

マルトポリンの構造

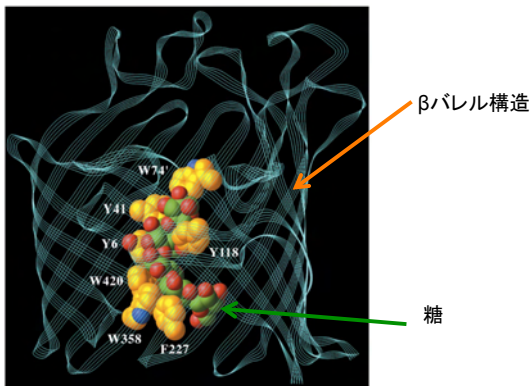
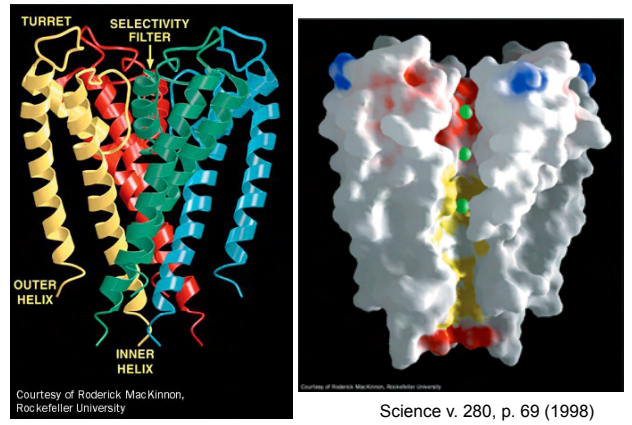
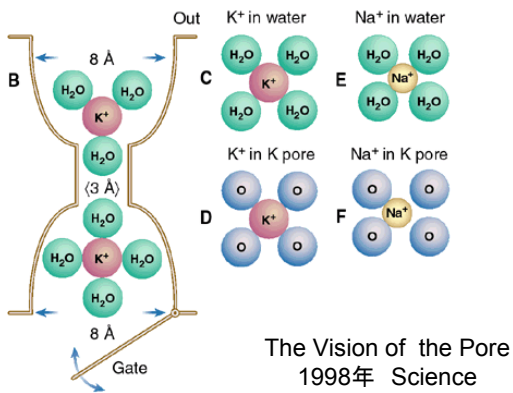


Figure 10-3 © 2008 John Wiley & Sons, Inc. All rights reserved.

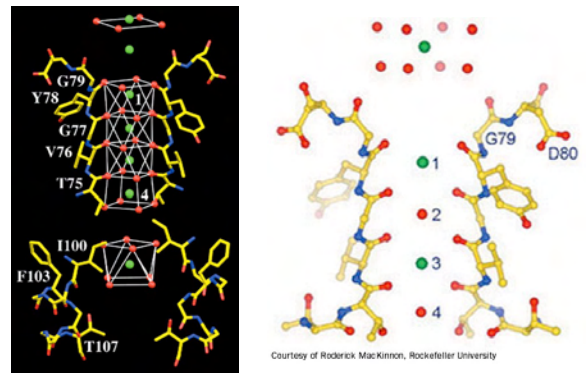


Science v. 280, p. 69 (1998)

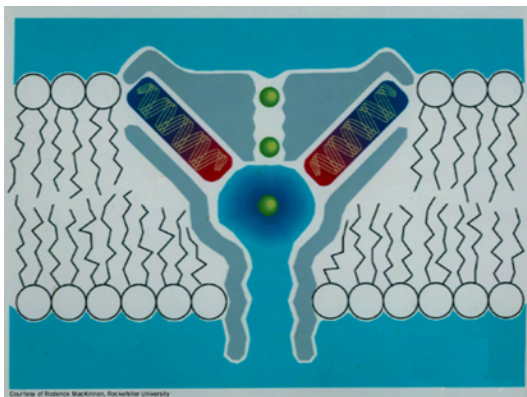
X-Ray structure of the KcsA K⁺ channel from *Streptomyces lividans*.



