

## **Supporting Information:**

### **Fluorescent Lipo-beads for the Sensitive Detection of Phospholipase A<sub>2</sub> and Its Inhibitors**

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- (1). Figure S1: Chemical structures of a). Rhodamine PE (RPE) b). DMPC c). DMPG d). Varespladib and e). Quercetin.
- (2). Figure S2: Long-term storage stability of different lipo-beads at 5°C
- (3). Figure S3: The stability of different lipo-beads after exposure to synthetic urine for 30 minutes
- (4). Figure S4: The effect of Ca<sup>2+</sup> on the stability of the supported lipid membrane. The test was performed on lipo-beads comprised of a). 100% DMPC b). 20% DMPG & 80% DMPC.
- (5). Figure S5: PLA<sub>2</sub> activity on 20:80 DMPG:DMPC coated fluorescein encapsulated beads at 18°C (gel phase) and 30°C (liquid phase). The final PLA<sub>2</sub> and Ca<sup>2+</sup> concentrations were 4.10 μM and 0.01 mM respectively. The high fluorescence intensity of particles suggests that the enzyme is not active as in other lipid composition, at this concentration of Ca<sup>2+</sup>
- (6) Figure S6: The effect of quercetin on DMPC lipo-beads. Quercetin disrupts lipid bilayers instead of inhibiting the PLA<sub>2</sub> activity.
- (7) Figure S7: PLA<sub>2</sub> inhibition by ANXA3 for 20:80 DMPG:DMPC lipo-beads. The percent PLA<sub>2</sub> activity is reduced approximately by 50% due to inhibition.
- (8) Table S1: The EC<sub>50</sub> and the PLA<sub>2</sub> concentrations needed for 25% decrease of the fluorescence intensity.

