Electronic Supplementary Material (ESI) for Analytical Methods.

Optical Nanosensors for Physiological Chloride Monitoring for Cystic Fibrosis in vivo

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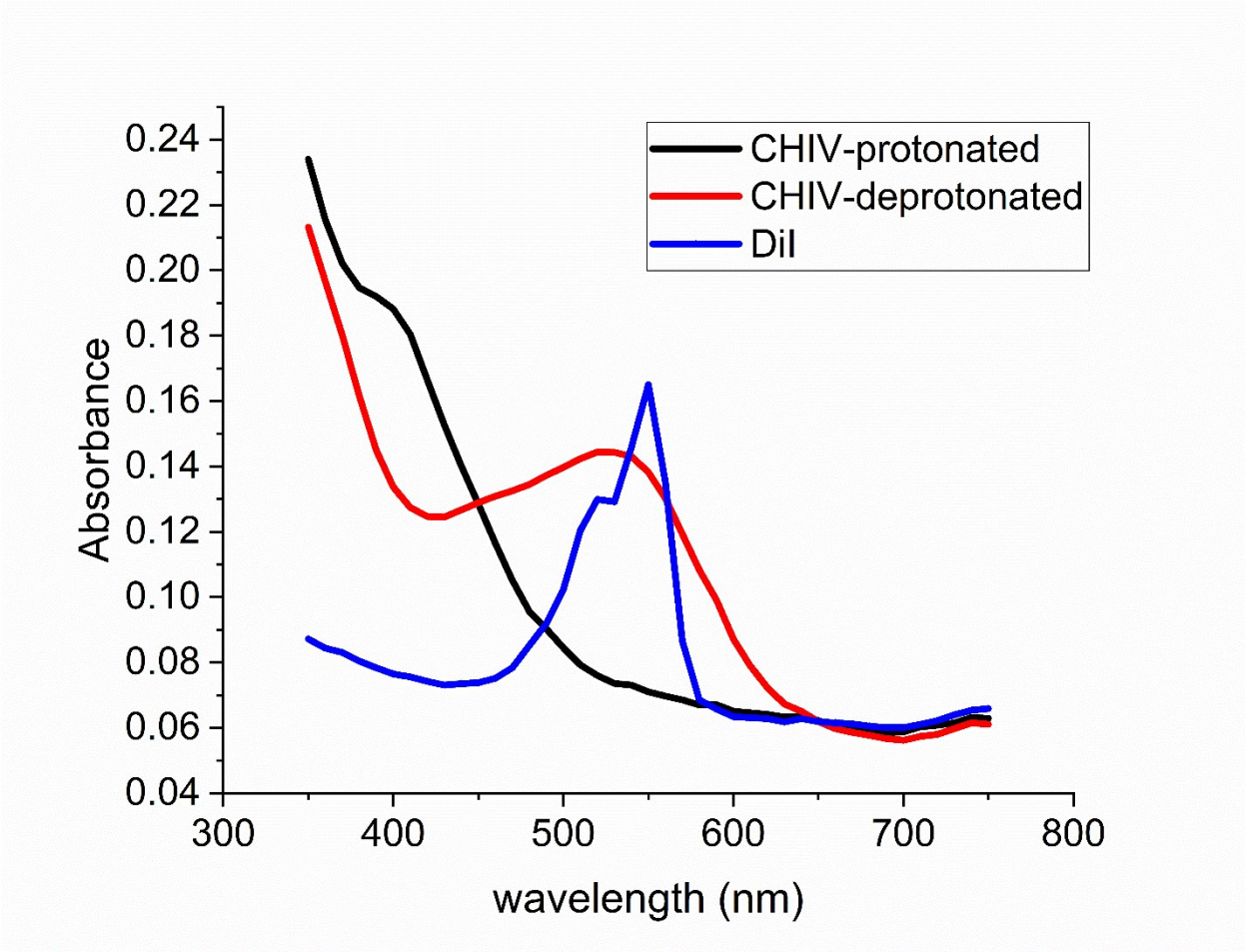

Fig.S1. Absorbance spectra of CHIV and DiI. DiI absorbance (excitation) spectrum is overlapped with deprotonated CHIV around 540 nm. When the CHIV is more deprotonated, the absorbance at 540 nm is increasing.

