

Supplementary Materials

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S0. g- and A- tensor components used for the simulations

system	g_{xx}	g_{yy}	g_{zz}	A_{xx} (G)	A_{yy} (G)	A_{zz} (G)
DMPC/DPP-Tempo	2.0086	2.0060	2.0023	6.25	6.25	33.75
DMPC/DPPTC	2.0086	2.0060	2.0023	6.25	6.25	34.20
POPC/DPPTC	2.0086	2.0064	2.0021	6.00	6.00	34.70
DMPC/5PC	2.0089	2.0059	2.0024	5.65	5.65	33.10
DMPC/14PC	2.0087	2.0059	2.0024	5.40	5.40	33.00

S1. Rotational diffusion rates $R_{\perp}$, $R_{\parallel}$ and order parameter S_0 of DPP-Tempo in DMPC dispersions vs. concentration of wt20 added at pH 5 and at 25° C

wt20/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^9 s^{-1})$	S_0
pure DMPC	3.02	0.96	0.314
1.25	3.47	0.78	0.314
1.43	2.95	1.07	0.313
1.67	2.82	1.00	0.353
2.00	2.63	0.91	0.355
2.50	2.75	1.00	0.356

S2. Rotational diffusion rates $R_{\perp}$, $R_{\parallel}$ and order parameter S_0 of DPP-Tempo in DMPC dispersions vs. concentration of wt20 added at pH 7 and at 25° C

wt20/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^9 s^{-1})$	S_0
pure DMPC	3.13	0.91	0.313
1.25	3.16	0.89	0.312
1.43	3.81	2.45	0.316
1.67	3.16	0.84	0.318
2.00	3.60	2.05	0.320
2.50	3.16	0.83	0.323

S3. Rotational diffusion rates $R_{\perp}$, $R_{\parallel}$ and order parameter S_0 of DPP-Tempo in DMPC dispersions vs. concentration of Δ G1 added at pH 5 and at 25° C

Δ G1/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	3.09	8.71	0.315
1.25	3.24	7.08	0.315
1.43	3.16	8.32	0.314
1.67	3.09	8.71	0.316
2.00	3.09	8.13	0.317
2.50	3.47	7.24	0.314

S4. Rotational diffusion rates $R_{\perp}$, $R_{\parallel}$ and order parameter S_0 of DPP-Tempo in DMPC dispersions vs. concentration of Δ G1 added at pH 7 and at 25° C

Δ G1/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	3.16	9.12	0.313
1.25	3.16	8.13	0.311
1.43	3.16	7.59	0.310
1.67	3.16	9.33	0.311
2.00	3.16	8.32	0.309
2.50	3.16	8.13	0.318

S5. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in DMPC dispersions vs. concentration of wt20 added at pH 5 and at 25° C

wt20/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	3.72	2.95	0.543
1.25	3.16	2.51	0.549
1.43	3.16	2.51	0.552
1.67	3.09	2.45	0.596
2.00	2.82	2.24	0.601
2.50	2.82	2.34	0.601

S6. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in DMPC dispersions vs. concentration of wt20 added at pH 7 and at 25° C

wt20/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	3.16	2.51	0.540
1.25	3.31	2.51	0.537
1.43	3.16	2.51	0.540
1.67	3.09	2.45	0.550
2.00	3.24	2.57	0.553
2.50	3.31	2.63	0.558

S7. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in DMPC dispersions vs. concentration of Δ G1 added at pH 5 and at 25° C

Δ G1/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	2.95	2.63	0.538
1.25	2.88	2.57	0.542
1.43	3.02	2.69	0.536
1.67	2.95	2.63	0.533
2.00	2.34	2.63	0.535
2.50	2.34	2.63	0.534

S8. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in DMPC dispersions vs. concentration of Δ G1 added at pH 7 and at 25° C

Δ G1/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	2.88	2.63	0.538
1.25	4.57	2.57	0.537
1.43	2.88	2.69	0.535
1.67	2.88	2.63	0.531
2.00	2.34	2.63	0.530
2.50	2.34	2.63	0.536

S9. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in DMPC dispersions vs. concentration of wt20 added at pH 5 and at 37° C

wt20/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	4.47	5.62	0.492
1.25	4.17	5.25	0.496
1.43	4.47	5.62	0.509
1.67	4.17	5.25	0.540
2.00	3.55	4.47	0.554
2.50	4.07	5.13	0.555