The Vision of the Pore
1998年 Science

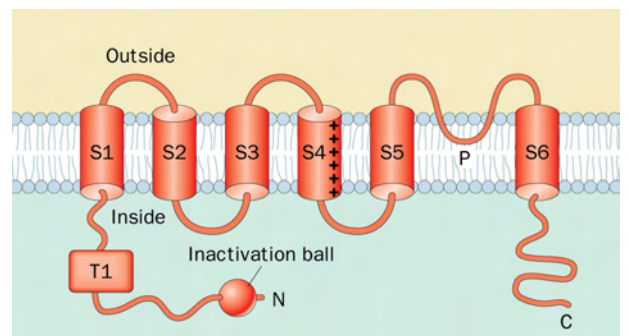


Portions of the KcsA K⁺ channel responsible for its ion selectivity viewed similarly



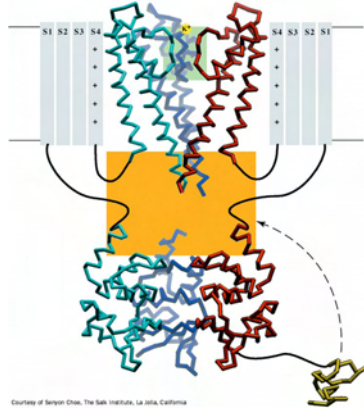
A schematic diagram of the KcsA K⁺ channel

Predicted secondary structure and membrane orientation of voltage-gated K⁺ channels.



Kvチャネル

Composite model of the KV channel.



電位依存KV channelのX線構造.

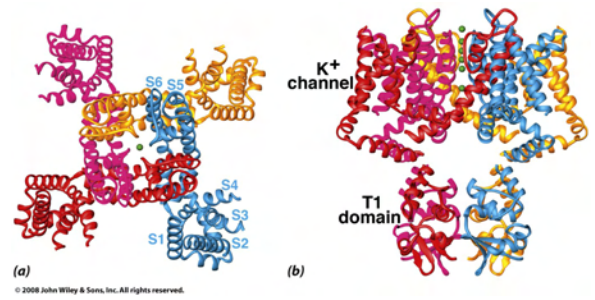


Figure 10-8

電位依存KV channelの膜貫通ドメインの動き.

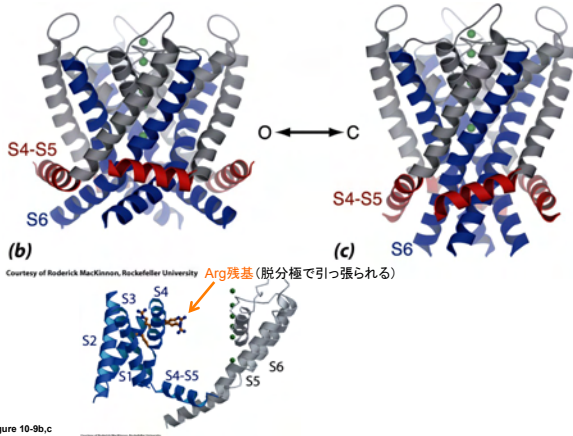


Figure 10-9b,c



Peter Agre

Roderick MacKinnon

The Nobel Prize in Chemistry 2003 was awarded for "for discoveries concerning channels in cell membranes" jointly with one half to Peter Agre "for the discovery of water channels" and with one half to Roderick MacKinnon "for structural and mechanistic studies of ion channels".