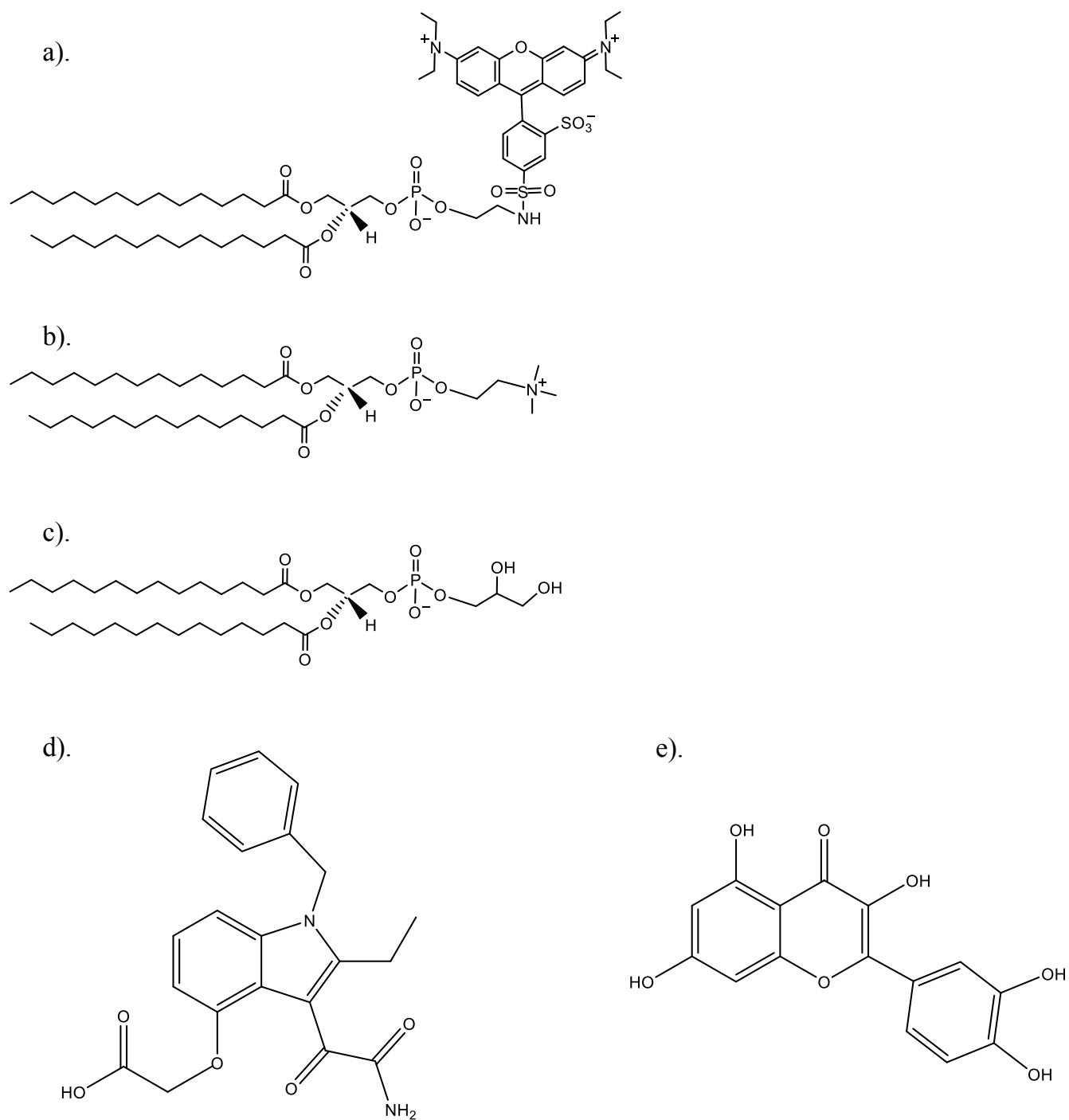


Figure S1: Chemical structures of a). Rhodamine PE (RPE) b). DMPC c). DMPG d).Varespladib and e). Quercetin.

