NMR Spectroscopy

The $^{13}$C-NMR spectrum of DOPC titrated with d- or l-menthol at 15 °C is shown in Figure S3. As the concentration of d-menthol increased, the peak at 70.4 ppm, corresponding to the carbon at the g2 position of DOPC, remained unchanged. On the other hand, this peak became less intense as the l-menthol concentration was increased. In addition, the peak at 71.57 ppm, which corresponds to C1 of menthol, intensified compared to when d-menthol was added. Since the carbon at the g2 position is located in the hydrophilic region of DOPC, there is a hydrophilic interaction between l-menthol and DOPC.

Figure S1. Systematic numbering of the chemical structures of (a) Chol, (b) l-menthol, and (c) d-menthol.
Table S1. $^1$H chemical shift values for DOPC, Chol, and menthol at 15 °C. Since there are no significant differences in chemical shifts between d- and l-menthol, only the results for l-menthol are shown.
Figure S3. $^{13}$C-NMR spectra of DOPC titrated with d- or l-menthol at 15 °C.
Phase-separated Structures at Room Temperature

Figure S4. Typical microscopic image of reverse domain formation. Scale bar = 10 μm.