

Table 9.5. Chemical structure and absorption maxima of the various bacteriochlorophylls. In bacteriochlorophylls a and b carbon atoms 3 and 4 are linked by a single bond^a

substituent	bacteriochlorophyll				
	a	b	c	d	e
R ₁	—CO—CH ₃	—CO—CH ₃	—CHOH—CH ₃	—CHOH—CH ₃	CHOH—CH ₃
R ₂	—CH ₃	—CH ₃	—CH ₃	—CH ₃	—CHO
R ₃	—C ₂ H ₅	=CH—CH ₃	—C ₂ H ₅	—C ₂ H ₅	—C ₂ H ₅
R ₄	—CH ₃	—CH ₃	—C ₂ H ₅	—C ₂ H ₅	—C ₂ H ₅
R ₅	—CO—OCH ₃	—CO—OCH ₃	—H	—H	—H
R ₆	phytyl	phytyl	farnesyl	farnesyl	farnesyl
R ₇	—H	—H	—CH ₃	—H	—CH ₃
absorp. max. ^b (nm)	850–910	1020–35	745–60	725–45	715–25

^a A. Gloe, N. Pfenning, H. Brockmann, and W. Trowitzsch. *Arch. Microbiol.* **102**, 103–109 (1975).

^b The absorption maxima are from spectra of whole cells and represent the spectral properties of the bacteriochlorophylls interacting with the components of the light-harvesting centers.

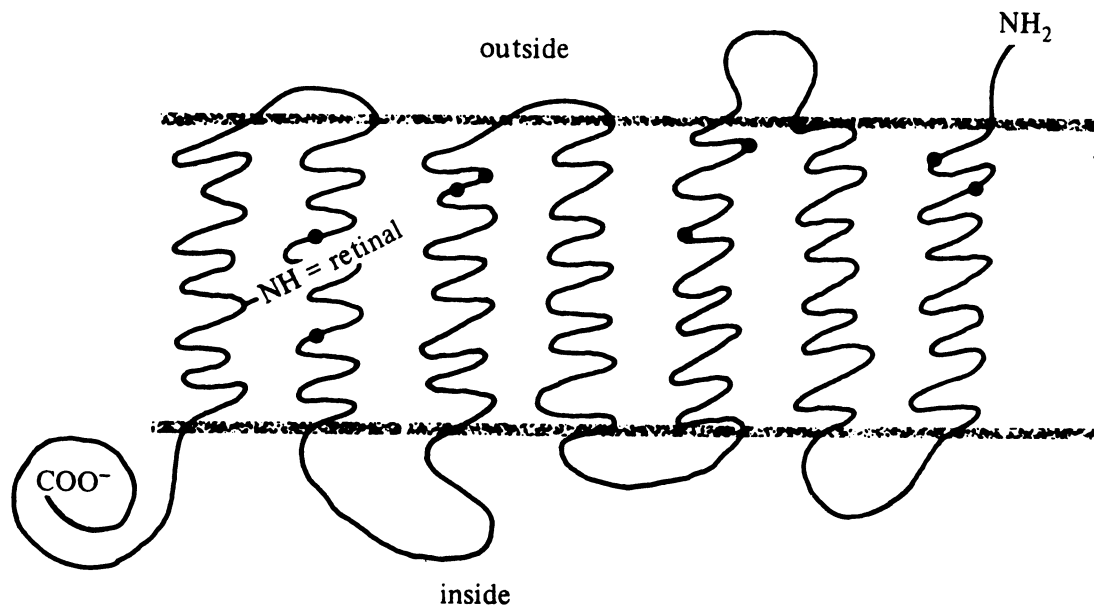


Figure 9.22. Location of the bacteriorhodopsin polypeptide chain in the membrane. (●), Tryptophan residues. Retinal is bound to lysine residue 219. The proton released could be passed via tryptophan residues to the outside. [Redrawn from K.-S. Huang, R. Radhakrishnan, H. Bayley, H. G. Khorana. *J. Biol. Chem.* **257**, 13616–13623 (1982).]

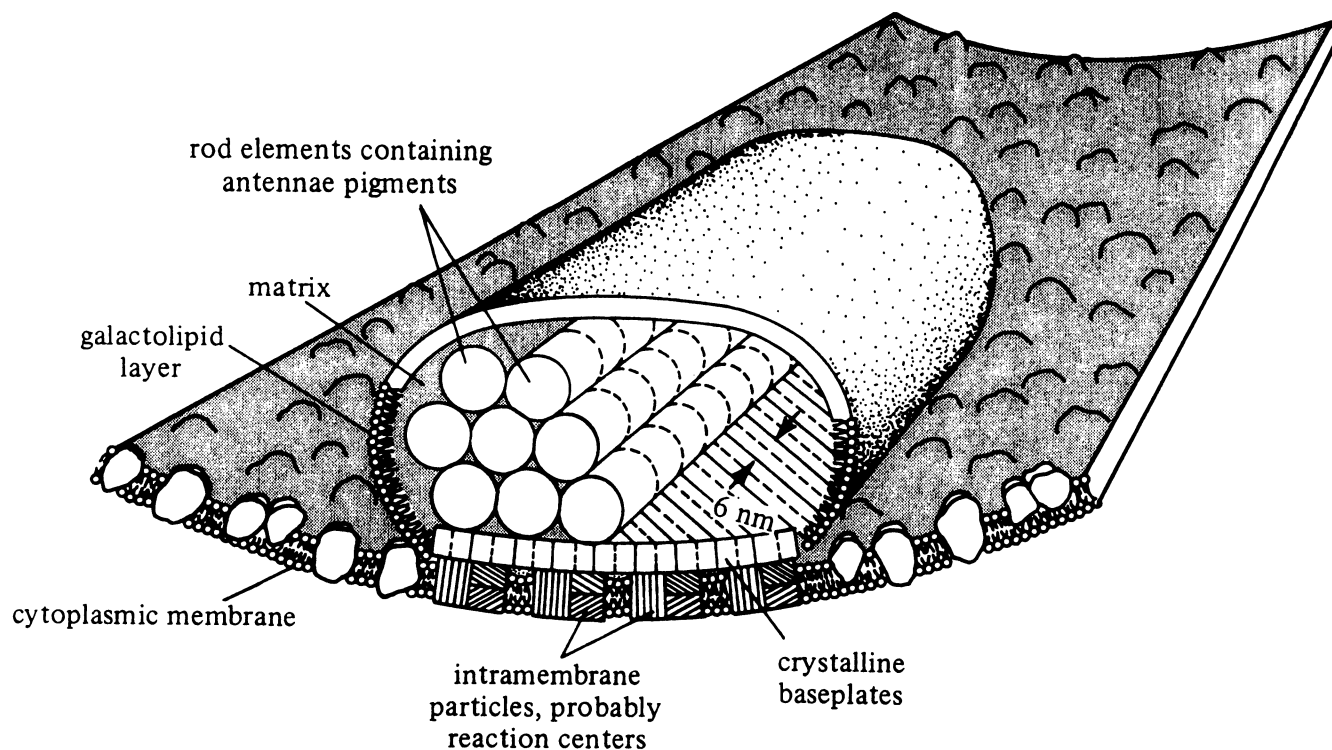


Figure 9.15. Model of a chlorosome and the associated cytoplasmic membrane [L. Staehelin, J. R. Golecki, and G. Drews. *Biochem. Biophys. Acta* **589**, 30–45 (1980).]