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Correlated motion of membrane proteins and their effect on membrane viscosity HAIM DIAMANT, NAOMI OPPENHEIMER, Tel Aviv University — We extend the theory of membrane hydrodynamics to account for the correlated motion of membrane proteins, along with the effect of protein concentration on that correlation and on the response of the membrane to stresses. Expressions for the coupling diffusion coefficients of protein pairs and their concentration dependence are derived. The additional role of membrane viscosity as determining the characteristic length scale for membrane response leads to unusual concentration effects at large inter-protein separation. We treat a freely floating membrane, as well as a supported membrane lying at a finite distance from a solid substrate.

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