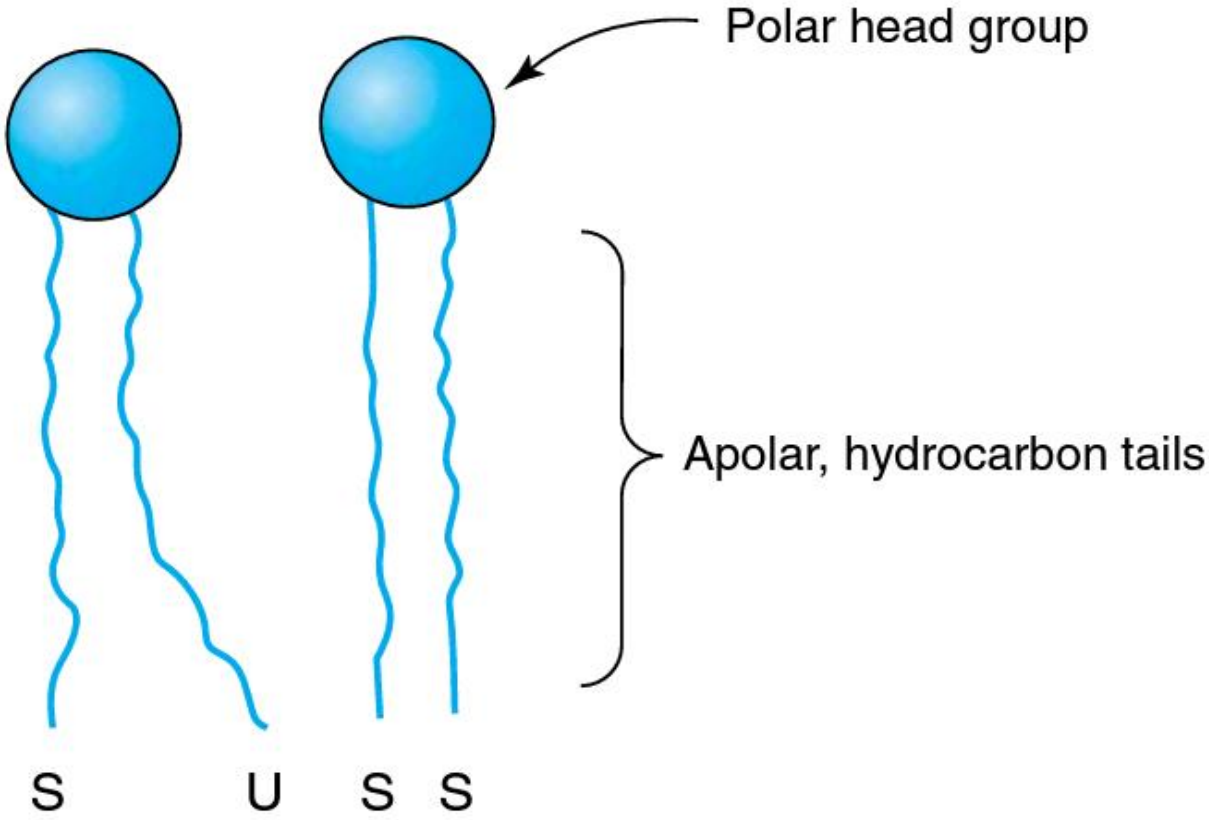
