# Electric Supporting Information (ESI)

## Trapping and release of giant unilamellar vesicles in microfluidic wells

**Ayako Yamada[1], Sungyon Lee[2], Patricia Bassereau[1*], and Charles N. Baroud[3*]**

[1]Institut Curie, Centre de Recherche ; CNRS, UMR168 ; Université Pierre et Marie Curie; Labex CelTisPhyBio and Paris Sciences et Lettres, F-75248 Paris Cedex 05, France

[2]Department of Mechanical Engineering, Texas A&M, College Station, TX 77843, USA

[3]Laboratoire d'Hydrodynamique (LabHyX) and Department of Mechanics, Ecole Polytechnique, CNRS, 91128 Palaiseau, France

[*]To whom correspondence should be addressed.
E-mail: patricia.bassereau@curie.fr (P. B.), baroud@ladhyx.polytechnique.fr (C. N. B.)
Tel : +33 1 56 24 67 84 (P. B.), +33 1 69 33 52 61 (C. N. B.)

## Supplementary Figures

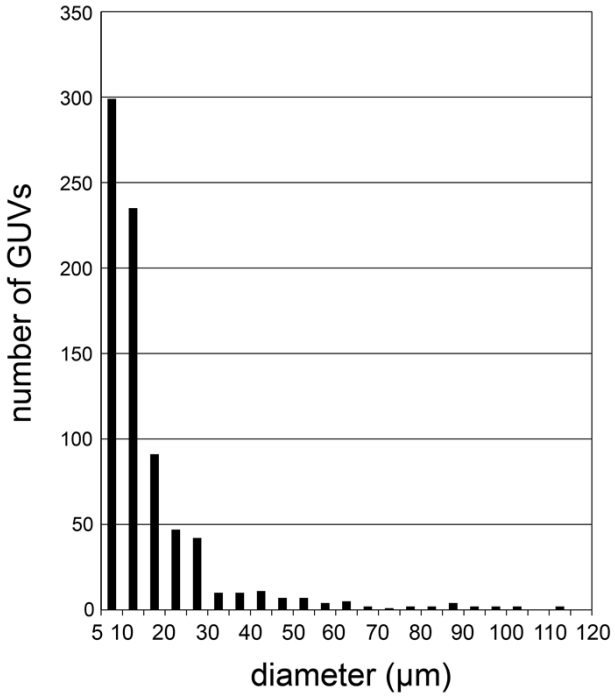



**Fig. S1**

Size distribution of GUVs prepared by electro-formation method. Immediately after electro-formation, GUVs made of EPC containing 0.5 % Texas Red DHPE (w/w) were transferred to an observation chamber, fluorescence microscopy images were taken, and the diameters measured. GUVs smaller than 5 µm diameter were not counted because of the limitation of image resolution.