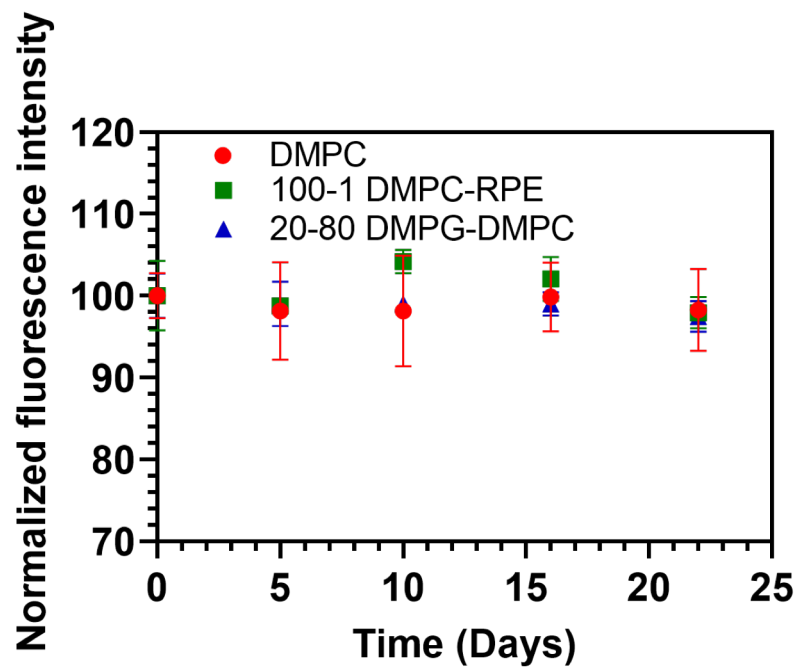


Figure S2: Long-term storage stability of different lipo-beads at 5°C

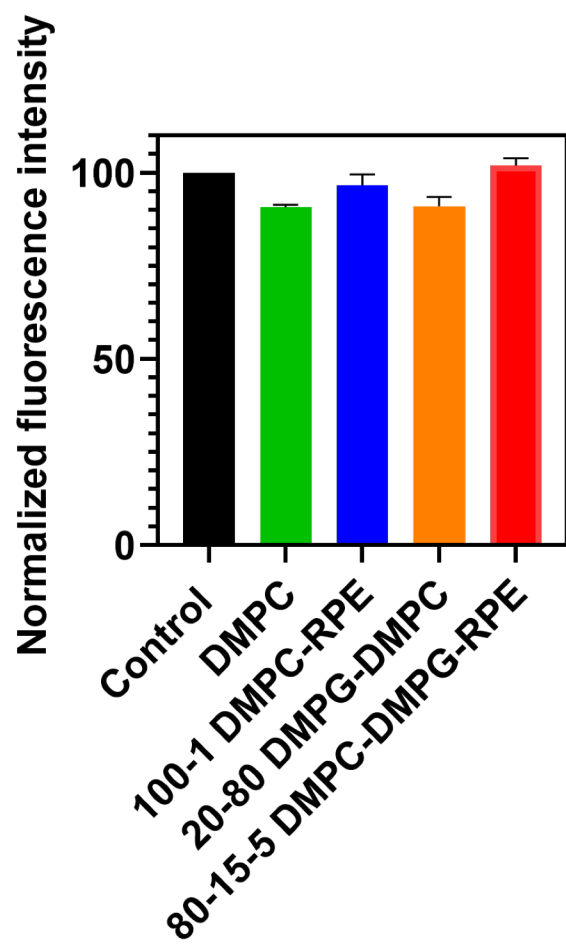


Figure S3: The stability of different lipo-beads after exposure to synthetic urine for 30 minutes

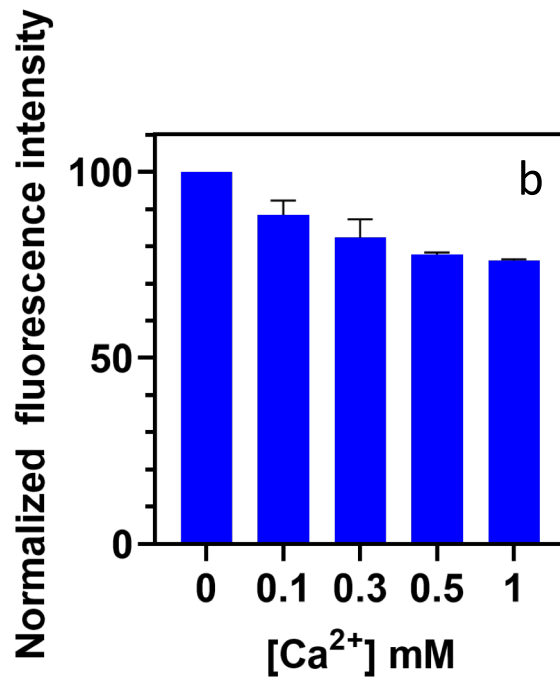
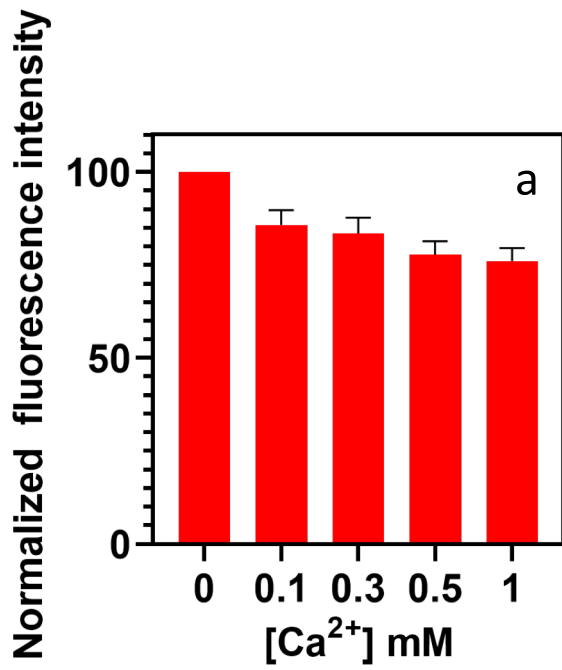


Figure S4: The effect of  $Ca^{2+}$  on the stability of the supported lipid membrane. The test was performed on lipo-beads comprised of a) 100% DMPC b) 20% DMPG & 80% DMPC

