# Supporting Information

## Emaminejad et al. 10.1073/pnas.1701740114

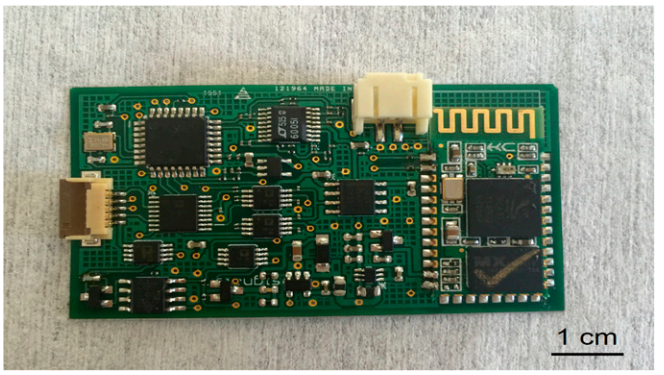


**Fig. S1.** Image of an FPCB used for electrolyte sensing.

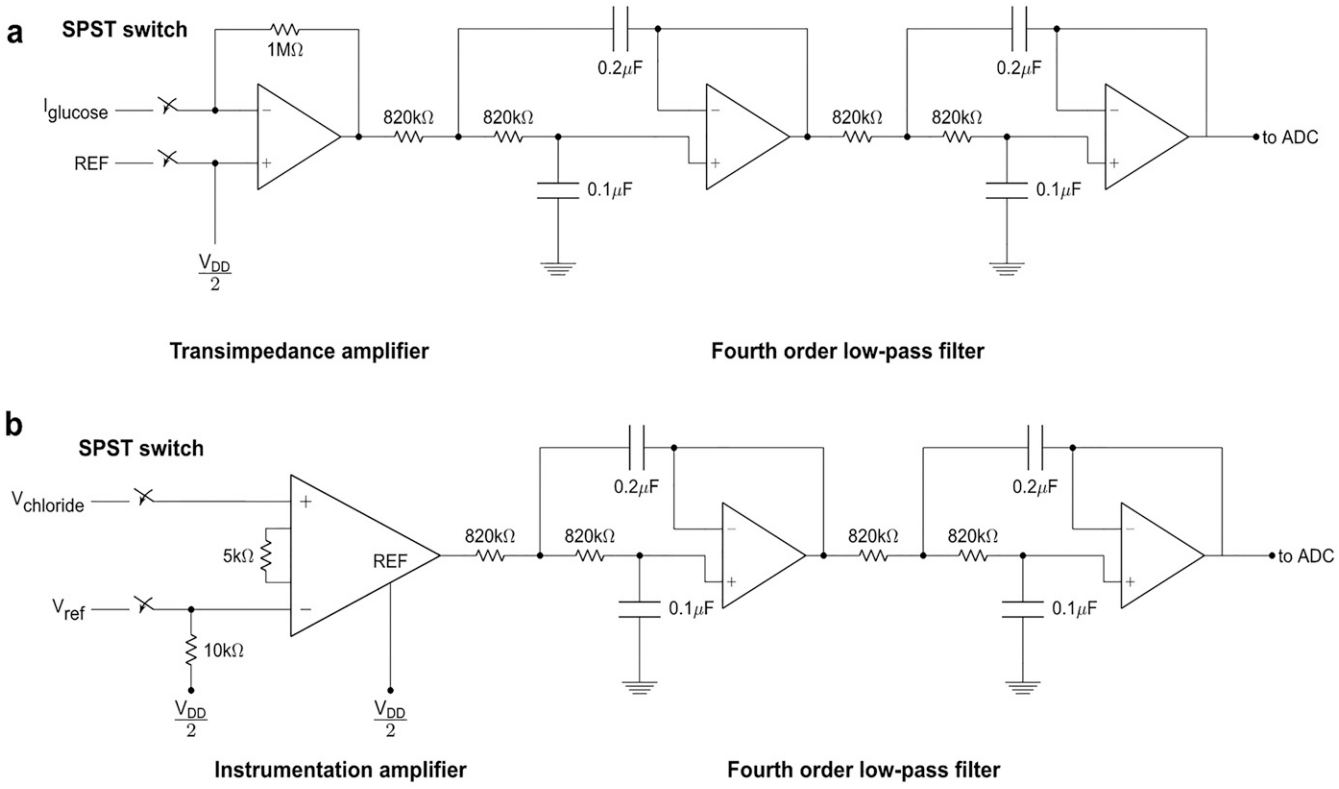


**Fig. S2.** Analog signal-conditioning circuit schematics of (*A*) amperometric glucose sensor and (*B*) potentiometric sensors.