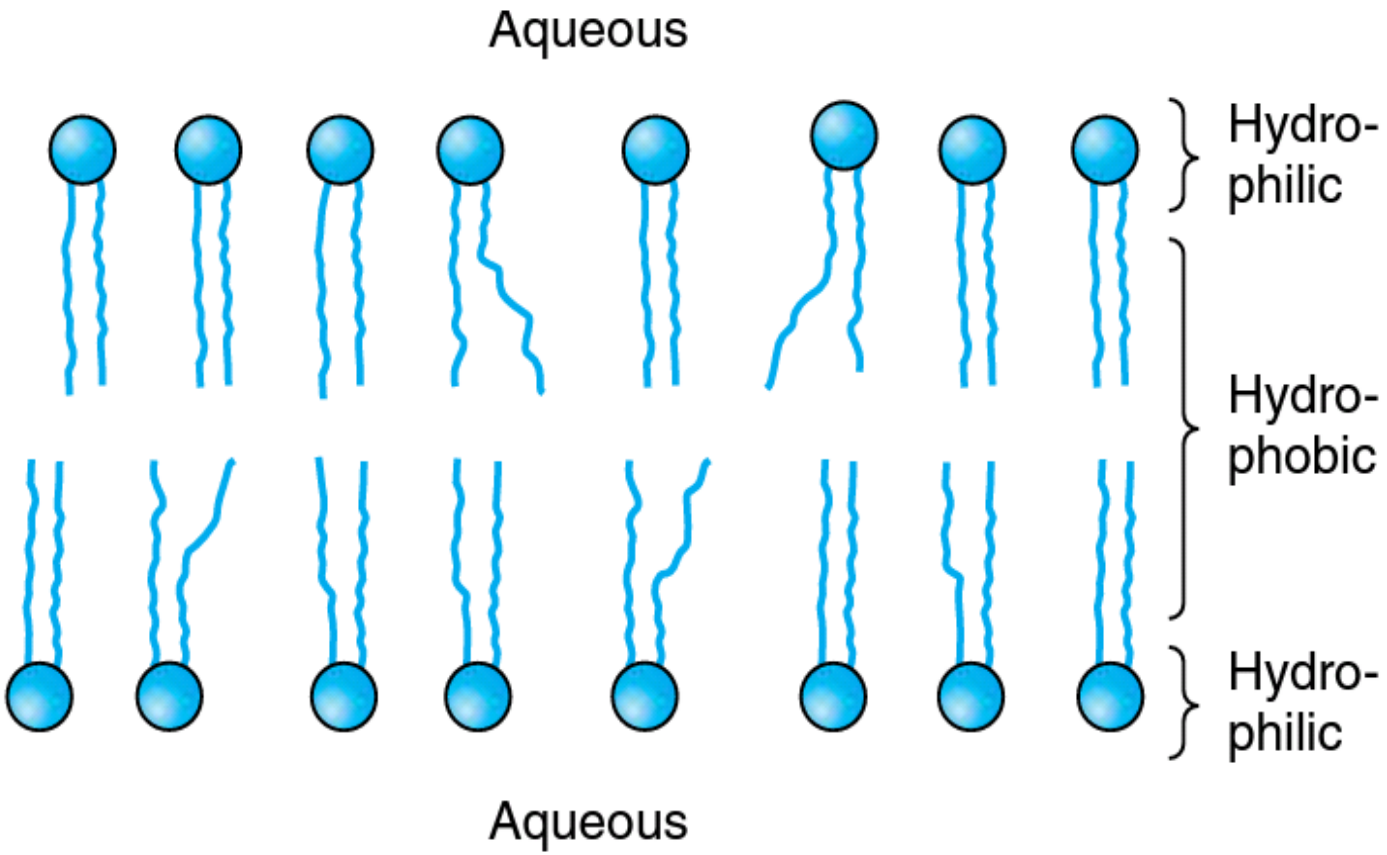
Membranes:Structure & Function