S10. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in DMPC dispersions vs. concentration of wt20 added at pH 7 and at 37° C

wt20/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	4.57	5.75	0.497
1.25	4.68	5.89	0.492
1.43	4.37	5.62	0.493
1.67	4.57	5.50	0.507
2.00	4.47	5.62	0.505
2.50	4.47	5.62	0.507

S11. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in DMPC dispersions vs. concentration of Δ G1 added at pH 5 and at 37° C

Δ G1/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	4.57	5.75	0.496
1.25	4.47	5.62	0.503
1.43	4.57	5.75	0.496
1.67	4.68	5.89	0.500
2.00	4.68	5.89	0.498
2.50	4.57	5.75	0.499

S12. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in DMPC dispersions vs. concentration of Δ G1 added at pH 7 and at 37° C

Δ G1/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	4.57	5.75	0.500
1.25	4.47	5.62	0.498
1.43	4.57	5.75	0.498
1.67	4.68	5.89	0.494
2.00	4.68	5.89	0.492
2.50	4.57	5.75	0.495

S13. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in POPC dispersions vs. concentration of wt20 added at pH 5 and at 25° C

wt20/POPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure POPC	4.17	3.31	0.483
1.25	4.07	3.24	0.481
1.67	4.17	3.31	0.486
2.00	3.89	3.09	0.501
2.50	3.80	3.02	0.501
3.33	3.89	3.09	0.499

S14. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in POPC dispersions vs. concentration of wt20 added at pH 7 and at 25° C

wt20/POPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure POPC	7.76	6.17	0.488
1.25	7.94	6.31	0.488
1.67	7.94	6.31	0.488
2.00	7.94	6.31	0.485
2.50	8.13	6.46	0.480
3.33	7.94	6.31	0.481

S15. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in POPC dispersions vs. concentration of $\Delta G1$ added at pH 5 and at 25° C

$\Delta G1/POPC$ (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure POPC	3.98	3.16	0.488
1.25	4.07	3.24	0.475
1.67	3.98	3.16	0.482
2.00	4.07	3.24	0.480
2.50	4.07	3.24	0.474
3.33	4.07	3.24	0.482

S16. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in POPC dispersions vs. concentration of $\Delta G1$ added at pH 7 and at 25° C

$\Delta G1/POPC$ (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure POPC	3.98	3.16	0.487
1.25	4.07	3.24	0.486
1.67	3.98	3.16	0.486
2.00	3.98	3.16	0.484
2.50	3.98	3.16	0.489
3.33	3.98	3.16	0.486

S17. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in POPC dispersions vs. concentration of wt20 added at pH 5 and at 37° C

wt20/POPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure POPC	5.37	6.76	0.441
1.25	7.76	9.77	0.439
1.67	5.01	6.31	0.442
2.00	4.79	6.03	0.466
2.50	4.90	6.17	0.466
3.33	5.13	6.46	0.469

S18. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in POPC dispersions vs. concentration of wt20 added at pH 7 and at 37° C

wt20/POPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure POPC	5.37	6.76	0.440
1.25	5.13	6.46	0.448
1.67	5.50	6.92	0.448
2.00	5.50	6.92	0.449
2.50	5.50	6.92	0.444
3.33	5.50	6.92	0.445

S19. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in POPC dispersions vs. concentration of Δ G1 added at pH 5 and at 37° C

Δ G1/POPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure POPC	5.13	6.46	0.446
1.25	5.37	6.76	0.446
1.67	5.37	6.76	0.449
2.00	5.62	7.08	0.448
2.50	5.37	6.76	0.443
3.33	5.50	6.92	0.445

S20. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of DPPTC in POPC dispersions vs. concentration of Δ G1 added at pH 7 and at 37° C

Δ G1/POPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure POPC	5.50	6.92	0.446
1.25	5.50	6.92	0.447
1.67	5.50	6.92	0.445
2.00	5.50	6.92	0.446
2.50	5.50	6.92	0.450
3.33	5.62	7.08	0.450

S21. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of 5PC in DMPC dispersions vs. concentration of wt20 added at pH 5 and at 25° C

wt20/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^7 s^{-1})$	S_0
pure DMPC	4.47	3.47	0.38
1.25	4.37	3.63	0.38
1.43	4.37	4.90	0.39
1.67	4.27	5.13	0.41
2.00	4.37	3.89	0.41
2.50	4.37	2.88	0.42

