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**Membrane Transport Mechanisms** MIHAIL MIHAILESCU, University of Pittsburgh, ANNA BALAZS, University of Pittsburgh — One of the most important functions of biological membranes is regulating the passage of various chemical components in and out of a cell. The large variation in the physical characteristics of components that traffic through the membrane hints at the diversity of the membrane behavior. As opposed to small molecule transport, the transport of large molecules, such as bio-polymers, often involves a cooperative dynamic behavior that leads to formation and closure of a hole in the membrane. Dynamic simulations of the cooperative phenomena within the framework of self-consistent theory of polymeric systems allow us to monitor the phases of the transport process and to identify its macroscopic characteristics. In this study, we employ numerical simulations of the transport of a target molecule through a model membrane and identify the dependence of the transport process on microscopic properties of both the target molecule and the polymeric components of the membrane.

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