Polar head group
Apolar, hydrocarbon tails
S
U
S
S

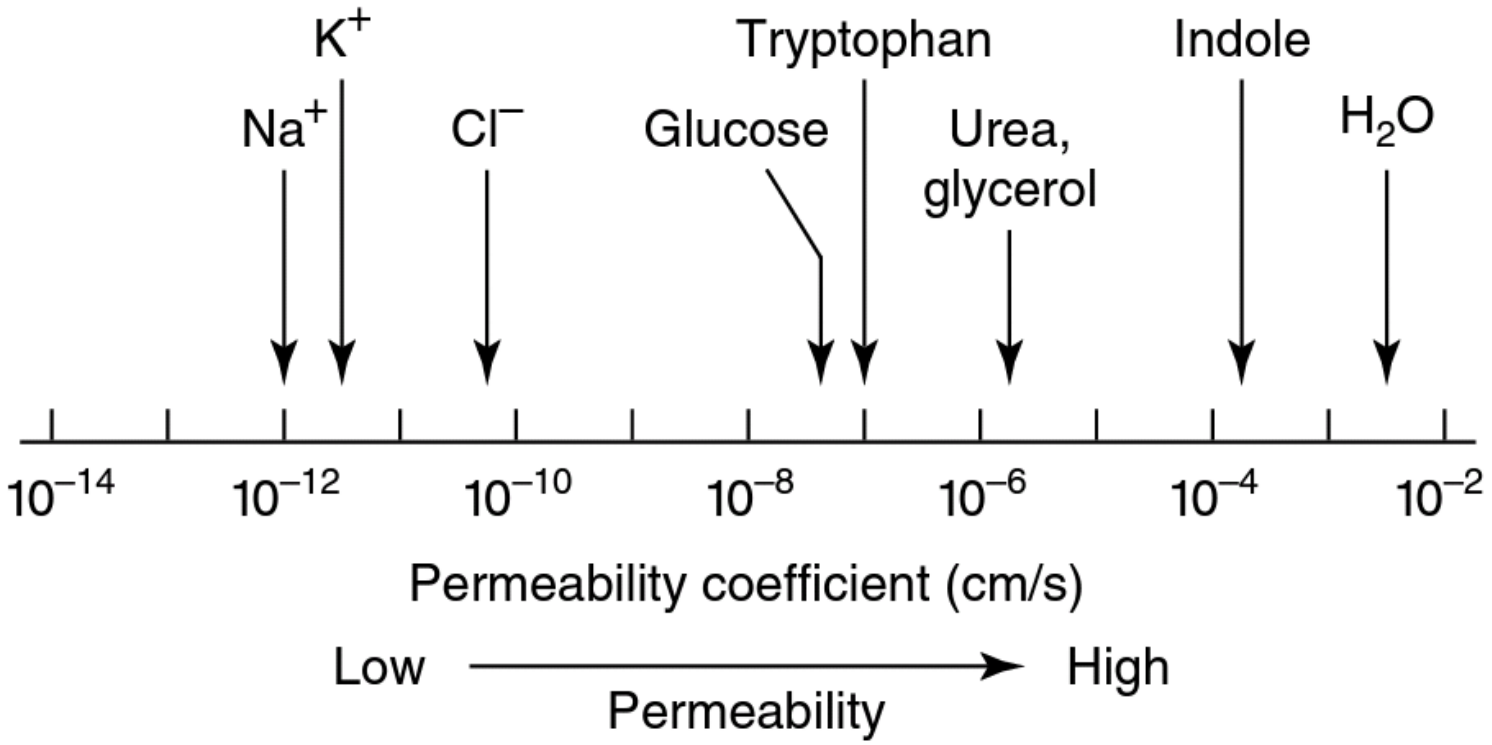
The Major Lipids in Mammalian Membranes Are Phospholipids, Glycosphingolipids, & Cholesterol

Membrane Lipids Are Amphipathic

Membrane Lipids Form Bilayers


Aqueous
Hydro-
philic
Hydro-
phobic
Hydro-
philic
Aqueous

Permeability coefficients of water, some ions, and other small molecules in lipid bilayer membranes. Molecules that move rapidly through a given membrane are said to have a high permeability coefficient.



