

# Supporting Information

## Nature of Interactions between PEO-PPO-PEO Triblock Copolymers and Lipid Membranes: (I) The Effect of Polymer Hydrophobicity on Its Ability to Protect Liposomes from Peroxidation

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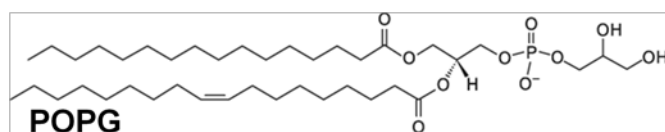
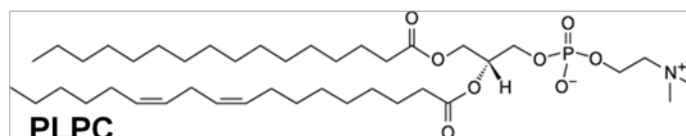
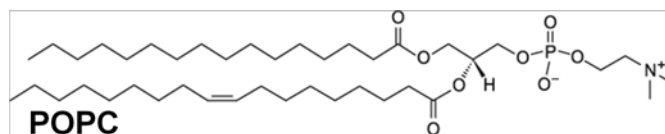
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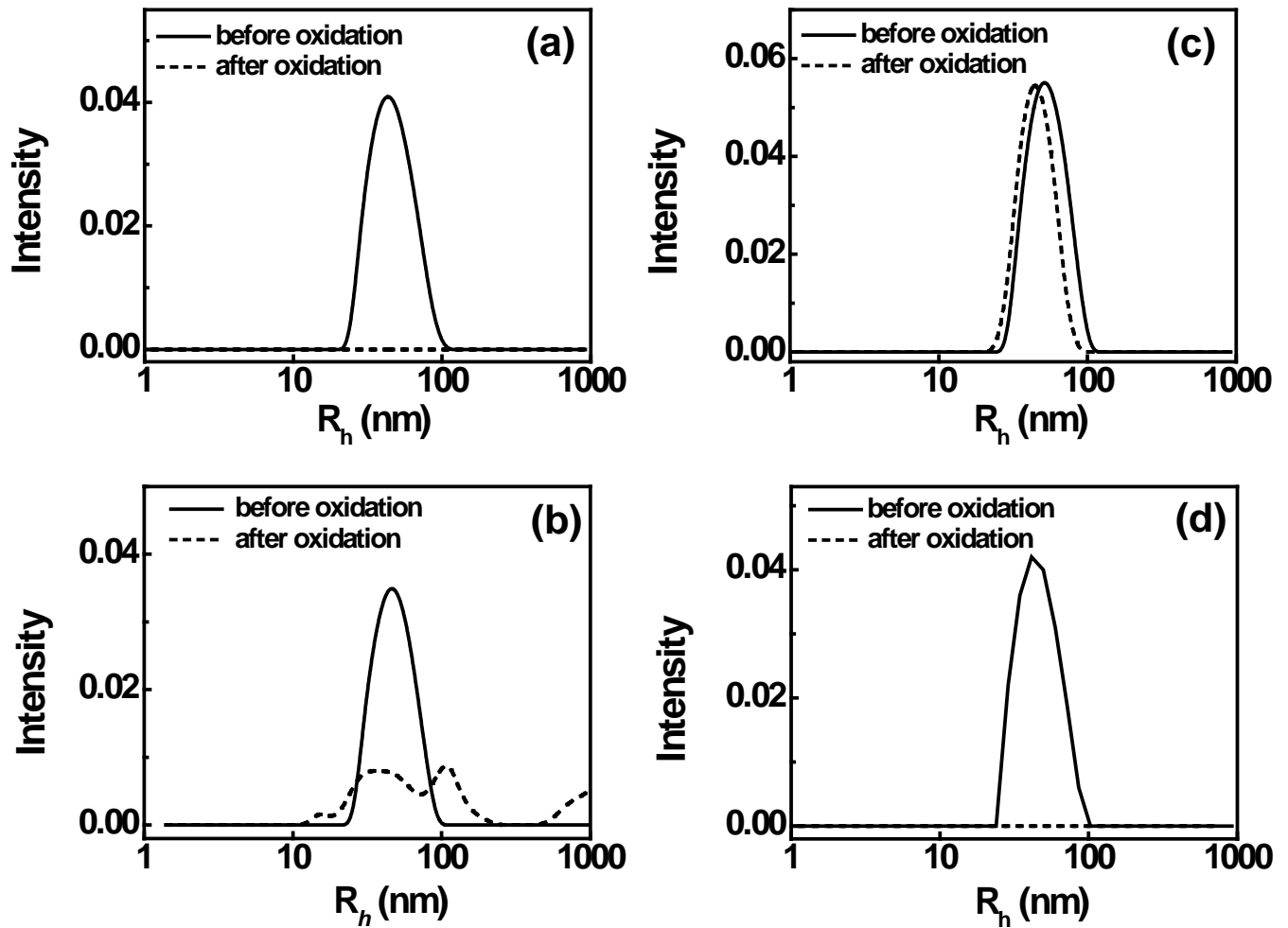
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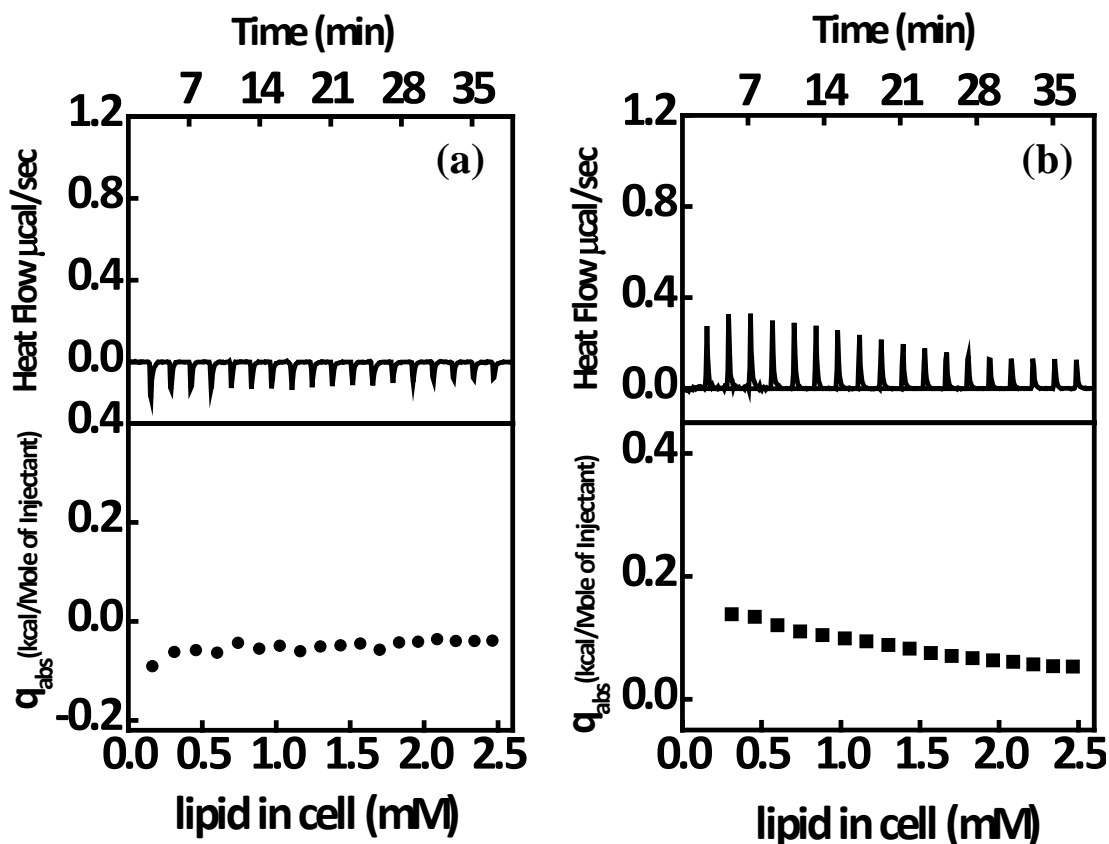
S-Scheme 1. Chemical structures of POPC, PLPC and POPG.



