

Supplementary Materials

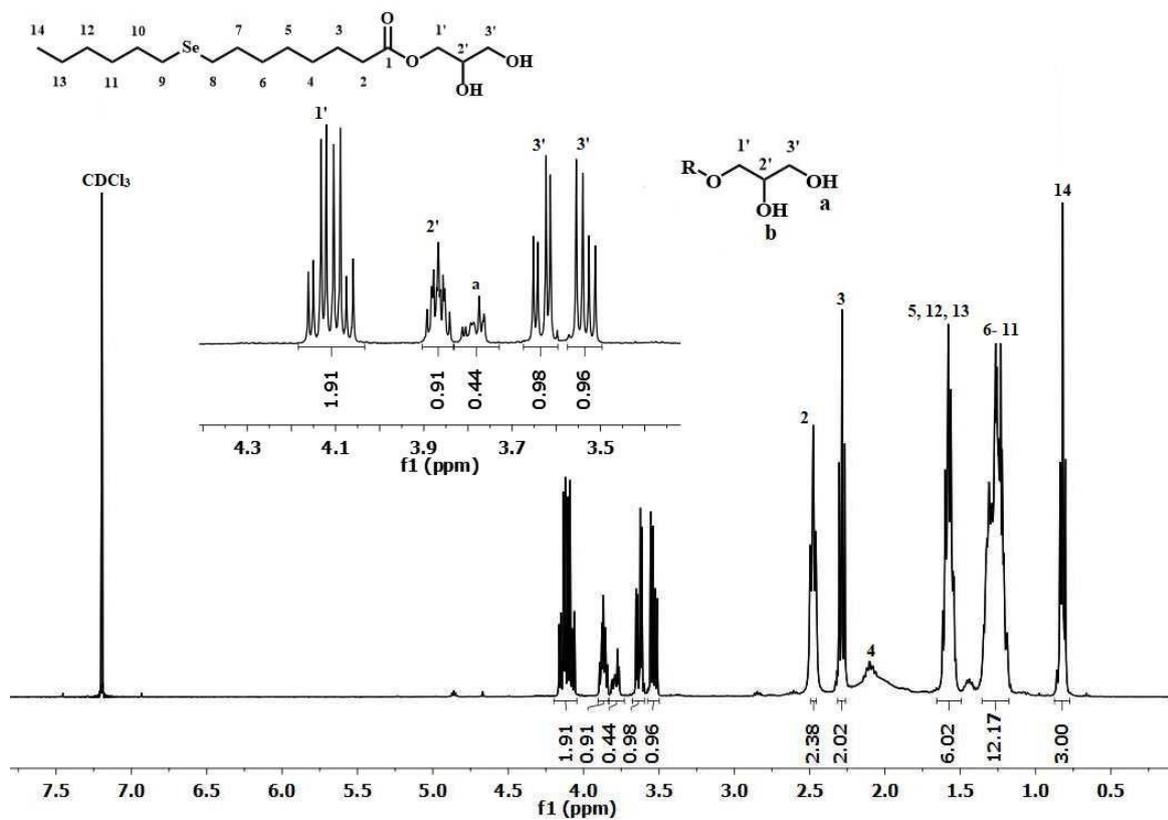


Figure S1. ^1H NMR of synthetic 2,3-dihydroxypropyl 8-(hexylselanyl)octanoate.