ウシ赤血球アクアポリンAQP1のX線構造

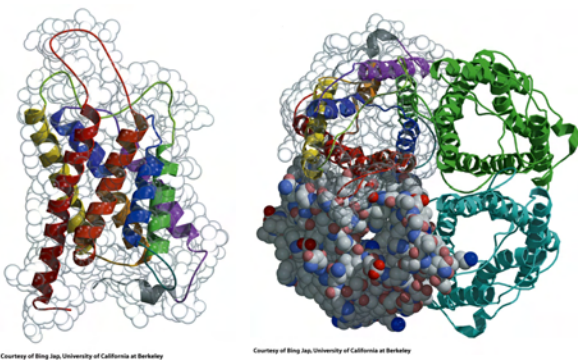


Figure 10-11a

アクアポリンAQP1の水分子透過機構のモデル

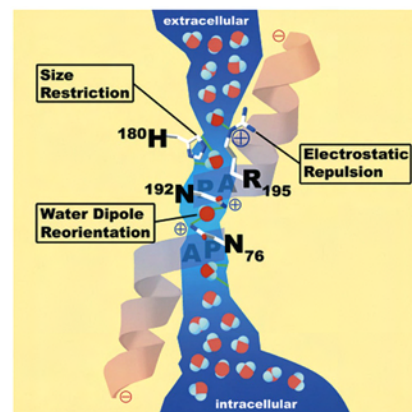
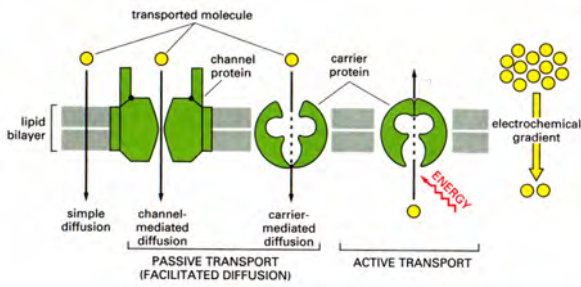
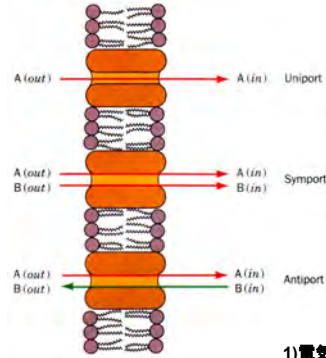


Figure 10-12

膜蛋白質による輸送形態



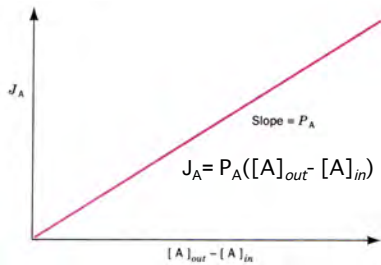
輸送形式の分類



- 1) ユニポート
- 2) シンポート
- 3) アンチポート

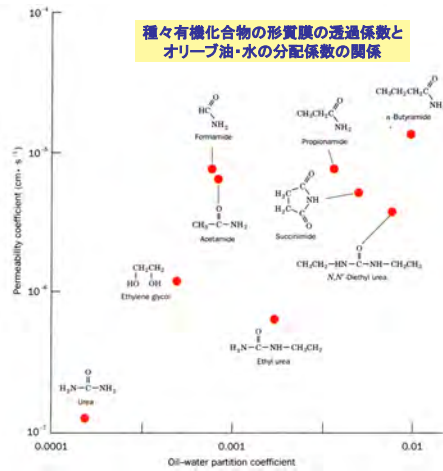
- 1) 電気的中性輸送 (electroneutral)
- 2) 起電的輸送 (electrogenic)

半透膜を横切る拡散速度と膜内外の基質濃度

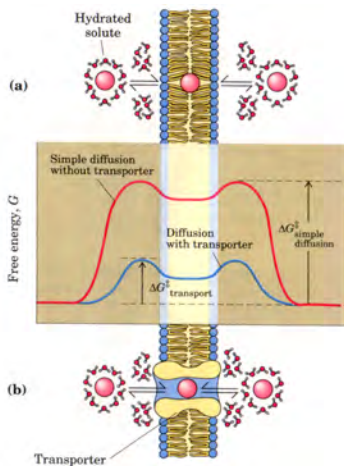


$P_A = D/L$
 P_A : 透過係数 (permeability coefficient)
 D : 拡散係数 (diffusion coefficient)
 L : 膜厚

種々有機化合物の形質膜の透過係数とオリーブ油・水の分配係数の関係



膜透過と自由エネルギー変化



生体膜と合成膜での糖の透過係数

Permeability Coefficients of Natural and Synthetic Membranes to D-Glucose and D-Mannitol at 25° C

Membrane Preparation	Permeability Coefficients (cm · s ⁻¹)	
	D-Glucose	D-Mannitol
Synthetic lipid bilayer	2.4×10^{-10}	4.4×10^{-11}
Calculated nonmediated diffusion	4×10^{-9}	3×10^{-9}
Intact human erythrocyte	2.0×10^{-4}	5×10^{-9}

Source: Jung, C. Y., in Surgenor, D. (Ed.), *The Red Blood Cell*, Vol. 2, p. 709, Academic Press (1975).

ヒト赤血球へのグルコース流入量と外部グルコース濃度の関係