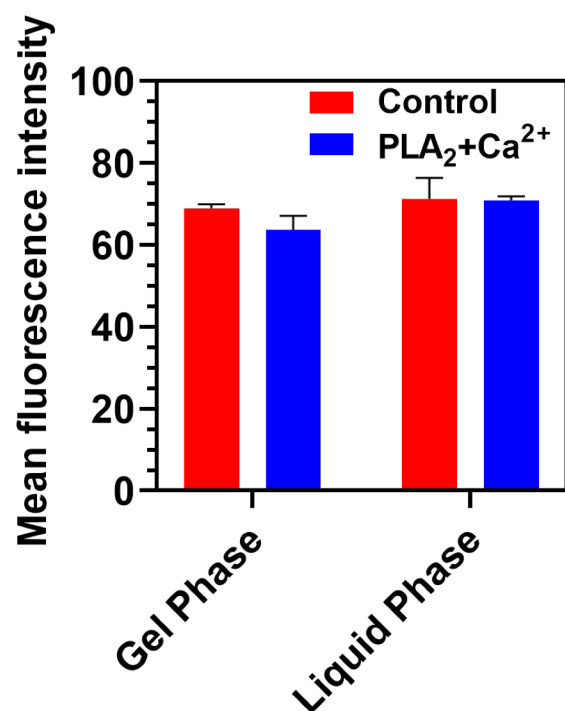


Figure S5: PLA<sub>2</sub> activity on 20:80 DMPG:DMPC coated fluorescein encapsulated beads at 18°C (gel phase) and 30°C (liquid phase). The final PLA<sub>2</sub> and Ca<sup>2+</sup> concentrations were 4.10 μM and 0.01 mM respectively. The high fluorescence intensity of particles suggests that the enzyme is not active as in other lipid composition, at this concentration of Ca<sup>2+</sup>

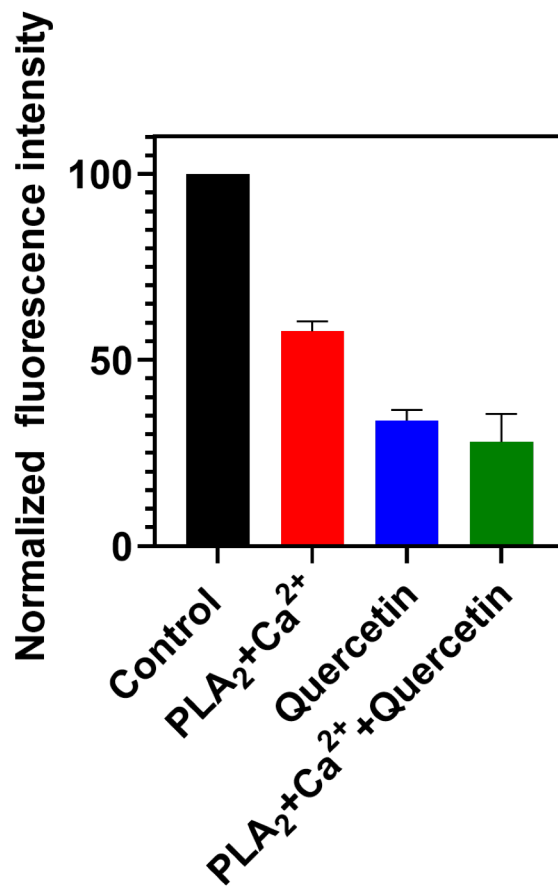


Figure S6: Effect of quercetin on DMPC lipo-beads. Quercetin disrupts lipid bilayers instead of inhibiting the PLA<sub>2</sub> activity.

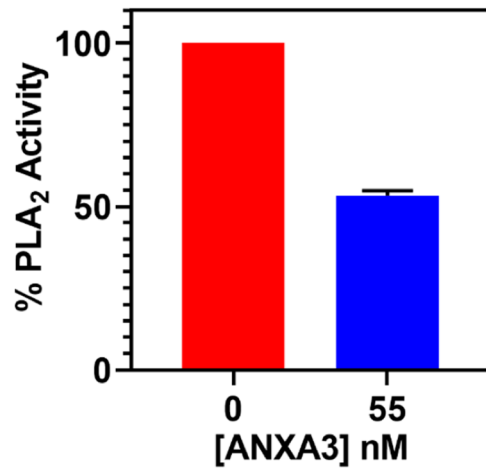


Figure S7: PLA<sub>2</sub> inhibition by ANXA3 for 20:80 DMPG:DMPC lipo-beads. The percent PLA<sub>2</sub> activity is reduced approximately by 50% due to inhibition.



Lipo-bead	EC <sub>50</sub> (nM)	25% Decrease (nM)
DMPC	278	92
PC	197	90
20:80 DMPG: DMPC	112	88
100:1 DMPC:RPE	89	48
85:15:5 DMPC:DMPG:RPE	15	6

Table S1: The EC<sub>50</sub> and the PLA<sub>2</sub> concentrations needed for 25% decrease of the fluorescence intensity.