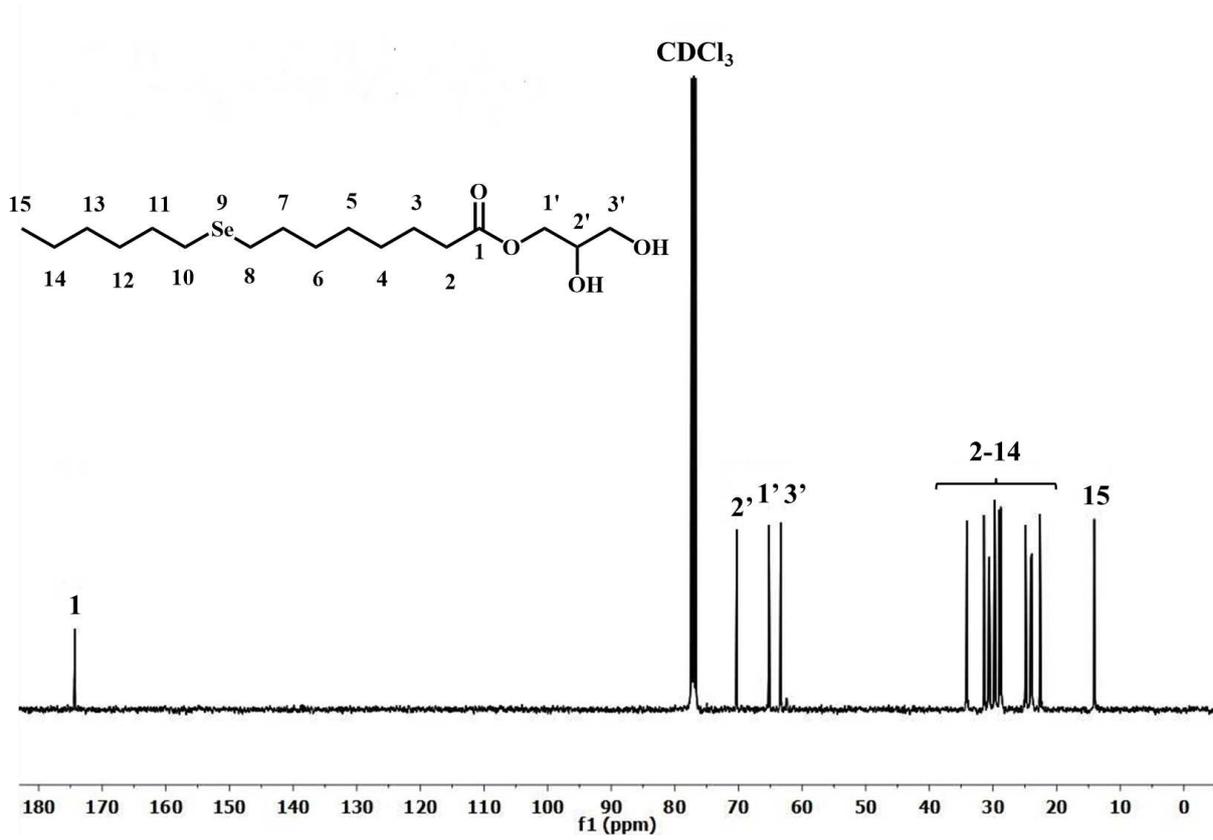


Figure S2. ¹³C NMR of synthetic 2,3-dihydroxypropyl 8-(hexylselanyl)octanoate.