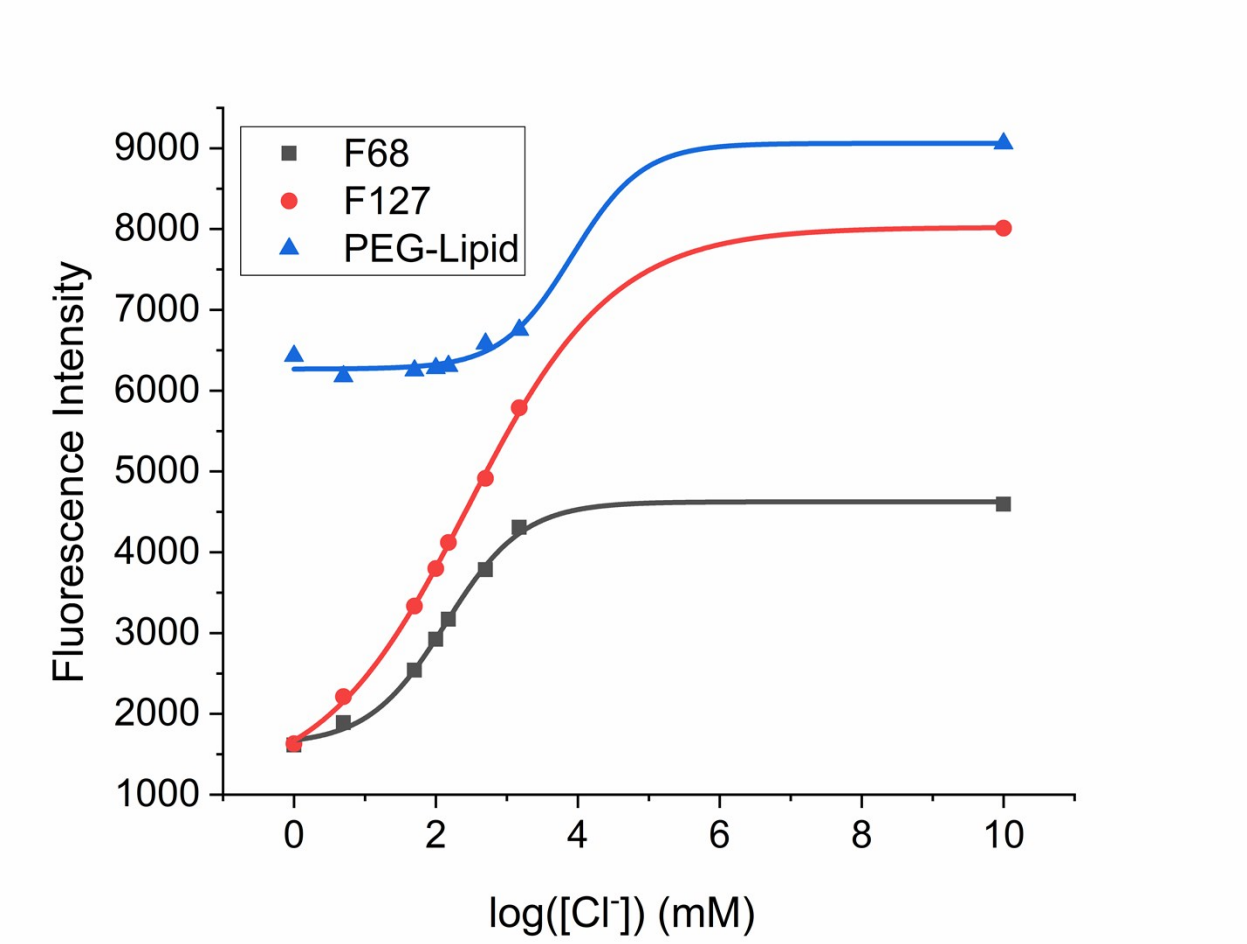

Fig.S2. Choices of surface coating for chloride nanosensors affects sensor response. Pluronic F68, Pluronic F127 and PEG-lipid 550 were compared as the coatings of chloride nanosensors. The dynamic ranges for sensors with each type of coating were significantly different.

