

Supplemental Information For

# LipiSensors: Exploiting Lipid Nanoemulsions to Fabricate Ionophore Based Nanosensors

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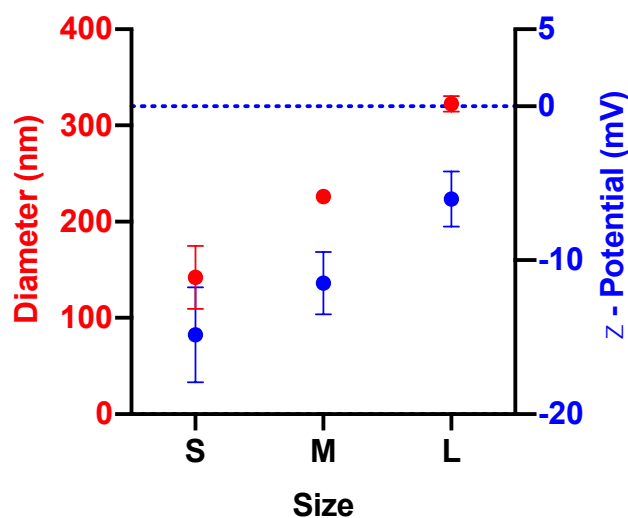
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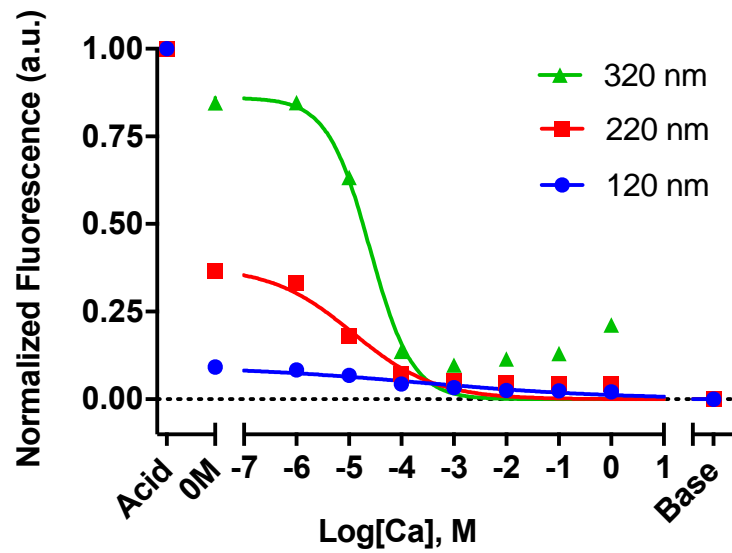
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**Table S1.** LipiSensor formulations and their respective diameter. 1: polyoxyethylene-40-stearate. 2: 1,2-dipalmitoyl-sn-glycero-3-phosphocholine. 3: Suppocire NC™. 4: soybean oil.

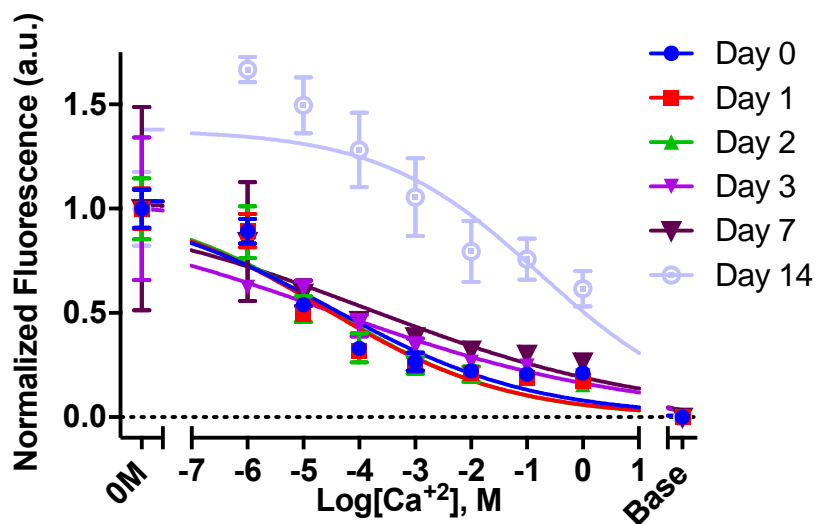
	Surfactant <sup>1</sup> (mg)	Lipid <sup>2</sup> (mg)	Wax <sup>3</sup> (mg)	Oil <sup>4</sup> ( $\mu$ L)	Ca <sup>+2</sup> Ionophore (mg)	NaBARF (mg)	CHIII (mg)	Saline ( $\mu$ L)	Approximate Diameter (nm)	DLS Diameter (nm)
Small	258.8	25	215.5	74.2	3.75	6.0	0.65	1046	120	142 $\pm$ 32.7
Medium	172.5	25	215.5	74.2	3.75	6.0	0.65	1046	220	226 $\pm$ 5.71
Large	86.3	25	215.5	74.2	3.75	6.0	0.65	1046	320	322 $\pm$ 8.06



