Supporting Material

Water Permeability of Aquaporin-4 Channel Depends on Bilayer Composition, Thickness, and Elasticity

by

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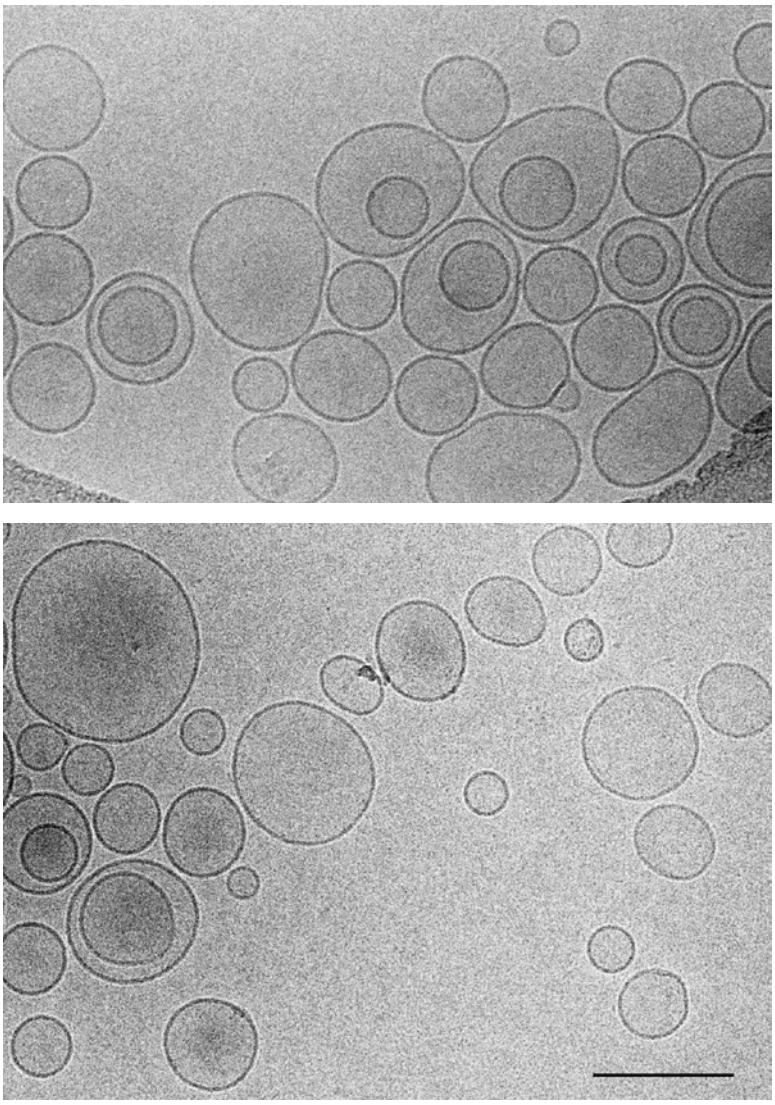

Figure S1: Cryo-transmission electron micrographs of SM:DPPG:cholesterol with no protein (top) or with AQP4-M1 (bottom) (protein/lipid ratio of 1/1500 M/M). Both micrographs were taken at the same magnification, with the bar in the lower right corner denoting 200 nm. Similar images were obtained with AQP4-M1 proteoliposomes containing POPC:POPG or POPC:POPG:cholesterol.

Table S1
Vesicle water permeabilities in absence of protein

Lipid	This work P_f ($x10^{-3}$ cm/sec)	Published values P_f ($x10^{-3}$ cm/sec)
POPC:POPG (8:2)	13.6±0.9	13.0±0.4 [a] 12.0±1.1 [b]
POPC:POPG:cholesterol (4:2:4)	3.3±0.2	2.9±0.6 [c]
SM:DPPG:cholesterol (4:2:4)	0.3±0.1	0.2±0.1 [d]

[a] POPC, Mathai, J. C., S. Tristram-Nagle, J. F. Nagle and M. L. Zeidel. 2008. Structural determinants of water permeability through the lipid membrane. J Gen Physiol. 131:69-76.

[b] POPC, Gensure, R. H., M. L. Zeidel and W. G. Hill. 2006. Lipid raft components cholesterol and sphingomyelin increase H^+/OH^- permeability of phosphatidylcholine membranes. Biochem J. 398:485-495.

[c] POPC:cholesterol (6.7:3.3), Gensure, R. H., M. L. Zeidel and W. G. Hill. 2006. Lipid raft components cholesterol and sphingomyelin increase H^+/OH^- permeability of phosphatidylcholine membranes. Biochem J. 398:485-495.

[d] SM:cholesterol (6:4), Lande, M. B., J. M. Donovan and M. L. Zeidel. 1995. The relationship between membrane fluidity and permeabilities to water, solutes, ammonia, and protons. J Gen Physiol. 106:67-84.

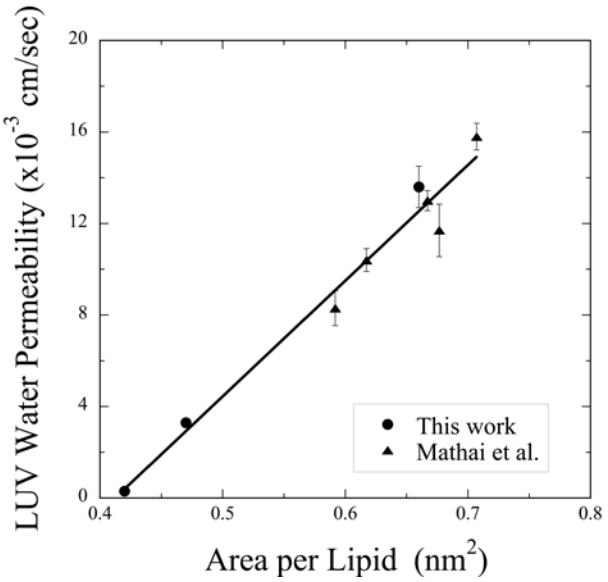

Figure S2: Average water permeability of control liposomes (LUVs) in the absence of protein plotted versus the area per lipid molecule (A_m). The data of Mathai et al. (2008) are from single component PCs, in the order of increasing A_m: (C14:0)(C14:0)PC, (C12:0)(C12:0)PC, (C16:0)(C18:1)PC, (C22:1)(C22:1)PC, and (C18:1)(C18:1)PC, with a temperature adjustment so that all specimens are at 20 ^{o}C.