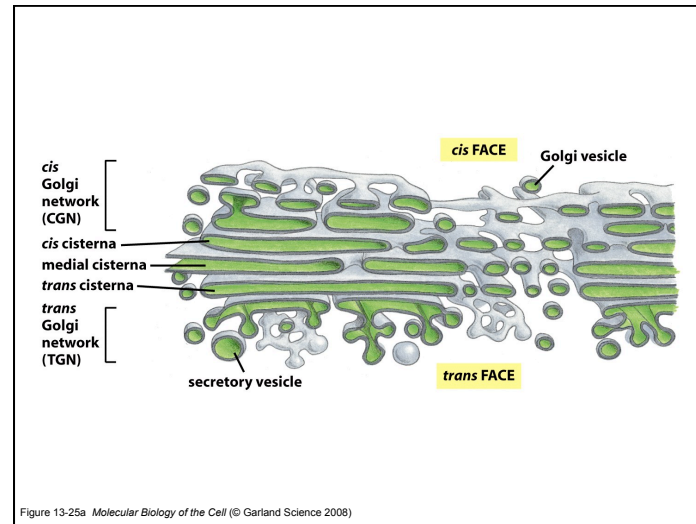
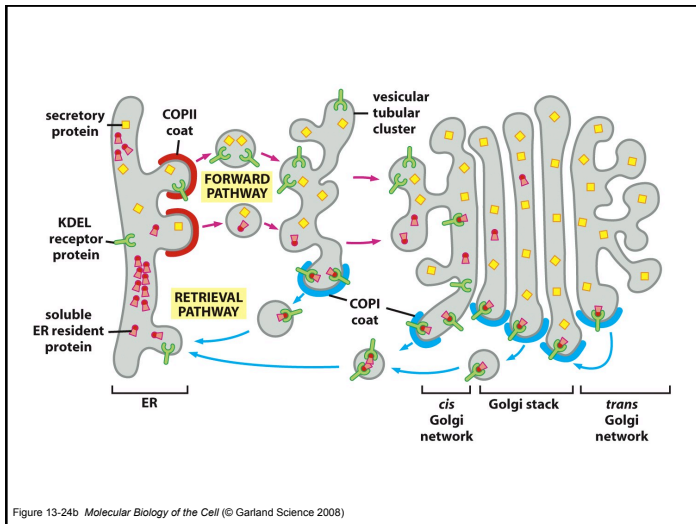
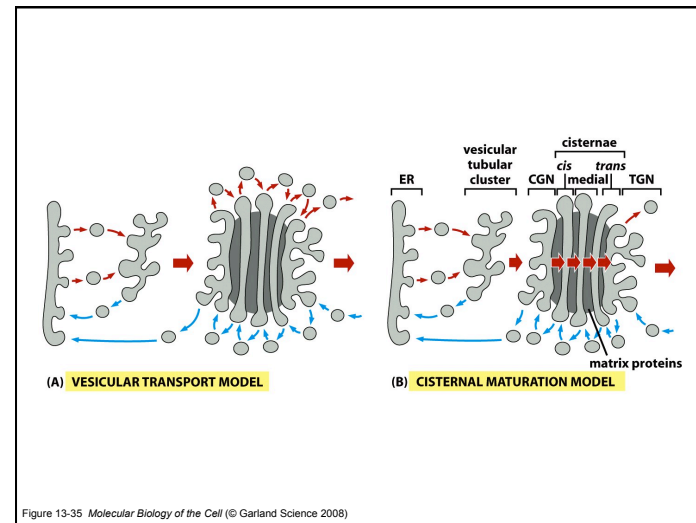
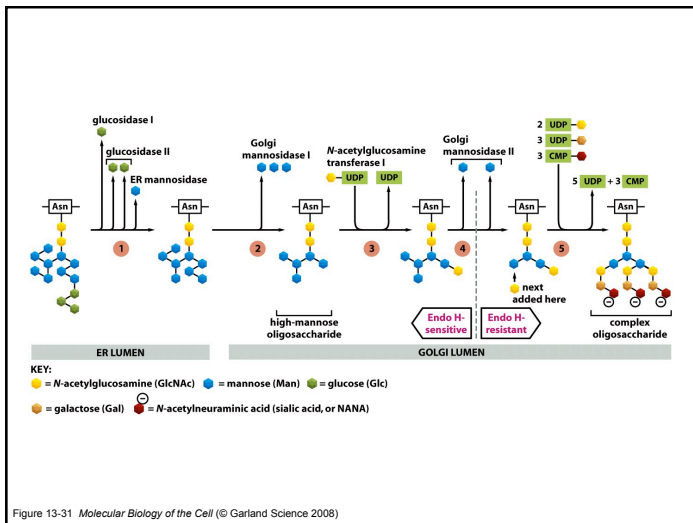
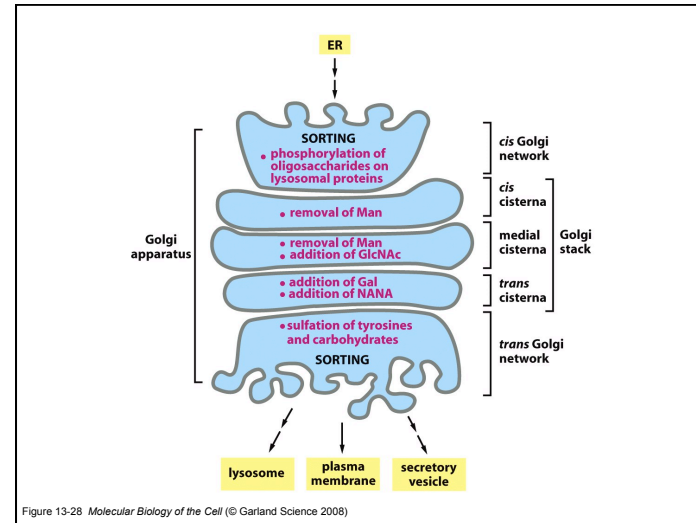
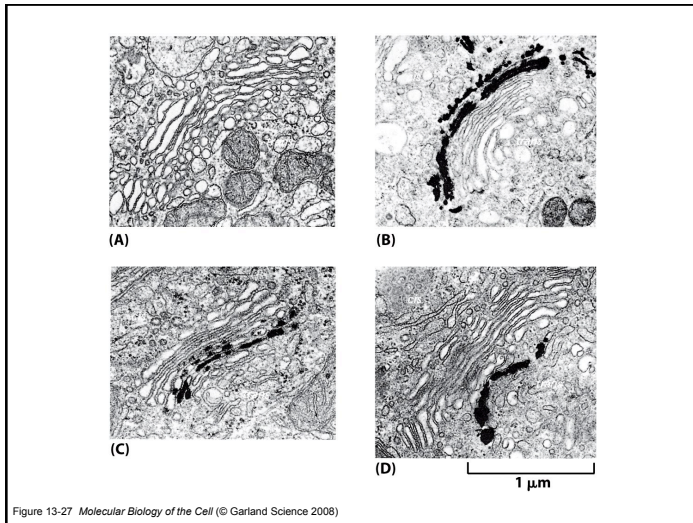


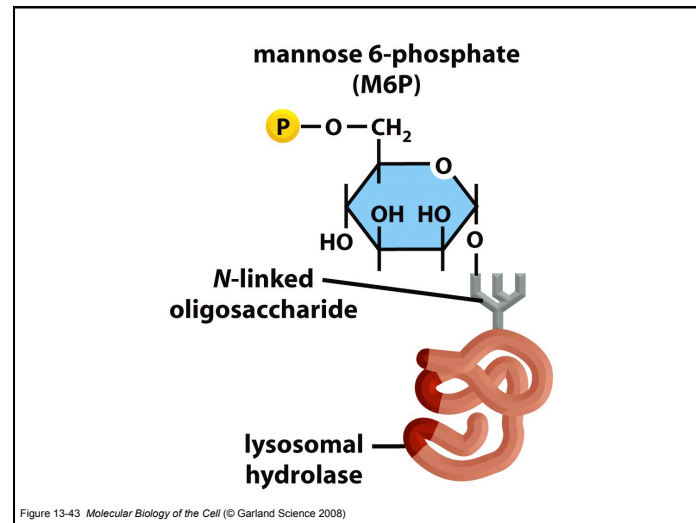
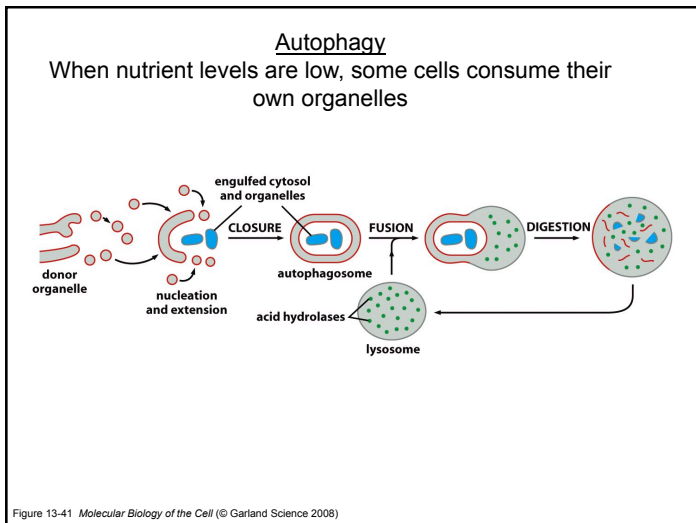
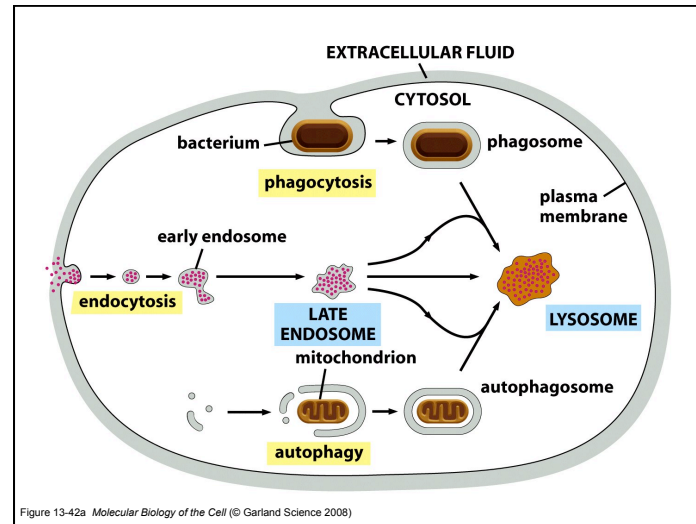
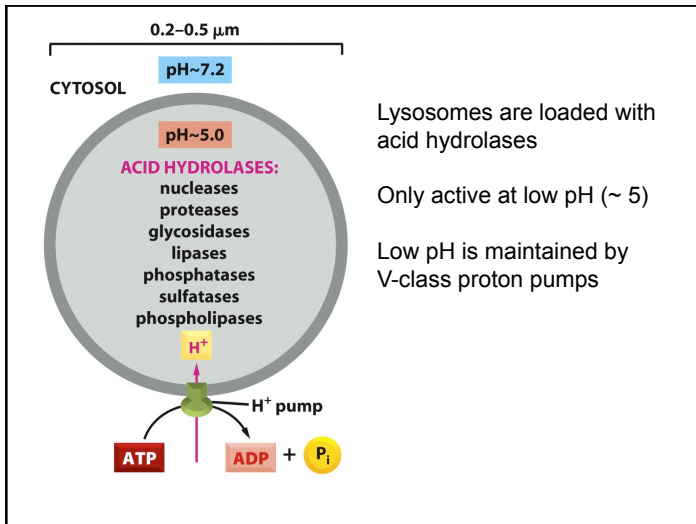