S22. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of 5PC in DMPC dispersions vs. concentration of wt20 added at pH 7 and at 25° C

wt20/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^7 s^{-1})$	S_0
pure DMPC	4.17	5.13	0.39
1.25	4.17	4.57	0.39
1.43	4.17	4.07	0.40
1.67	4.27	2.95	0.41
2.00	4.27	3.72	0.41
2.50	4.37	3.02	0.42

S23. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of 5PC in DMPC dispersions vs. concentration of Δ G1 added at pH 5 and at 25° C

Δ G1/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^7 s^{-1})$	S_0
pure DMPC	4.47	5.50	0.39
1.25	4.37	5.01	0.39
1.43	4.37	5.01	0.39
1.67	4.37	5.13	0.39
2.00	4.37	5.01	0.39
2.50	4.37	5.01	0.39

S24. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of 5PC in DMPC dispersions vs. concentration of Δ G1 added at pH 7 and at 25° C

Δ G1/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^7 s^{-1})$	S_0
pure DMPC	4.47	6.61	0.39
1.25	4.17	6.31	0.39
1.43	4.47	7.08	0.39
1.67	4.47	6.31	0.39
2.00	4.37	7.59	0.39
2.50	4.37	7.24	0.39

S25. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of 14PC in DMPC dispersions vs. concentration of wt20 added at pH 5 and at 25° C

wt20/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^9 s^{-1})$	S_0
pure DMPC	9.12	1.15	0.08
1.25	8.91	1.12	0.08
1.43	9.12	1.15	0.08
1.67	9.12	1.15	0.08
2.00	8.91	1.12	0.08
2.50	9.12	1.15	0.08

S26. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of 14PC in DMPC dispersions vs. concentration of wt20 added at pH 7 and at 25° C

wt20/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	8.71	8.71	0.07
1.25	8.71	8.71	0.07
1.43	8.91	8.91	0.07
1.67	8.71	8.91	0.07
2.00	8.71	8.71	0.07
2.50	9.12	9.12	0.07

S27. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of 14PC in DMPC dispersions vs. concentration of Δ G1 added at pH 5 and at 25° C

Δ G1/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	9.33	9.33	0.08
1.25	9.33	9.33	0.08
1.43	9.77	9.77	0.08
1.67	9.55	9.55	0.08
2.00	9.12	9.12	0.08
2.50	9.12	9.12	0.08

S28. Rotational diffusion rates $R_{\perp}, R_{\parallel}$ and order parameter S_0 of 14PC in DMPC dispersions vs. concentration of Δ G1 added at pH 7 and at 25° C

Δ G1/DMPC (10^{-3})	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
pure DMPC	8.91	8.91	0.07
1.25	8.91	8.91	0.07
1.43	9.33	9.33	0.07
1.67	9.33	9.33	0.07
2.00	9.12	9.12	0.07
2.50	9.12	9.12	0.07

S29. Rotational diffusion rates $R_{\perp}$, $R_{\parallel}$ and order parameter S_0 of DPP-Tempo in DMPC dispersions vs. concentration of 1-palmitoyl-2-hydroxy phosphatidylcholine (lyso-PC) added at pH 7 and at 25° C

lyso-PC mole%	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^8 s^{-1})$	S_0
0	3.16	8.13	0.318
1.0	3.24	8.71	0.312
3.5	3.31	8.91	0.300
5.0	3.47	6.31	0.287
6.0	3.55	7.76	0.288
7.0	3.55	8.32	0.276
8.0	3.72	7.94	0.278
10.0	3.72	6.70	0.249

S30. Rotational diffusion rates $R_{\perp}$, $R_{\parallel}$ and order parameter S_0 of DPP-Tempo in DMPC dispersions vs. concentration of arachidonic acid (AA) added at pH 7 and at 25° C

AA mole%	$R_{\perp}(10^7 s^{-1})$	$R_{\parallel}(10^9 s^{-1})$	S_0
0	3.16	0.89	0.318
2.0	3.09	1.05	0.320
4.0	3.16	1.05	0.321
6.0	3.02	1.17	0.326
8.0	3.09	1.35	0.334
10.0	3.02	1.26	0.343

Fig, S1. Plot of the order parameter S_0 of DPP-Tempo in DMPC vs. the concentration of 1-palmitoyl-2-hydroxyl PC in DMPC dispersions at 25C for the condition of pH 7.

