

Abstract Submitted
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Relationship between Hydrophilicity of PEO-PPO-PEO Copolymers and Their Ability to Protect Liposomes from Peroxidation JIA-YU WANG, The Univeristy of Chicago, CHI-YUAN CHENG, SONG-I HAN, University of California, Santa Barbara, KA YEE LEE, The University of Chicago, THE UNIVERISTY OF CHICAGO COLLABORATION, UNIVERSITY OF CALIFORNIA, SANTA BARBARA COLLABORATION — It is known that PEO-PPO-PEO triblock copolymers interact with lipid membranes but can have opposing effects on membrane integrity - they can behave either as membrane sealants or as permeabilizers depending on their architecture. To understand the origin of their biomedical functionality, interactions between PEO-PPO-PEO triblock copolymers and biomimetic phospholipid vesicles were investigated by evaluating the effect of hydrophilicity of the triblock copolymers on their ability to protect liposomes from oxidative stress, a stress source used to disrupt lipid vesicles. Our results show that while highly hydrophilic triblock copolymers exhibit no apparent insertion into lipid membranes, they are most effective in protecting liposomes from oxidation, indicating that the protective effect of triblock copolymers comes from their physical adsorption onto, rather than their insertion into the membrane. Gaining a better understanding of polymer-membrane interactions could lead to a better design of polymeric cell membrane sealants.

Jia-Yu Wang
The Univeristy of Chicago

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