Abstract Submitted
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Amphiphilic polypeptoids connect lipid bilayers to rearrange unilamellar liposomes to closely spaced multilayered structures.[1] VIJAY JOHN, YUEHENG ZHANG, Tulane University, SUNTING XUAN, DONGHUI ZHANG, Louisiana State University, MARZHANA OMAROVA, Tulane University — Hydrophobically modified polypeptoids (HMPs) are amphiphilic pseudo-peptidic macromolecules with hydrophobic groups attached randomly along the polypeptoid backbone. We show that these biocompatible polymers connect across lipid bilayers and thus form layered structures on liposomes. The transition from single bilayer to multiple bilayer structures is characterized by small angle neutron scattering (SANS) and cryo-transmission electron microscopy (cryo-TEM). We propose a mechanism whereby the HMPs insert their hydrophobic tails into adjacent bilayers and thereby serve as the connective glue between bilayers. At higher HMP concentrations, the liposomes are entirely disrupted into much smaller micelle-like structures through extensive hydrophobe insertion. Interestingly, these small structures can reattach to fresh unilamellar liposomes and self-assemble to form new two-bilayered liposomes reminiscent of two-bilayered organelles such as the nucleus in eukaryotic cells. The observations have significance to designing new nanoscale drug delivery carriers. Replace this text with your abstract body.

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