Membranes Contain Integral & Peripheral Proteins

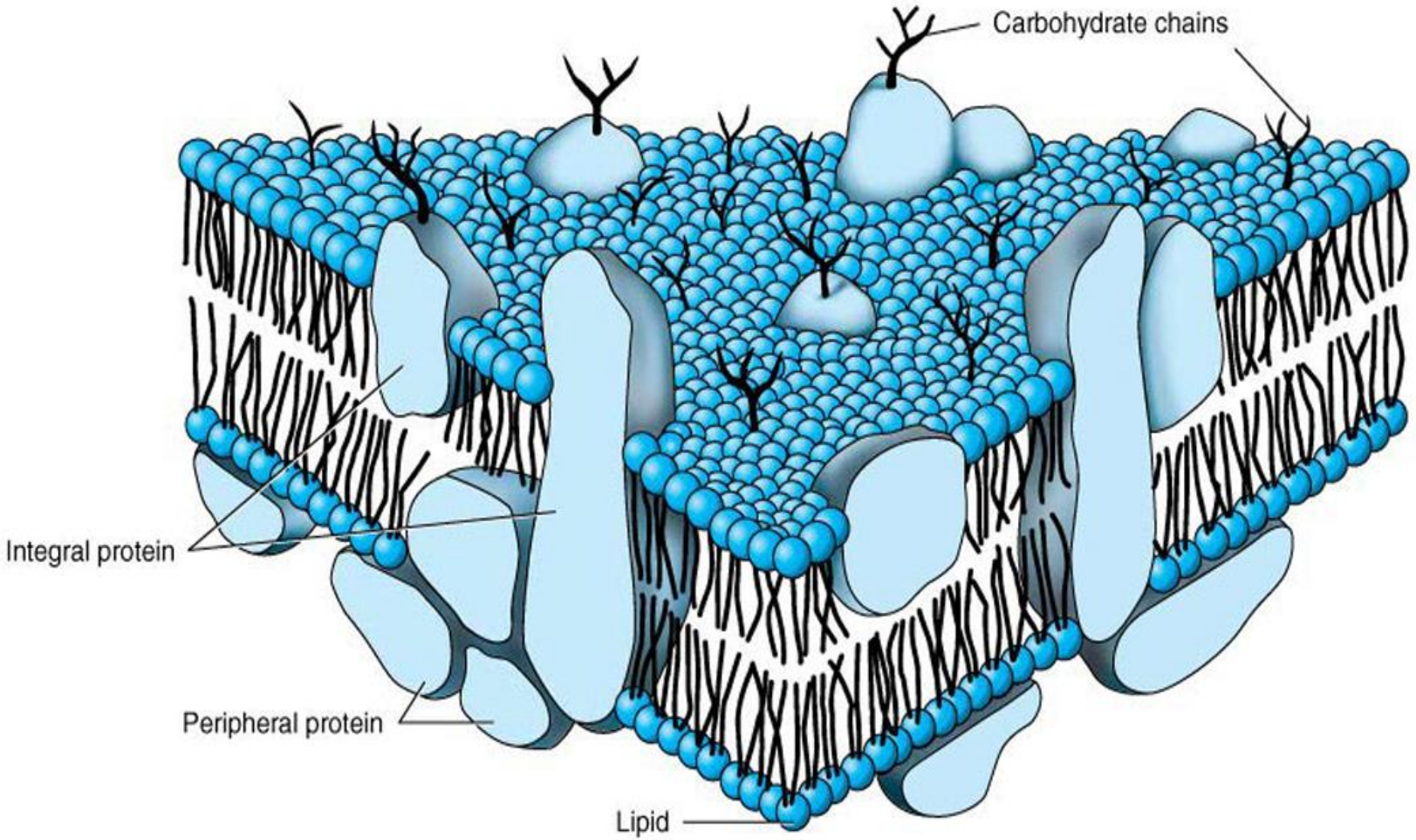


Table 41–3. Transfer of material and information across membranes.

