Liquid Crystal Droplet-Based Amplification of Microvesicles that are Shed by Mammalian Cells

Lie Na Tan[a], Gregory J. Wiepz[b], Daniel S. Miller[a], Eric V. Shusta[a], Nicholas L. Abbott[a]*

[a]*Department of Chemical and Biological Engineering, University of Wisconsin-Madison, 1415 Engineering Drive, Madison, Wisconsin 53706, and* [b]*Department of Biomolecular Chemistry, University of Wisconsin-Madison, 1300 University Avenue, Madison, Wisconsin 53706.*

* To whom all correspondence should be addressed. Tel: 608-265-5278. Fax: 608-262-5434. Email: abbott@engr.wisc.edu.

Electronic Supplementary Materials (ESI)

lipid tails	mol %
C14:0	2.2
C16:1	4.7
C16:0	23.2
C18:2	20.6
C18:1	32.5
C18:0	16.7

Figure S1: GC-MS analysis of the lipids tails of A431 cells-derived MVs.
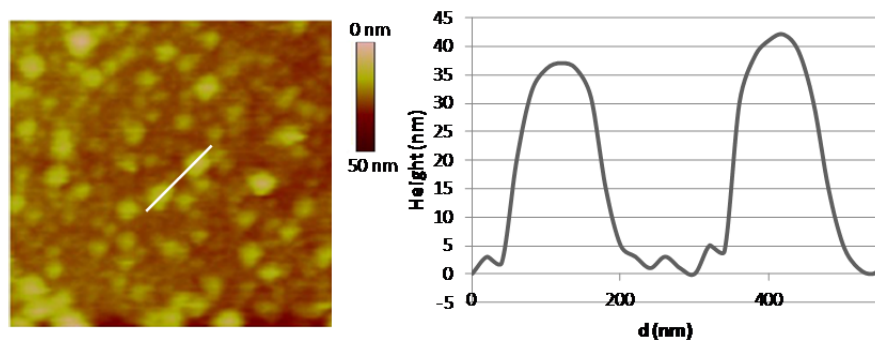
Figure S2: AFM image of a surface decorated with anti-EGFR 111.6 and subsequently incubated with MVs derived from A431 cells. The line corresponds to the location of the measurement of the cross sectional height (right plot).
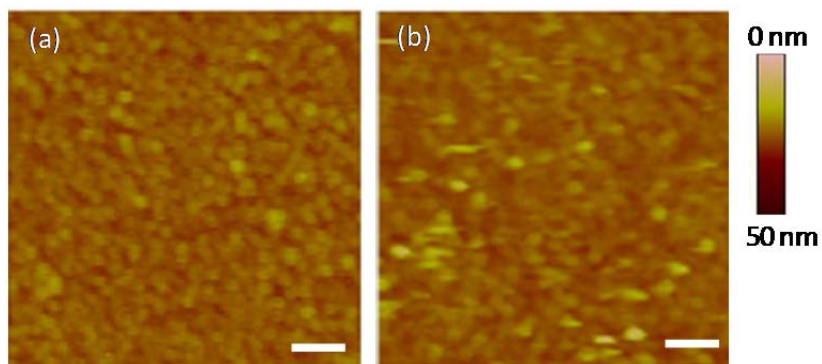

