

سمینار هفتگی ماده چگال نرم

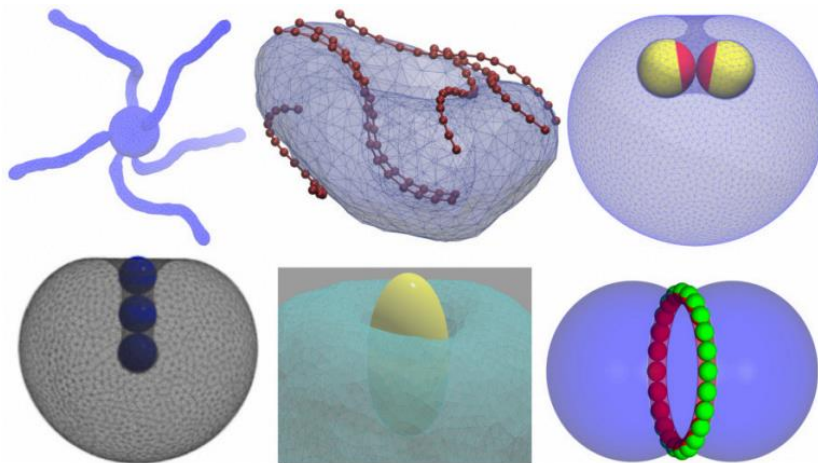
Computational membrane remodeling in soft matter and biophysics

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Abstract

Membrane remodeling plays a critical role in many physical and biological/cellular processes including synthetic biology, drug delivery, cellular uptake of nano containers, and self-assembly of nanostructures at membrane interface. We have developed a triangulated coarse-grained membrane model which is capable of rapid and efficient simulation of membrane remodeling. We report tubular membrane structures induced by adsorbed nanoparticles on vesicles and investigate the role of membrane curvature and size and shape of the particles on cellular uptake of the particles. We also performed simulations to understand how tubular membrane structures of the Endoplasmic reticulum, Golgi, mitochondria, and other cellular organelles are created and maintained. Our simulations show that the membrane area growth and volume reduction can induce tubular membrane structure in concert with curved proteins previously found to shape these tubules. Our simulations reveal the scaffolding role of Atg protein complexes in autophagy and how ESCRT machinery can induce membrane scission.



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مکان (کلاس مجازی آقای دکتر اجتهادی):

<https://vclass.ecourse.sharif.edu/ch/ejtehadi>