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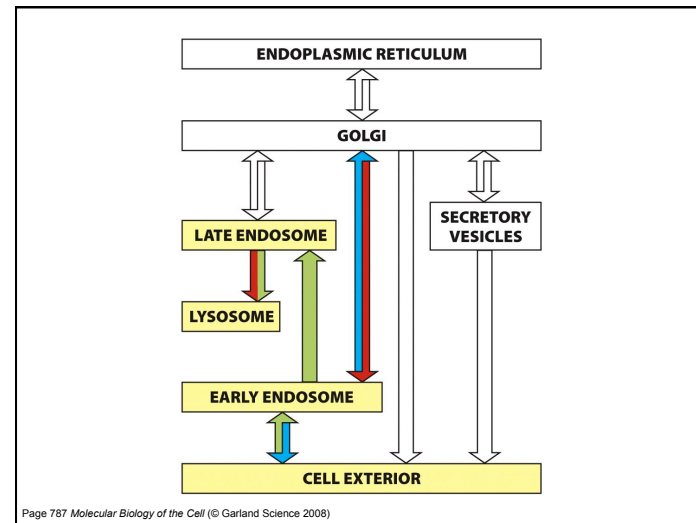
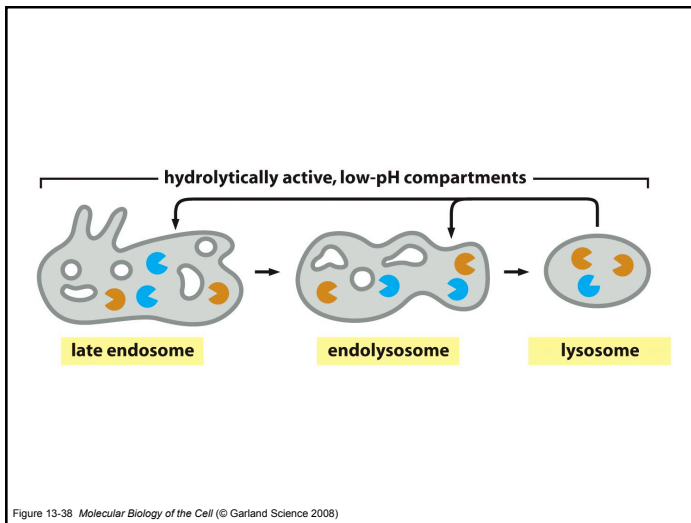
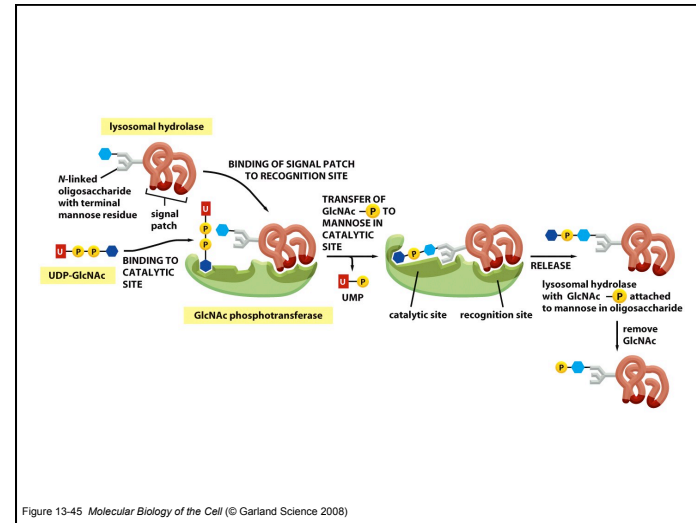
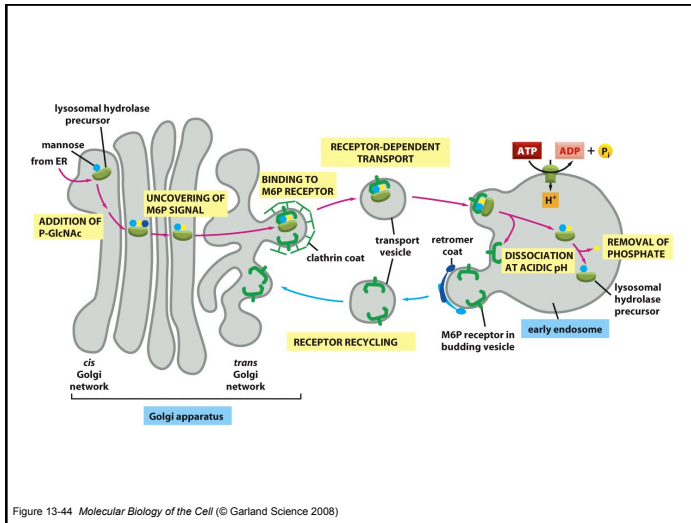


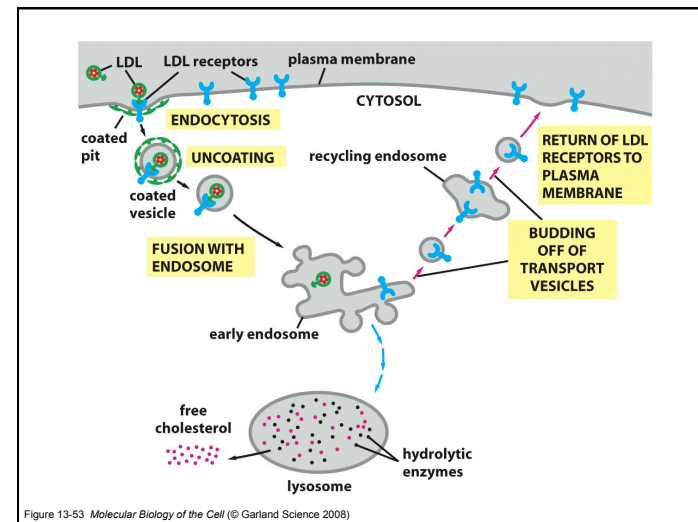
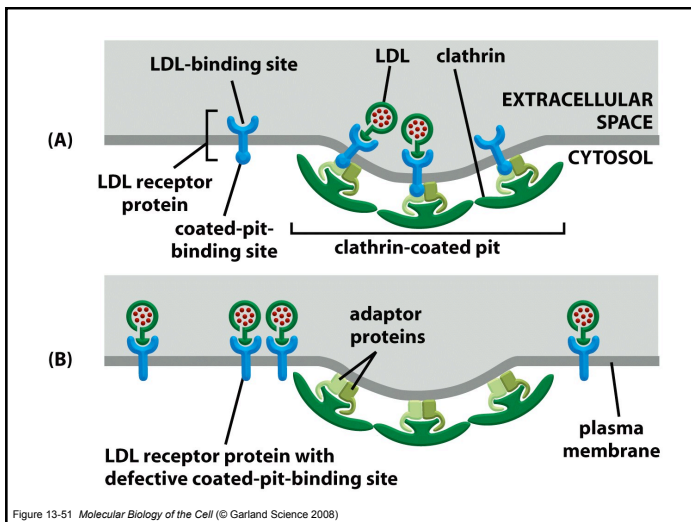
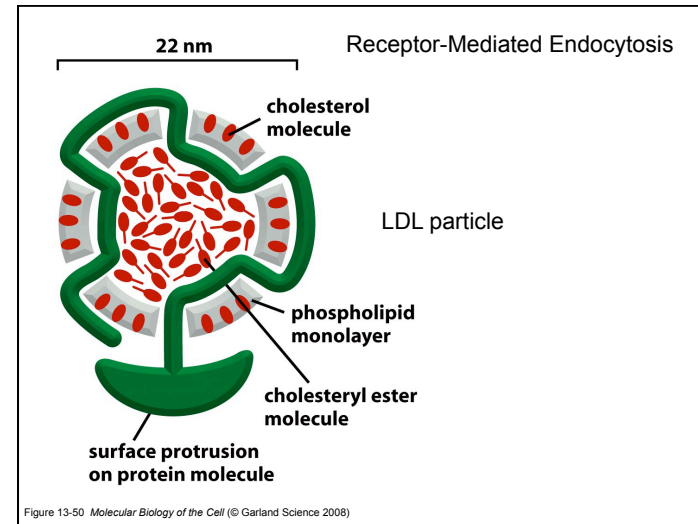
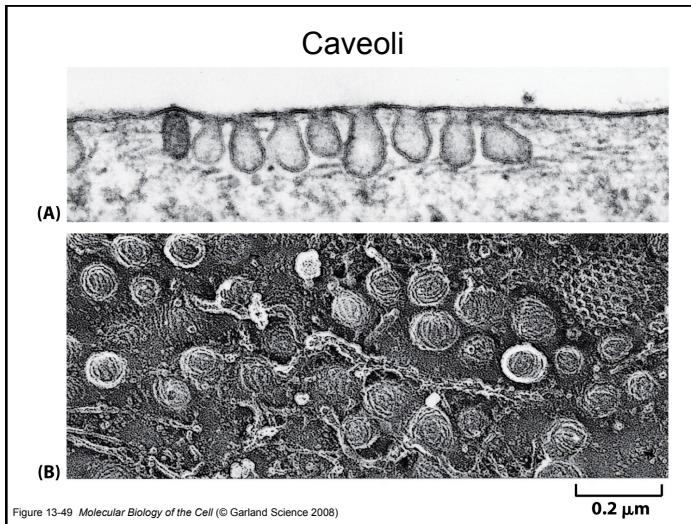


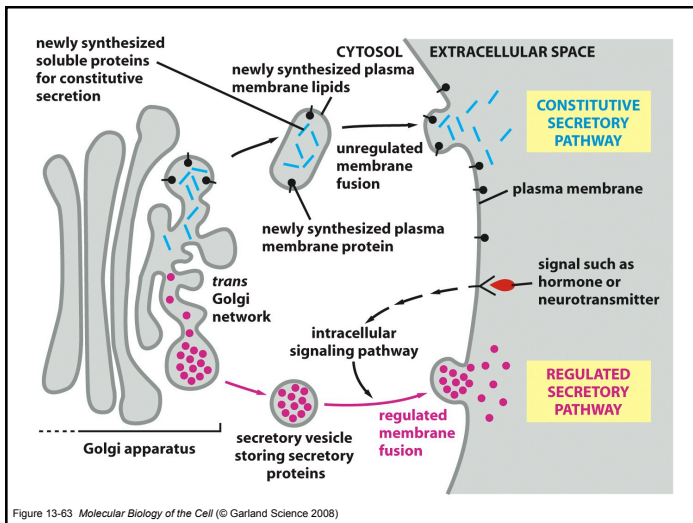