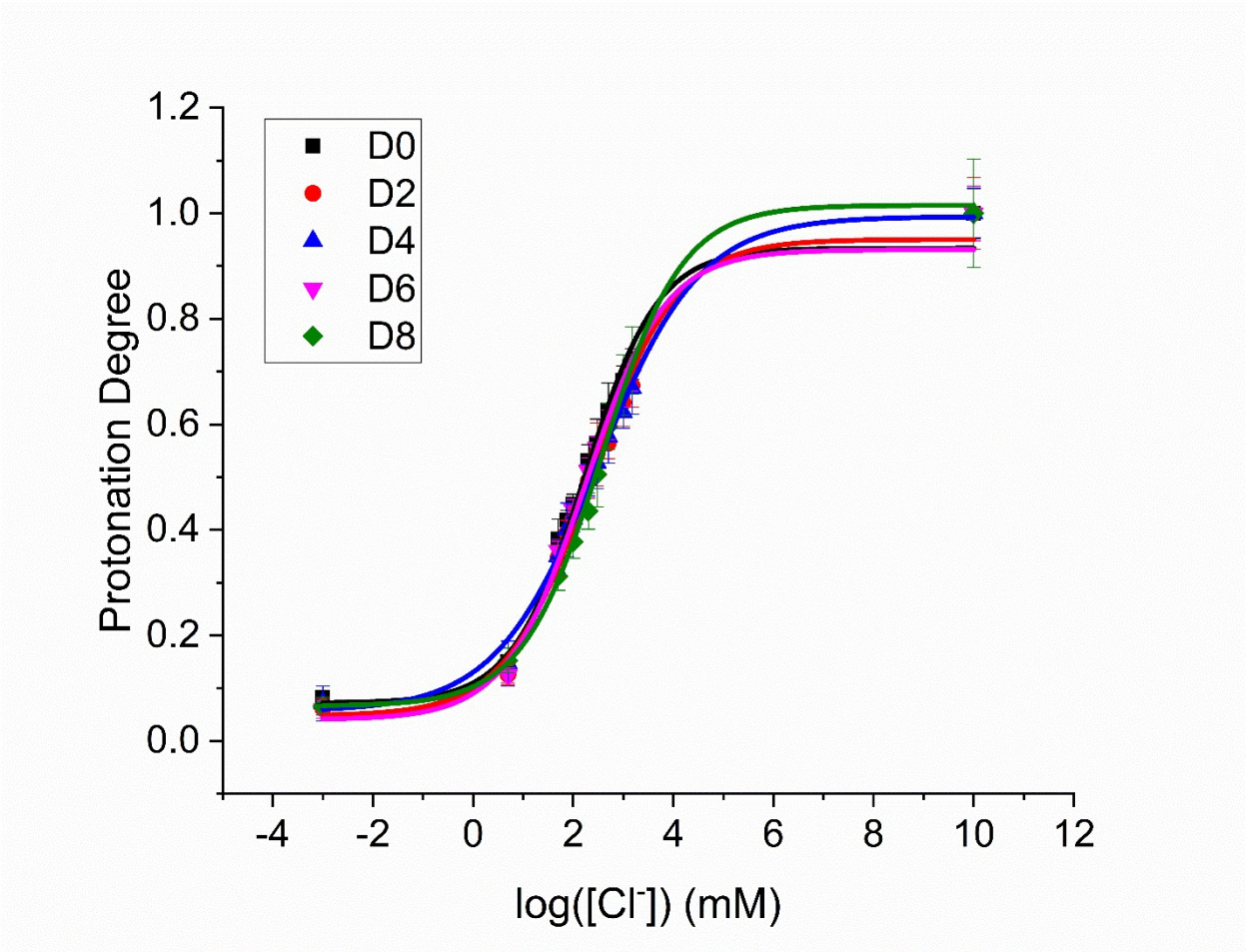

Fig.S3. The stability of the chloride nanosensors. The sensor response was remained consistent over 8 days. The sensor dynamic ranges and EC50 on days 2, 4, 6 and 8 were very close to each other.