Figure S3: AFM images of (a) a surface decorated with an isotype control IgG and (b) a surface decorated with isotype control IgG and subsequently incubated with MVs derived from A431 cells (scale bar: 500 nm).
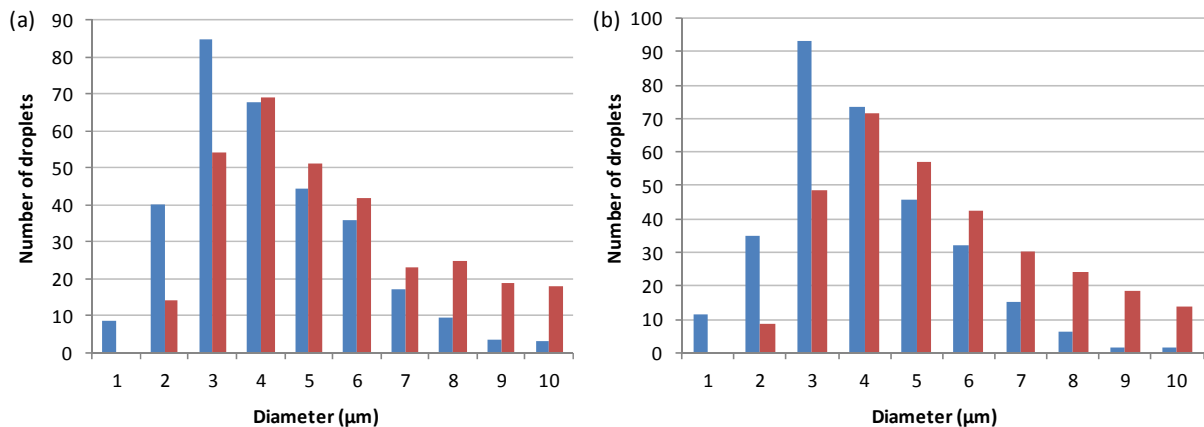
Figure S4: Time-dependent size distributions of LC droplets in the (a) absence and (b) presence of lipids extracted from MVs (blue bars – 0 h and red bars – 6 h).
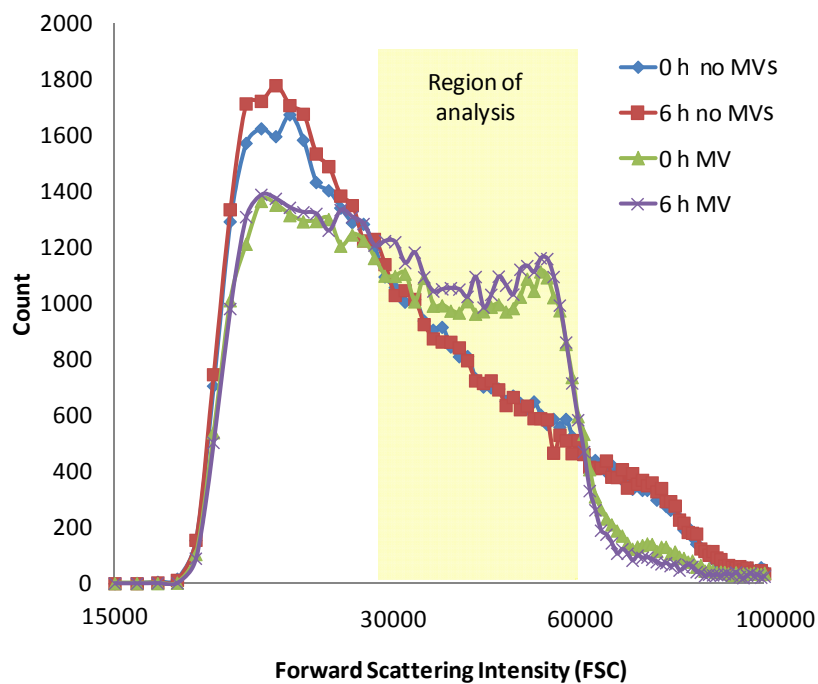

Figure S5. Frequency histogram for FSC obtained for radial (with MVs) and bipolar (no MVs) LC droplets at t = 0 h and t = 6 h.
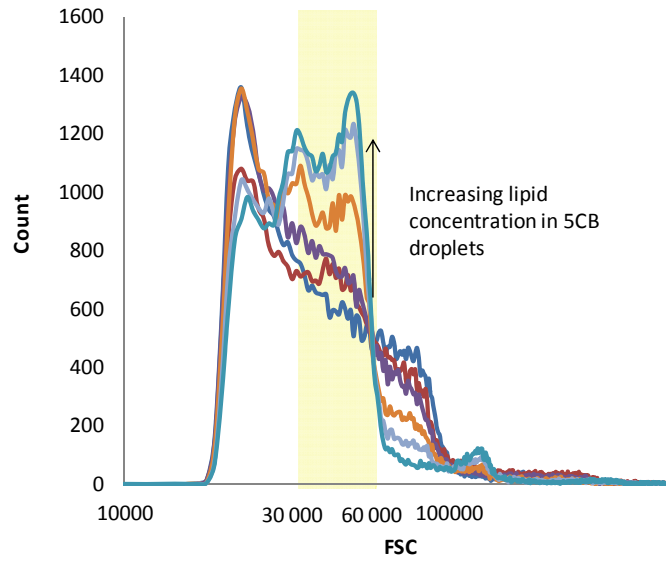
Figure S6: Frequency histogram for FSC obtained with increasing concentration of lipids in
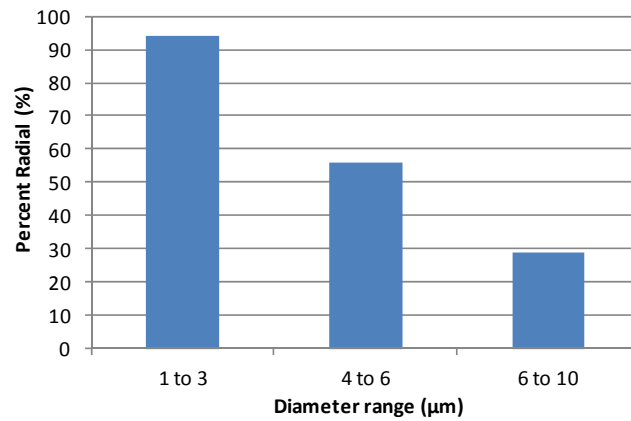
5CB droplets.

Figure S7. Percentage of radial LC droplets as a function of diameter of LC droplets in the

presence of lipids extracted from $5 \cdot 10^7$ MVs.

	# of lipids per droplet	
μL of 5CB	10^7 MVs	10^6 MVs
1	10^6	10^5
0.3	$3 \cdot 10^6$	$3 \cdot 10^5$
0.1	10^7	10^6
0.03	$3 \cdot 10^7$	$3 \cdot 10^6$

Table S1: Theoretical amount of lipids in each droplet with a given amount of MVs and volume

of 5CB used.