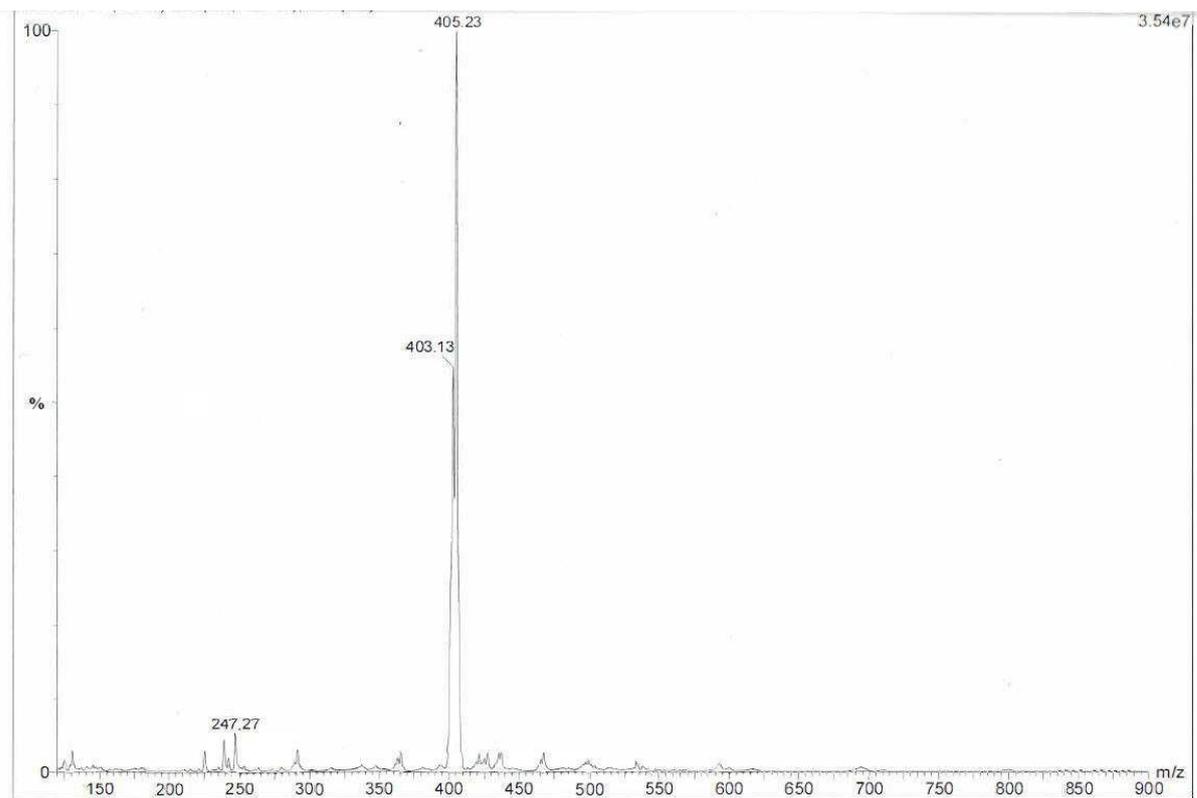


Figure S3. Mass spectral analysis of synthetic 2,3-dihydroxypropyl 8-(hexylselenyl)octanoate.

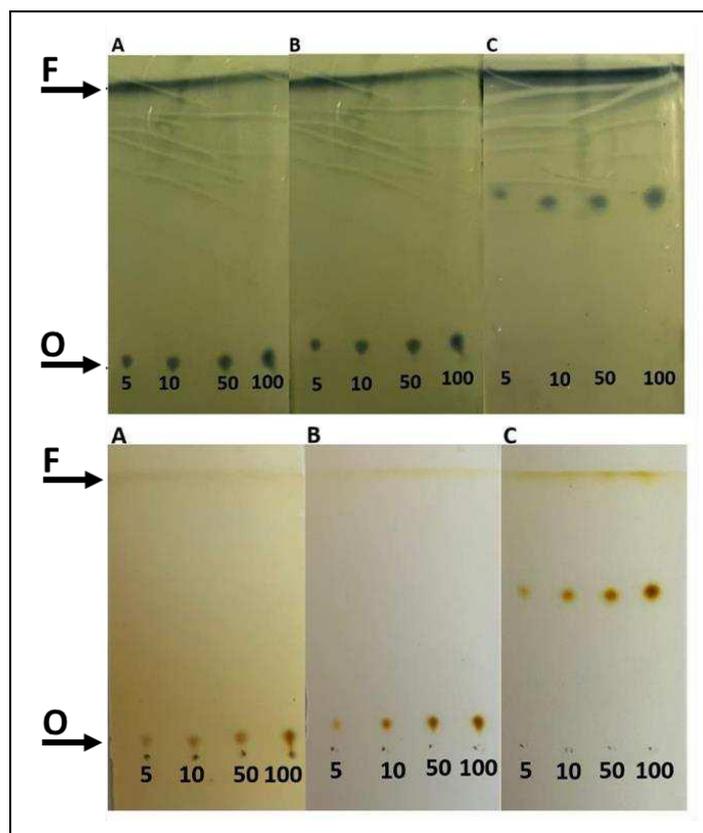


Figure S4. Thin layer chromatographic analysis of synthetic Se-MAG. Lipid loadings in micrograms are indicated at the bottom of each lane. Plates were stained with a 0.04 M ammonium molybdate solution followed by charring (top) and with iodine vapour (bottom). Eluting solvent systems are as follows: (A) hexanes:ethyl acetate (75:25 by vol.); (B) hexanes:acetone:ethyl acetate (74:25:1 by vol.); (C) hexanes:acetone:ethyl acetate (50:25:25 by vol.). Lipid was placed on the plate as a solution in hexane. O, origin. F, solvent front.