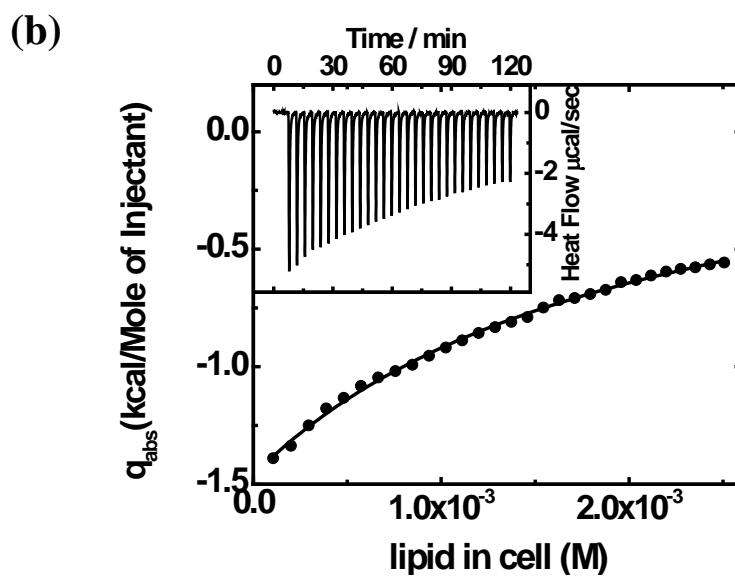
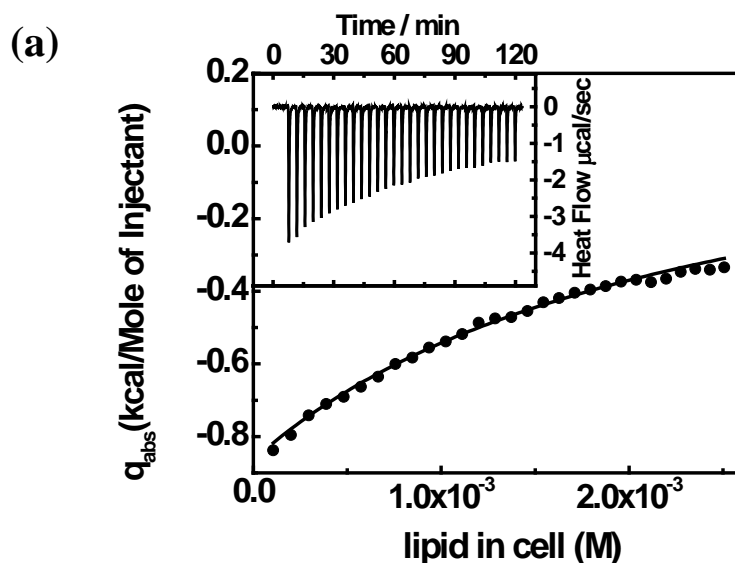
S-Figure 1. DLS analysis of POPC-PLPC-POPG liposome as a function of polymer concentration before and after oxidation without incubation. The molar ratio of P1107 vs. lipid is (a) 5, (b) 1; the molar ratio of PEG-8K is (c) 25, (d) 5.



