

The effect of density fluctuations on the passive ion permeability of lipid bilayers

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The influence of lateral density fluctuations in lipid membranes on passive ion permeability is studied. In an approximate model of the lipid bilayer, the bilayer permeability is accounted for by the existence of defects in the interfacial areas of clusters. The number of these defects depends on the state of neighboring acyl chains. The ten-state Pink model is used. The analysis of snapshots of characteristic microscopic configurations obtained from Monte Carlo simulations of this model reveals that permeability properties of interfacial areas of cluster are heterogeneous and depend on the individual clusters. The results of these studies are compared with those from Cruzeiro-Hansson model.