KEMIJSKI INŠTITUT

Vabilo na Preglov kolokvij / Invitation to the Pregl colloquium

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Velika predavalnica Kemijskega inštituta /
Great Lecture Hall
National Institute of Chemistry
Hajdrihova 19, Ljubljana, Slovenia

Membrane remodeling in artificial cells: bud or not to bud

Cell membranes exhibit a large variation in curvature and the common perception is that it is driven by specific proteins. We will demonstrate that curvature can be readily generated by various membrane asymmetries, plausibly acting as factors defining membrane organelle shapes. As a workbench for artificial cells, we employ giant unilamellar vesicles (GUVs, 10-100μm). We will discuss examples for curvature generation including asymmetric distribution of ions across the membrane, insertion/desorption of the ganglioside GM1, PEG adsorption. Macromolecule adsorption at low surface coverage also stabilizes the spontaneous curvature, impacting membrane morphology and inducing vesicle fission. Finally, the process of membrane wetting by molecularly-crowded solutions and protein condensates will be shown to induce vesicle budding, membrane tubulation and restructuring. The presented examples will demonstrate that even in the absence of specific proteins and/or active processes, the membrane is easily remodeled by simple physicochemical factors.

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Vljudno vabljeni / Kindly invited