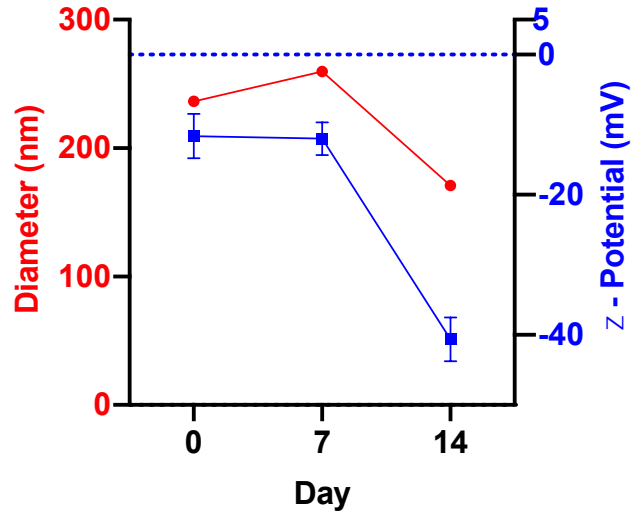
**Figure S1.** Changing the LipiSensor formulation changes both the size and  $\zeta$ -potential of the particles. As size increases, the  $\zeta$ -potential becomes less negative.



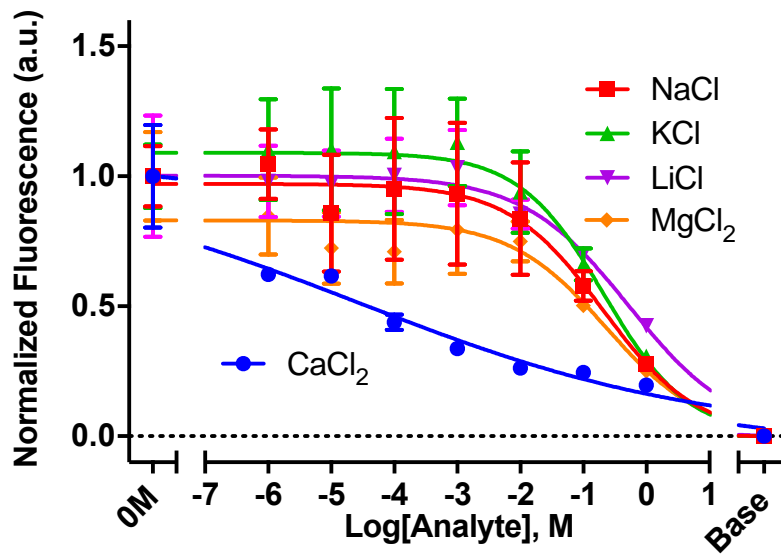
**Figure S2.** LipiSensors of each size have a dose-dependent response to increasing  $[Ca^{2+}]$ . Each size has slightly different response character (see Figure 2).



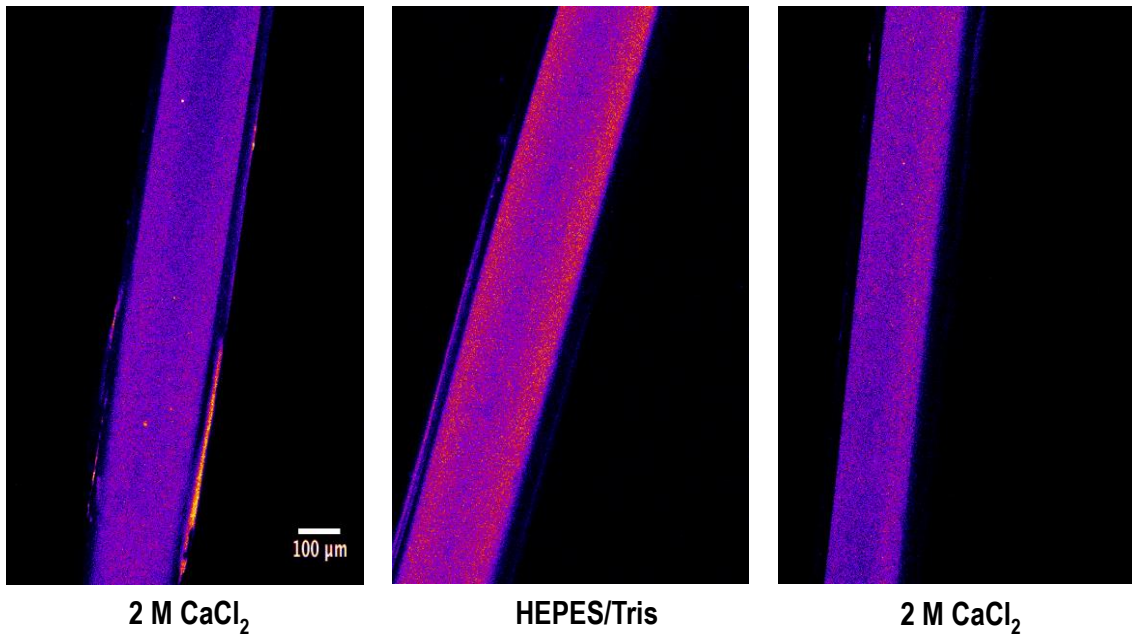
**Figure S3.** Between day 7 and day 14 the sensor response drastically changes, likely as a result of sensor degradation.



**Figure S4.** Between day 7 and day 14 the size and  $\zeta$  -potential of the LipiSensors (medium) are impacted dramatically, also likely as a result of sensor degradation.



**Figure S5.** LipiSensors have a selective response to  $\text{Ca}^{+2}$  ( $n = 3$ ).



**Figure S6.** LipiSensors have a reversible response to changing [Ca<sup>2+</sup>]. Dialysis tube (13kDa cutoff) with LipiSensors entrapped inside. Images taken with LSM-780 Confocal Microscope.