Cross-membrane movement of small molecules

- Diffusion (passive and facilitated)
- Active transport

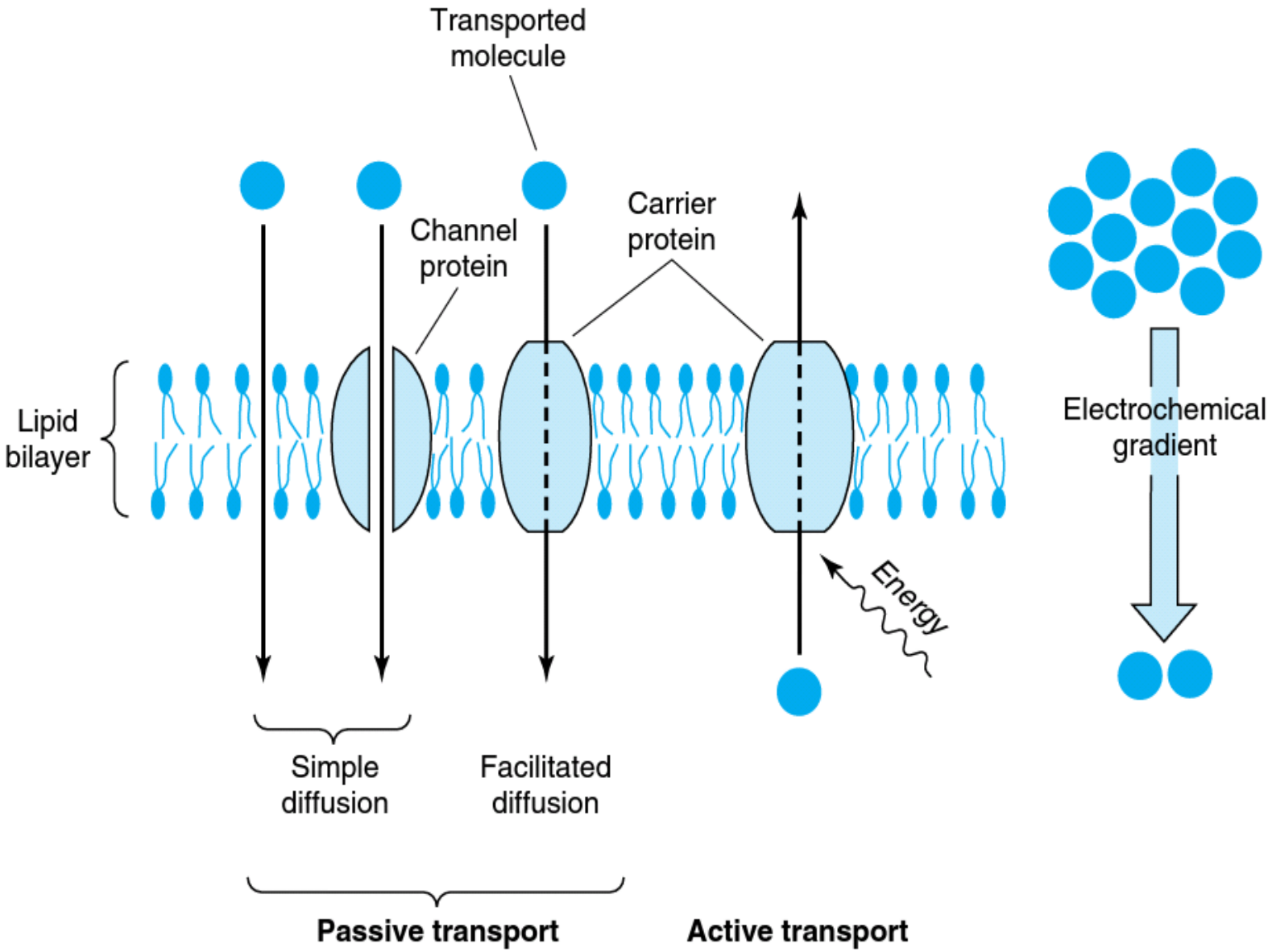
Cross-membrane movement of large molecules

- Endocytosis
- Exocytosis

Signal transmission across membranes

- Cell surface receptors
  1. Signal transduction (eg, glucagon → cAMP)
  2. Signal internalization (coupled with endocytosis, eg, the LDL receptor)
- Movement to intracellular receptors (steroid hormones; a form of diffusion)

Intercellular contact and communication


Transported molecule
Channel protein
Carrier protein
Lipid bilayer
Energy
Electrochemical gradient
Simple diffusion
Facilitated diffusion
Passive transport
Active transport

Thanks

Any questions?