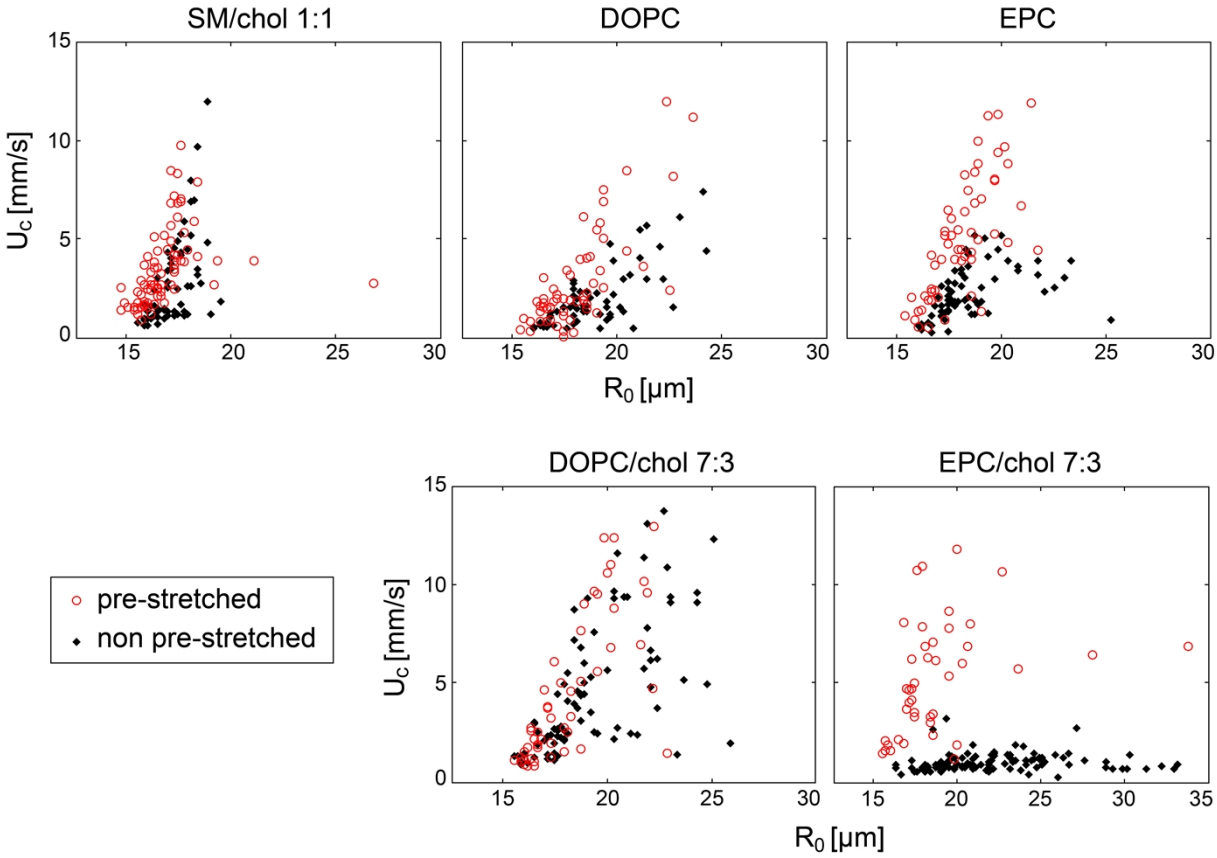


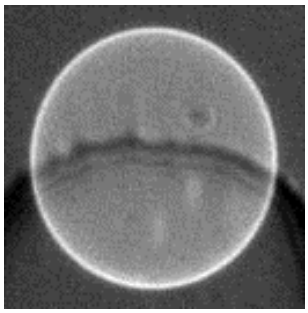

**Fig. S2**

Difference between pre-stretched and non pre-stretched GUVs. Experimental measurements of the threshold flow velocity *Uc* for GUV untrapping versus the non-constrained GUV radius $R_0$ for pre-stretched (red open circles) and non pre-stretched (black filled diamonds) GUVs with different lipid compositions. Data for the pre-stretched GUVs are identical to that in Fig. 5.

## Descriptions of Movies

### Movie S1

A time-lapse movie showing the flow in the lipid bilayer membrane of a trapped GUV induced by outer medium flow. The fluorescence and transmission images of the GUV in a well were recorded every 100 ms. A still image is shown in Fig. 3 (a). Image size: 84 μm × 85 μm.



### Movie S2

A time-lapse movie showing the extracted fluorescence signals of bright spots in the membrane shown in Movie 1. The images were obtained by sequential subtraction of images from Movie 1. Still images are shown in Fig. 3 (b).

### Movie S3

A time-lapse movie showing an escape event of a GUV (fluorescent from a well (dark disks). The fluorescence and transmission images of GUVs in wells were recorded every 100 ms while ΔP was increased from 5.8 to 29 mbar. The GUV on the right escapes from the well, whereas the left one remains trapped. Note that in this movie, ΔP was increased rapidly for a demonstration, but in normal experiments, ΔP was increased by small increment. Image size: 898 μm × 671 μm.