

Electronic Supplementary Information

The structural fate of lipid nanoparticles in the extracellular matrix

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SAXS, confocal microscopy, and cryo-EM data of DOPC liposomes

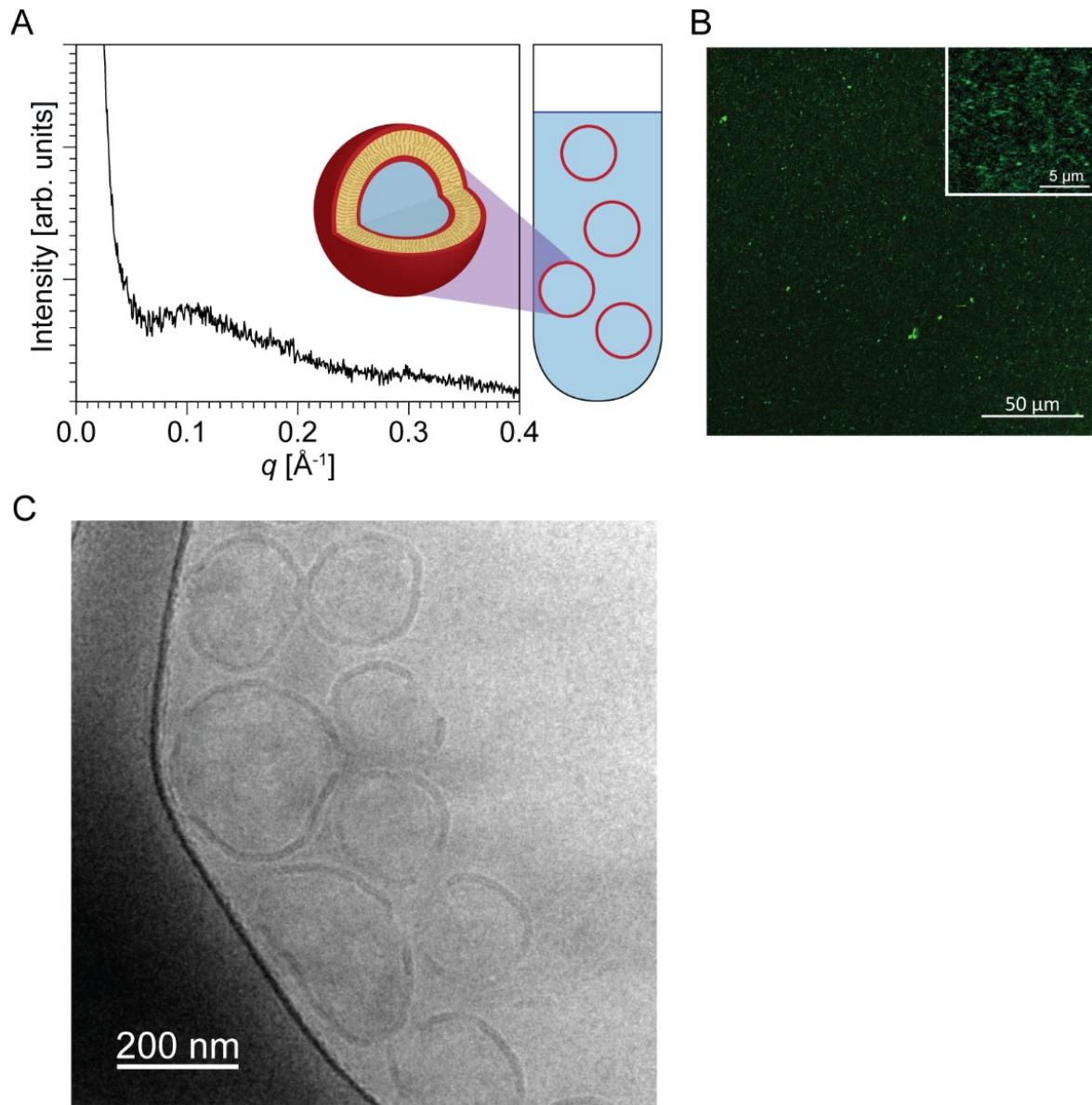
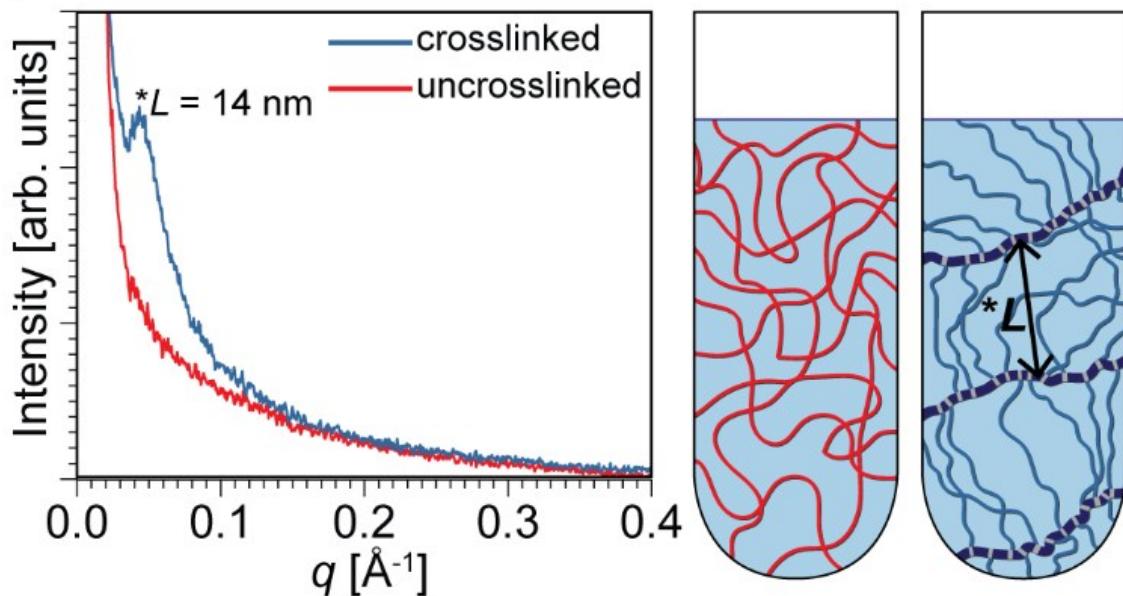