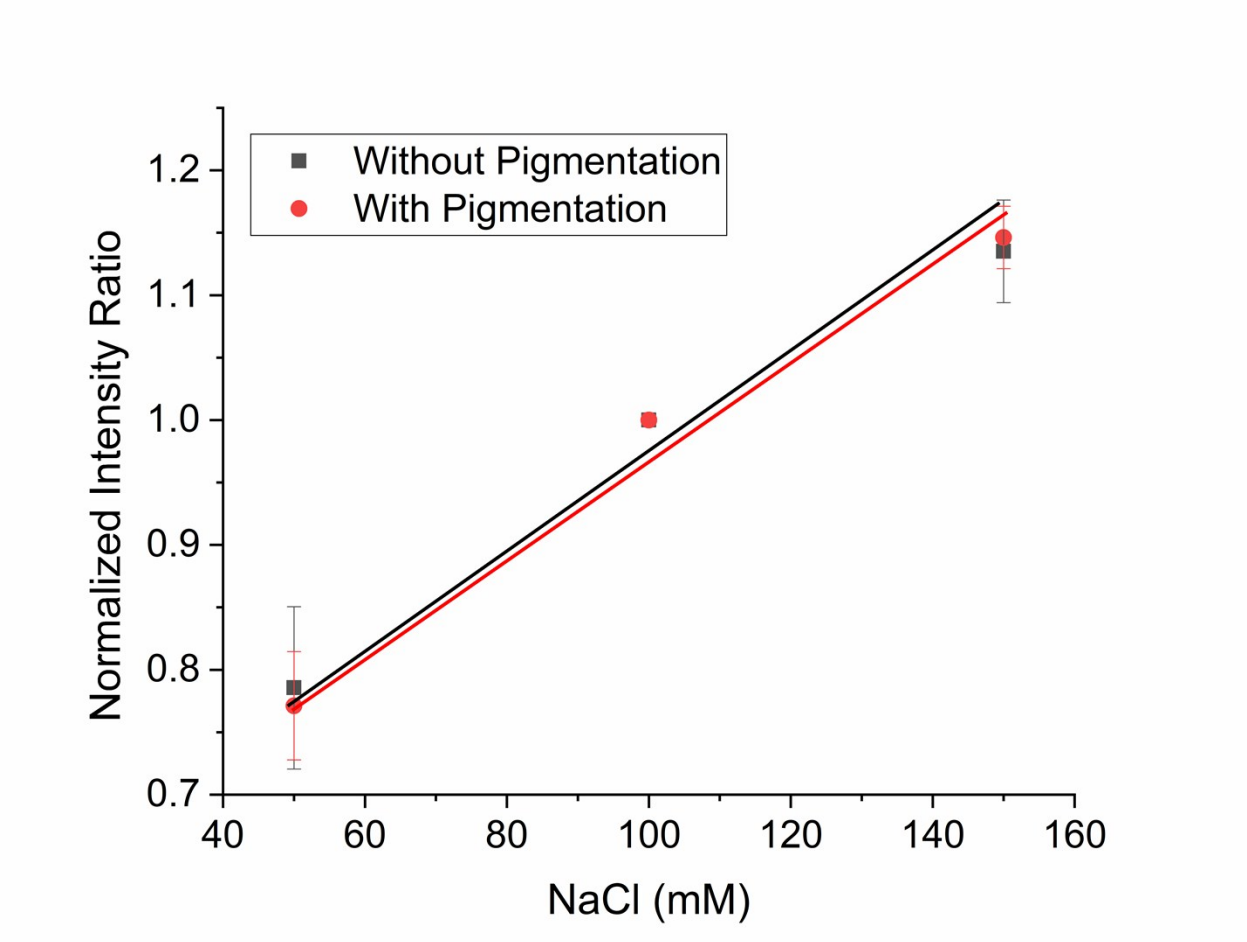

Fig.S4. Linear range of nanosensors response to different chloride concentrations in non-pigmented and pigmented skin areas of the mouse. The fluorescence intensity ratios were normalized at the chloride concentration of 100 mM. (n=3)

