

Membrane protein reactions and lipid interactions

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Abstract

Membrane proteins perform their biological function in the complex environment of the lipid membrane. The composition of the lipid membrane can influence significantly the local structure, dynamics, and activity of the membrane protein. Here we propose molecular dynamics work aiming to derive new insights into the mechanism of action of several complex membrane proteins. Of special importance for the research we propose here is to understand how the lipid interactions influence the reaction mechanisms. Towards this aim, we will assess the dynamics and lipid interactions of molecular transporters (the P-type ATPase AHA2 proton pump, the SecDF proton channel, and the bacterial riboflavin transporter), and Alzheimer's related peptides.