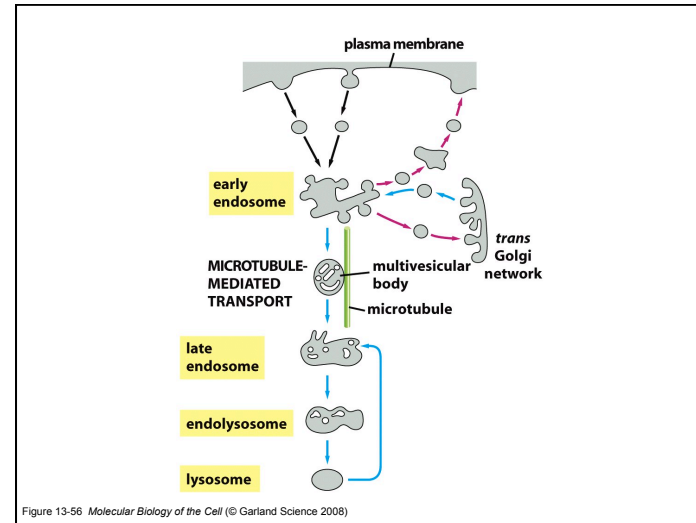
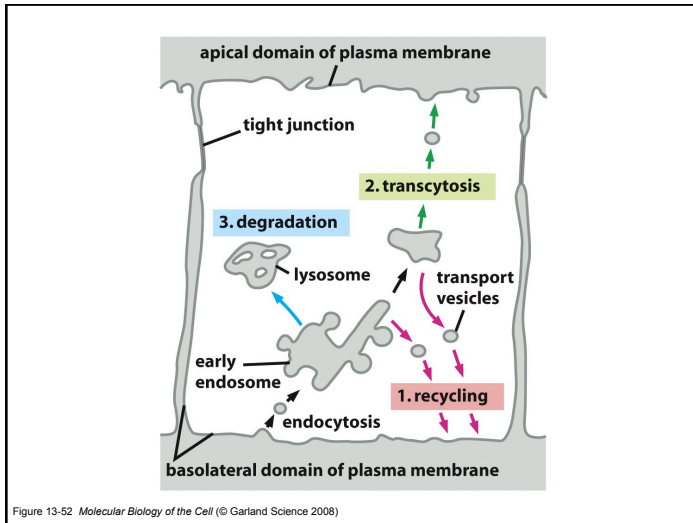












- Chapter 11
- Determination and maintenance of membrane potential
  - Nernst Equation & equilibrium potential
  - Types of ion channels
  - Basis of ion selectivity
  - Aquaporin (ion exclusion mechanism)
  - Structure of the voltage-gated potassium channel
  - Mechanism of inactivation
  - Action potential generation and propagation