Figure S1. (A) SAXS data of DOPC liposomes display the characteristic form factor of a single lipid bilayer. A schematic representation to the right of the SAXS data depicts liposomes in a quartz capillary. (B) Confocal microscopy of the DOPC liposomes displays a green haze. The inset is at a higher magnification. (C) A cryo-EM image of liposomes displays unilamellar vesicles 100-200 nm in diameter.

SAXS and cryo-EM data of PEG

A



B

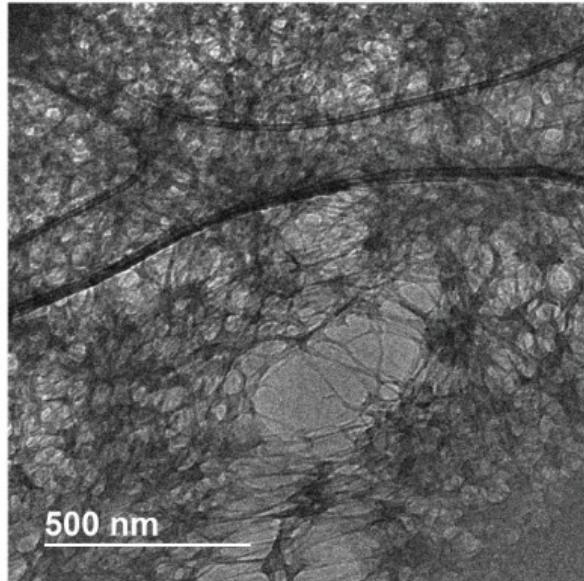


Figure S2. (A) SAXS data of crosslinked PEG (blue) display a broad peak at $q = 0.044 \text{ \AA}^{-1}$ that is absent in the SAXS data of uncrosslinked PEG (red). The correlation length of crosslinked PEG $*L = 14 \text{ nm}$. A schematic representation to the right of the SAXS data depicts uncrosslinked and crosslinked PEG in quartz capillaries. (B) A cryo-EM image of uncrosslinked PEG shows a network of polymer.

