

## Electronic Supplementary Information

# Thermo-Acoustofluidic Separation of Vesicles Based on Cholesterol Content

**Ata Dolatmoradi, Elnaz Mirtaheri, and Bilal El-Zahab\***

Department of Mechanical and Materials Engineering, Florida International University, Miami,  
Florida 33174, USA

### Table of Contents

Tables	S1
Figures	S2
Videos	S3
References	S4

## Tables

Table S1 - Molar percentage of total PCs in some cell membranes for the lipids used in this study.

<i>Tissue</i>	<i>DMPC</i>	<i>DPPC</i>	<i>POPC</i>	<i>Ref</i>
Human, erythrocyte membrane	0.4	33.3	N/A	1
Human, platelet membrane	N/A	31.4	N/A	2
Rat, liver cells membrane	0.5	30.2	N/A	3
Saccharomyces cerevisiae, BY4741	N/A	0.09	2.92	4
Canine, kidney epithelial cells membrane	N/A	N/A	0.38	5

## Figures

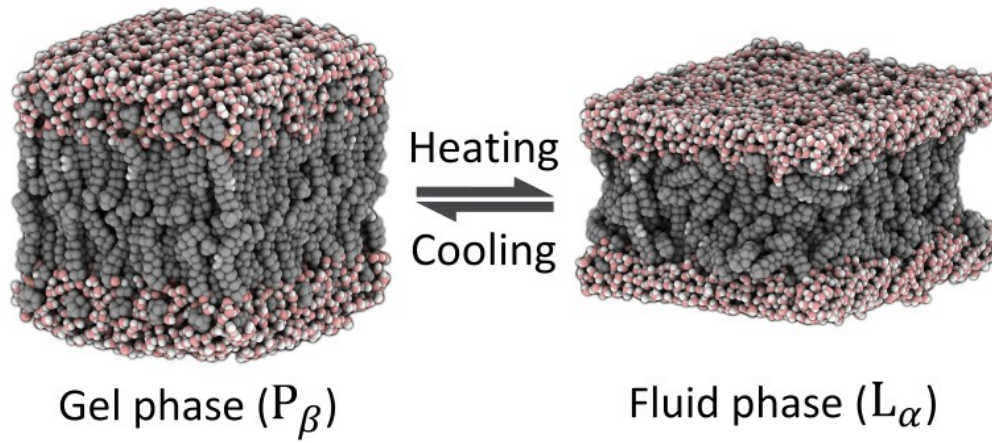


Figure S1 - Schematic illustration of a POPC bilayer membrane in gel (ordered) and fluid (disordered) states. The bilayer is surrounded on both sides by water molecules shown in pink and white. The gray atoms on the lipid chains are the hydrogen atoms explicitly shown on the acyl chains.

## Videos

Video S1 - Node-to-antinode migration of pure DPPC vesicles and their consequent separation from  $X_{\text{chol}}=0.3$  DPPC vesicles in real-time rate for approximately 18 seconds (timer counter in the left is in seconds).

## References

- 1 L. Marai and A. Kuksis, *J. Lipid Res.* , 1969, **10**, 141–152.
- 2 A. J. Marcus, H. L. Ullman and L. B. Safier, *J. Lipid Res.* , 1969, **10**, 108–114.
- 3 R. C. Pflieger, N. G. Anderson and F. Snyder, *Biochemistry*, 1968, **7**, 2826–2833.
- 4 C. S. Ejsing, J. L. Sampaio, V. Surendranath, E. Duchoslav, K. Ekroos, R. W. Klemm, K. Simons and A. Shevchenko, *Proc. Natl. Acad. Sci. {U.S.A.}*, 2009, **106**, 2136–2141.
- 5 J. L. Sampaio, M. J. Gerl, C. Klose, C. S. Ejsing, H. Beug, K. Simons and A. Shevchenko, *Proc. Natl. Acad. Sci. U. S. A.*, 2011, **108**, 1903–1907.