

Abstract Submitted  
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**Alteration of Biomembrane Properties by Trans-Unsaturated Lipids**<sup>1</sup> MANASA GUDHETI, MICHAEL MLODZIANOSKI, SAMUEL HESS, University of Maine — Trans-unsaturated lipids have been associated with a higher incidence of heart disease, but not enough is known about the effect of trans-lipids on membrane properties. We use giant unilamellar vesicles (GUVs) as a model membrane system to explore the effect of the trans-lipid, trans-DOPC on biophysical membrane parameters. GUVs are made by electroformation, imaged by confocal microscopy and analyzed for changes in membrane morphology and properties. Trans-DOPC induces some membrane domains to form unusual morphologies that differ from the typical circular and truncated spherical shapes observed in its absence. Trans-DOPC also alters the membrane curvature distribution, especially in the  $l_o$  phase near the phase boundary where significantly negative curvatures ( $< -0.5 \mu\text{m}^{-1}$ ) are observed. A narrower distribution of meridional curvatures in GUVs with trans-DOPC is suggestive of higher membrane bending rigidity. Though the  $l_o$ - $l_d$  area fractions are similar in the presence and absence of trans-DOPC, the ratio of fluorescent intensities in the  $l_d/l_o$  phases indicates a greater concentration or brightness of the probes in the  $l_o$  phase in the presence of trans-DOPC. The presence of trans-lipids could significantly impact cell function.

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