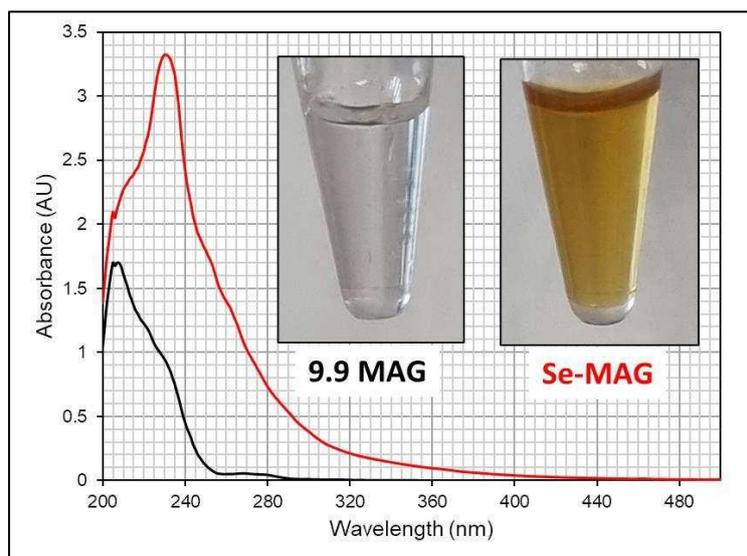


Figure S5. Ultraviolet-visible absorption spectroscopic analysis of monoolein (9.9 MAG) and synthetic Se-MAG. Measurements were made in 1 cm quartz cuvettes at a lipid concentration of 5 mg/mL in ethanol. UV absorbance by the lipid can impact on its use in spectrophotometric measurements of reconstituted membrane proteins in the cubic phase where the lipid is present at a concentration of approximately 2 molar. For reference, the absorbance values of the 9.9 MAG and Se-MAG solutions at 280 nm are 0.045 and 0.73, respectively. Photographs of the two MAGs in molten form at ~ 20 °C in 1.5 mL Eppendorf tubes are shown as insets.

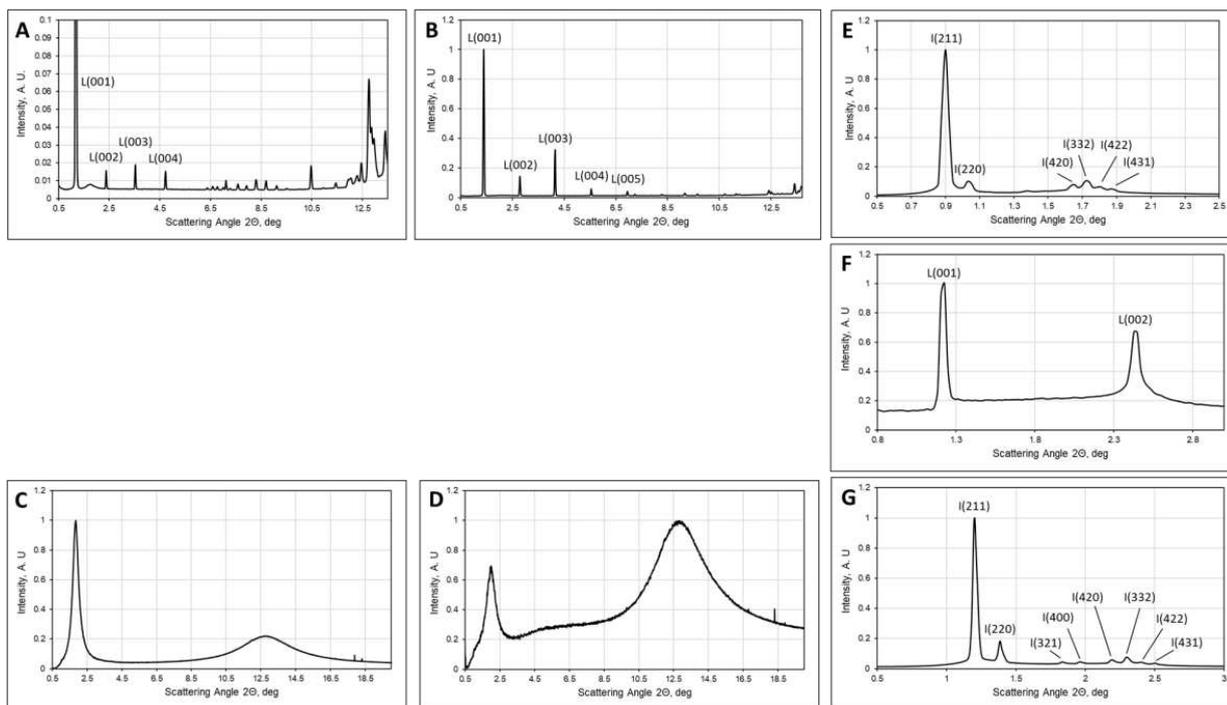


Figure S6. Small- and wide-angle X-ray scattering from solid, liquid and mesophases formed by neat and hydrated MAGs. Data are shown as scattered X-ray intensity (normalized to the highest value in the plot) versus scattering angle (2θ) in degrees. **(A)** Neat monoolein, lamellar crystalline (Lc) phase. **(B)** Neat Se-MAG, lamellar crystalline (Lc) phase. **(C)** Neat monoolein, undercooled fluid isotropic (FI) phase. **(D)** Neat Se-MAG, undercooled fluid isotropic (FI) phase. **(E)** Hydrated monoolein, cubic- $Ia3d$ phase. **(F)** Hydrated Se-MAG, lamellar liquid crystalline (L_α) phase. **(G)** Hydrated Se-MAG* (monoolein/Se-MAG, 50/50 by weight), cubic- $Ia3d$ phase. The lamellar crystalline (L) and the liquid crystalline (I, cubic- $Ia3d$) low-angle reflections are indexed as indicated.