  - Myelination (effect on action potential propagation)
  - Patch clamp technique (utility & applications)
  - Acetylcholine receptor (structure & function)
  - Ion channels at the neuromuscular junction
  - Chemical neurotransmission (glutamate receptors)

Chapter 12

Sorting signal sequences (know them)  
 Gated transport into/out of nucleus  
 Nuclear pore complex (structure & function)  
 Ran-GTPase & powering of transport through NPCs  
 Nuclear import mechanism  
 Nuclear export mechanism  
 Disintegration and reformation of the nuclear envelope  
 Transport into mitochondria (all 4 compartments)  
 Mitochondrial transporter complexes  
 Peroxisomes (nature & transport processes)  
 Co-translational transport into ER (lumen/membrane)  
 Determination of ER membrane protein orientation  
 N-glycosylation  
 Protein misfolding (chaperones/calnexin)  
 Unfolded protein responses

Chapter 13

Vesicle types (clathrin/COPI/COPII/Caveoli)  
 Vesicle destinations  
 Clathrin self-assembly  
 Regulation of vesicle content  
 Role of phosphoinositides  
 Sar1-GTPase  
 Control of vesicle destination  
 Rabs/ SNAREs/NSF  
 ER retention (KDEL)  
 Golgi structure  
 Golgi Turnover/Maturation  
 Lysosome Biochemistry  
 Endosomal pathway  
 M6P tag & receptors  
 Receptor-mediated endocytosis