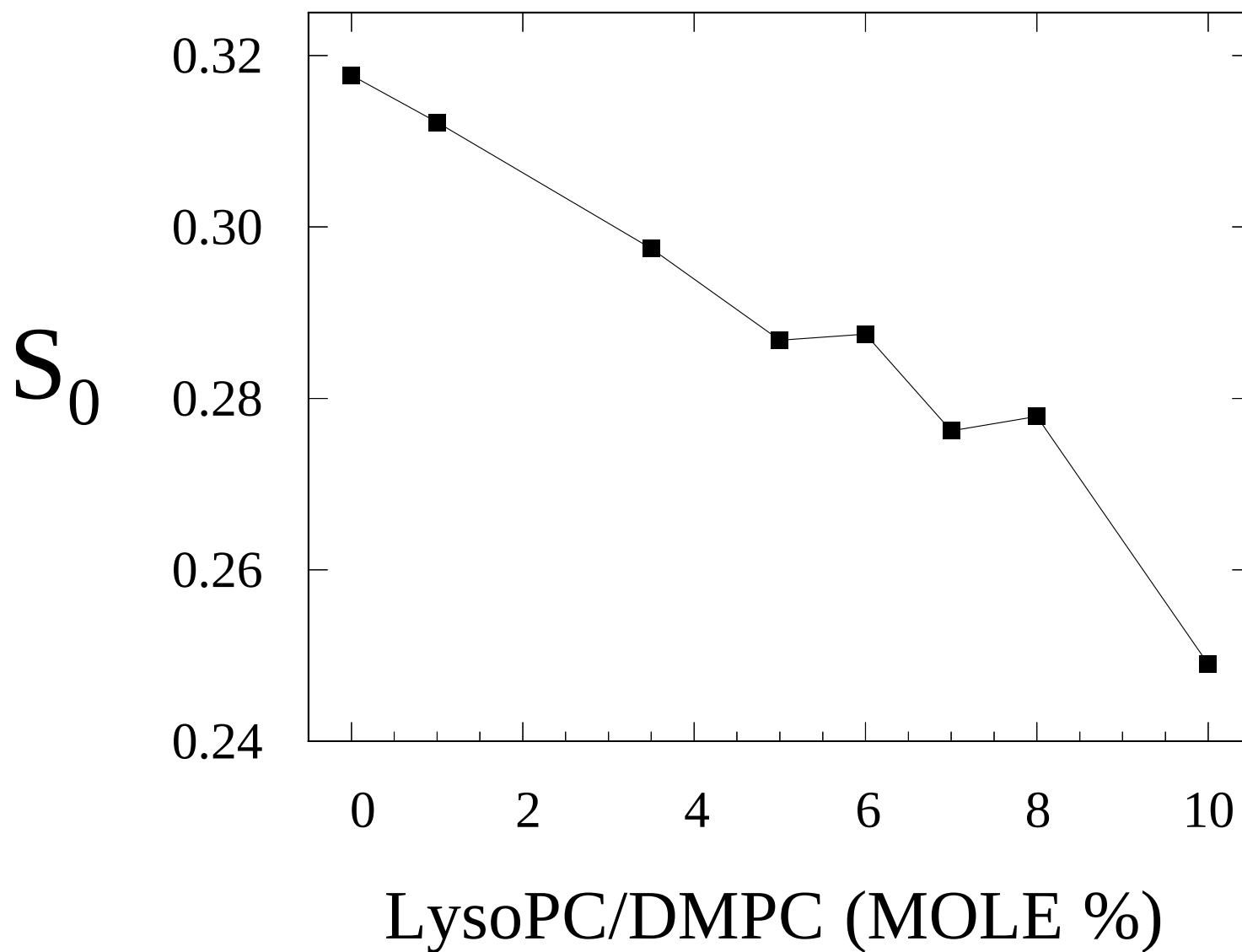


Fig. S2. Plot of the order parameter S_0 of DPP-Tempo in DMPC vs. the concentration of AA in DMPC dispersions at 25C for the condition of pH 7.