Effect of PAM stiffness on PAM swelling ratio and lipid restructuring

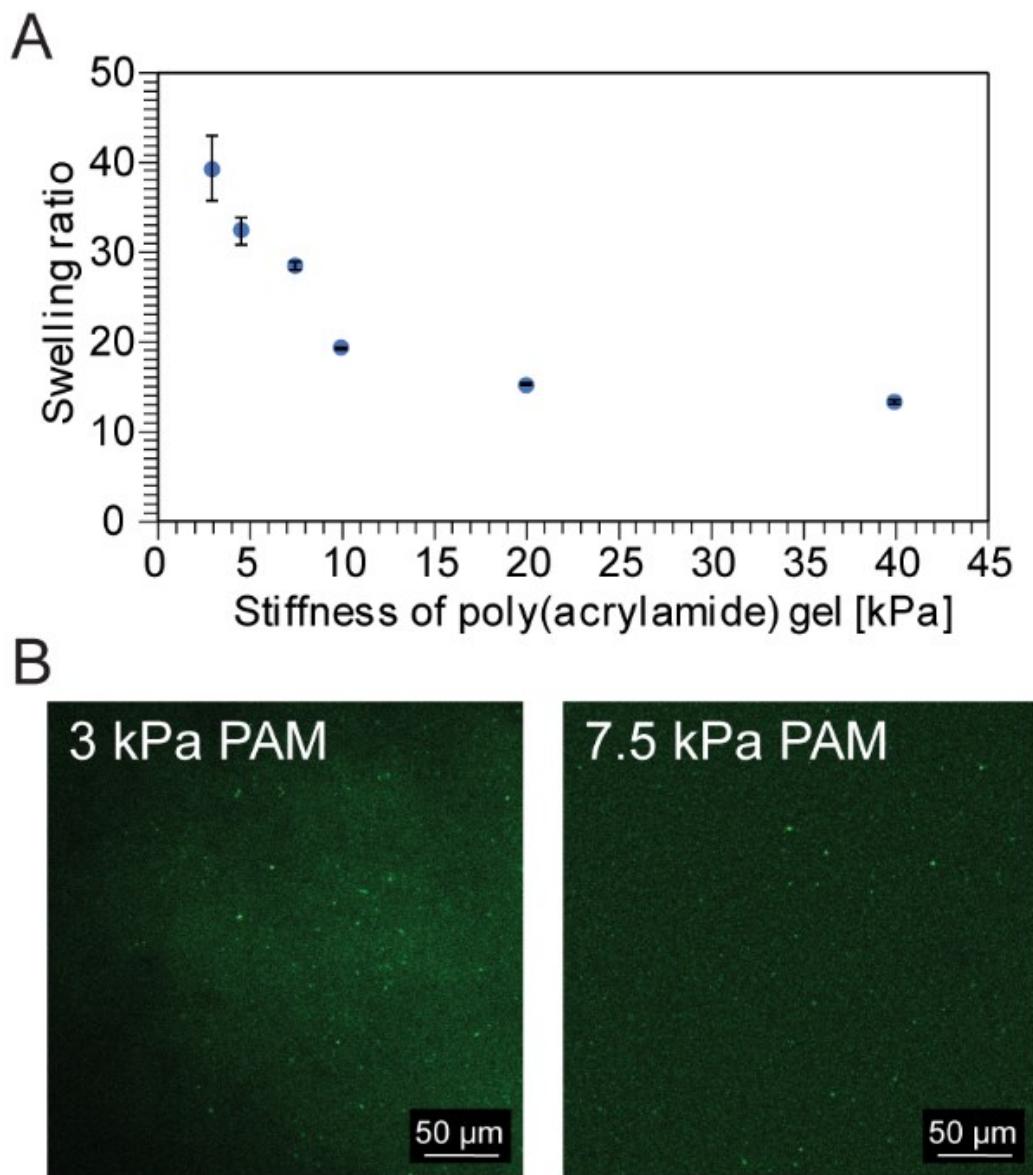


Figure S3. (A) Increasing the stiffness of PAM (by varying relative concentrations of acrylamide and bis-acrylamide as described by Tse and Engler)¹ decreases the swelling ratio (standard deviations shown, $n = 5$). (B) Confocal microscopy of DOPC liposomes in 3 kPa and 7 kPa PAM displays a green haze similar to that observed with just liposomes.

References

(1) Tse, J. R.; Engler, A. J. Preparation of Hydrogel Substrates with Tunable Mechanical Properties. *Curr. Protoc. Cell Biol.* **2010**, No. SUPPL. 47, 1–16. <https://doi.org/10.1002/0471143030.cb1016s47>.