S-Figure 2. ITC of (a) 50  $\mu\text{M}$  P188 and (b) 100  $\mu\text{M}$  P181 with 15 mM POPC-PLPC-POPG liposomes at 25°C. Upper panel: raw data from sequential injections. Lower panel: the integrated heat per injection normalized with respect to the number of moles of POPC injected. The small, constant, exothermic heat flow in the profile of P188 and the decayed endothermic heat flow in the profile of P181 are very similar to the corresponding cases using POPC liposomes, indicating that the changes in acyl chain desaturation and the headgroup type do not affect the way of the polymers partition to the lipid membrane.



S-Figure 3. ITC of release of POPC LUVs pre-incorporated with (a) P181 and (b) P333 into water at 25°C. The liposome concentration is 13.5 mM and the poloxamer concentration is 1.5 mM. The data are the integrated heat per injection normalized with respect to the number of moles of POPC injected. The solid lines are the least-squares fits of the calorimetric data with Heerklotz's partitioning mode. The fitting parameters are listed in S-table 1. The inset shows raw data from sequential injections.



S-table 1. Type of experiment performed and the fitting parameters obtained for both uptake and release experiments at 25 °C.

Type of experiment	Polymer	Concentration (mM)	Permeable model				Impermeable model			
			$\gamma$	$\Delta H$ (KJ/mol)	$K$ ( $10^4$ )	$\chi^2$ ( $10^{-4}$ )	$\gamma$	$\Delta H$ (KJ/mol)	$K$ ( $10^4$ )	$\chi^2$ ( $10^{-4}$ )
uptake	P181	$P^{sy} = 0$								
		$L^{sy} = 15$	$\gamma_P = 1$	11.5	1.44	0.45	$\gamma_P = 1$	5.8	2.77	0.45
		$P_0 = 0.10$	$\gamma_L = 1$				$\gamma_L = 0.5$			
		$L_0 = 0$								
		$P^{sy} = 0$								
		$L^{sy} = 15$	$\gamma_P = 1$	21.6	2.22	1.60	$\gamma_P = 1$	10.9	4.34	1.60
	$P_0 = 0.05$	$\gamma_L = 1$	$\gamma_L = 0.5$							
	$L_0 = 0$									
	P335	$P^{sy} = 0$								
		$L^{sy} = 15$	$\gamma_P = 1$	19.3	1.61	1.51	$\gamma_P = 1$	9.7	3.16	1.51
		$P_0 = 0.05$	$\gamma_L = 1$				$\gamma_L = 0.5$			
		$L_0 = 0$								
release		P181	$P^{sy} = 1.5$							
			$L^{sy} = 13.5$	$\gamma_P = 1$	5.34	2.34	1.45	$\gamma_P = 0.5$	5.34	4.78
	$P_0 = 0$		$\gamma_L = 1$	$\gamma_L = 0.5$						
	$L_0 = 0$									
	P333	$P^{sy} = 1.5$								
		$L^{sy} = 13.5$	$\gamma_P = 1$	9.21	2.65	1.21	$\gamma_P = 0.5$	9.21	5.30	1.21
$P_0 = 0$		$\gamma_L = 1$	$\gamma_L = 0.5$							
$L_0 = 0$										

S-Figure 4. 300 MHz  $^1\text{H}$  NMR spectrum of P188 (a) before oxidation (b) after oxidation in  $\text{D}_2\text{O}$  at 25  $^\circ\text{C}$