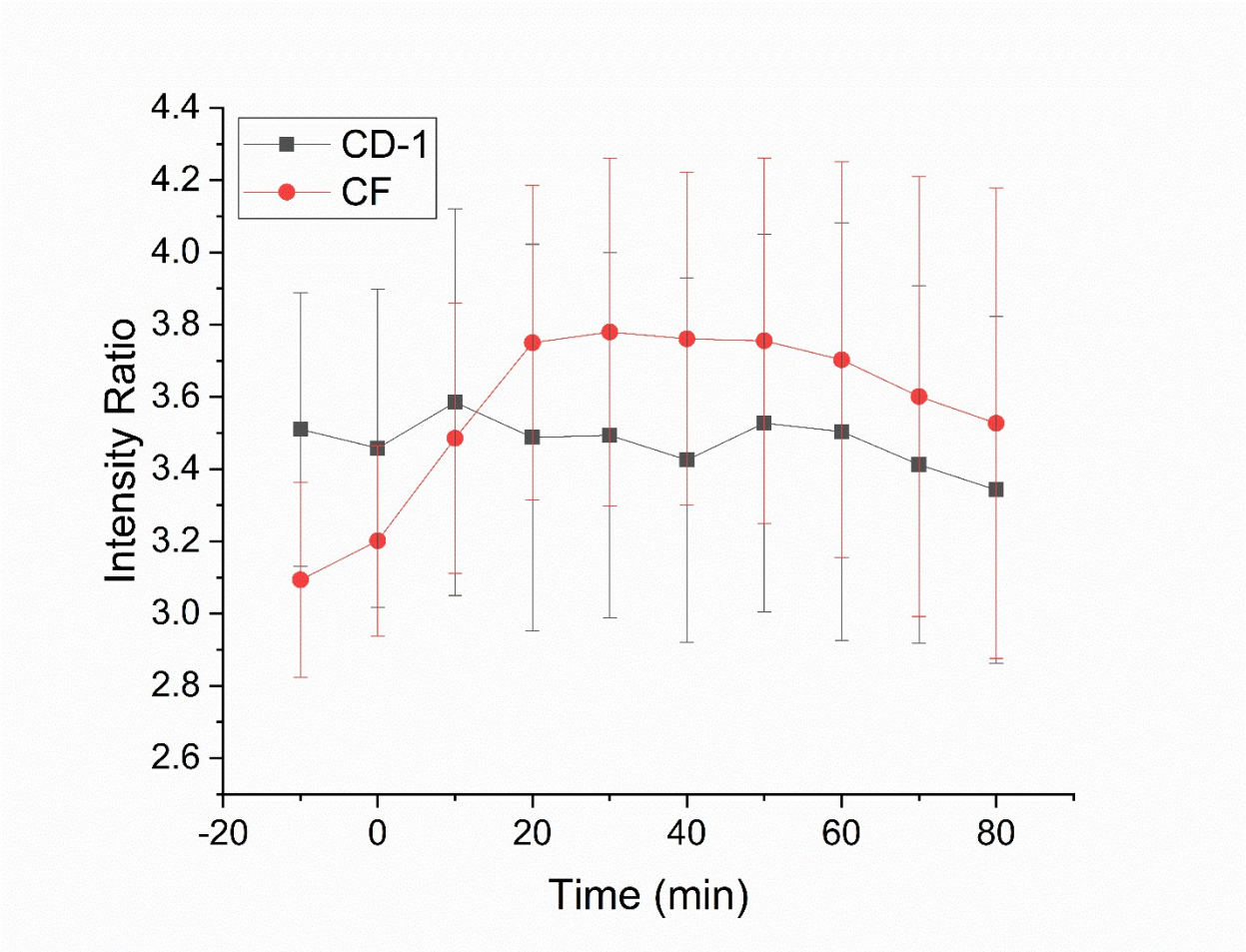

Figure S5: Nanosensor fluorescence changes to endogenous chloride dynamics in both CD-1 and Cystic fibrosis (CF) mice. The nanosensor measures the fluorescence kinetics. Time 0 was the time when Vardenafil was administrated. (n=12)