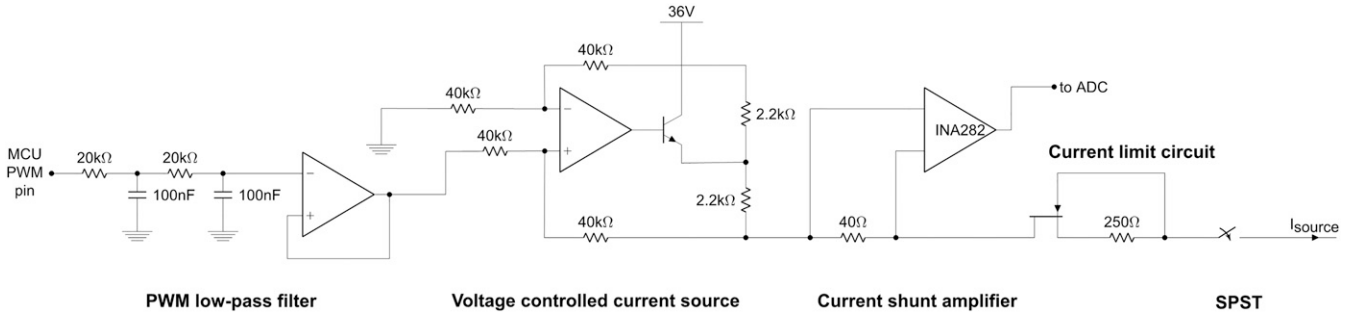


**Fig. S3.** Schematic showing the current delivery circuitry.

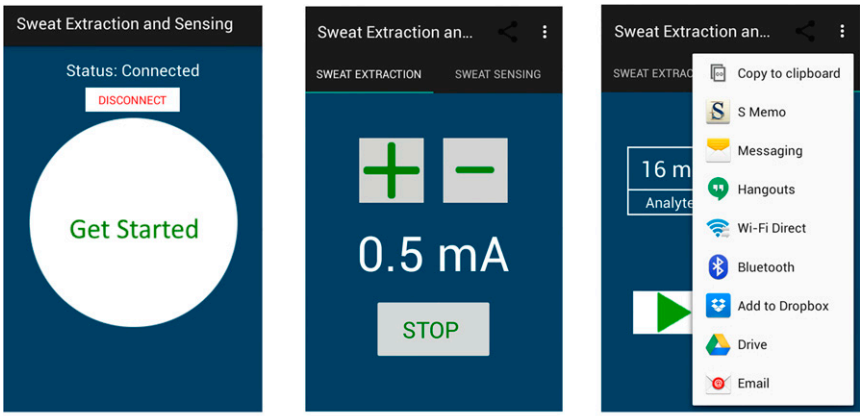


**Fig. S4.** Custom-developed mobile application interface for wireless control of iontophoresis and data communication. (*A*) The home page of the application after Bluetooth pairing. (*B*) Iontophoresis control interface. (*C*) Data display of sweat analyte levels with data sharing and uploading options.

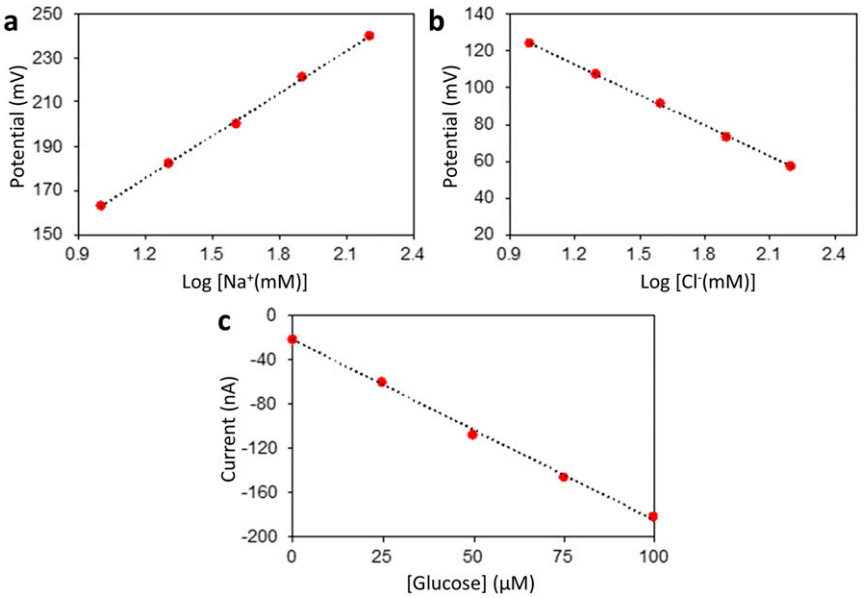


**Fig. S5.** Calibration curves for (*A*) $Na^+$, (*B*) $Cl^-$, and (*C*) glucose sensors shown in Fig. 2 *D*–*F*.

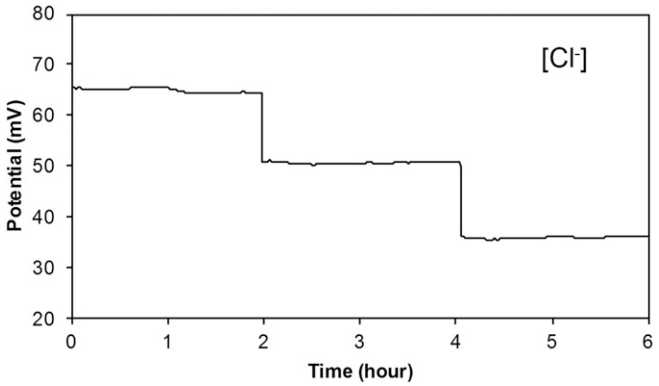


**Fig. S6.** Long-term continuous measurement of a $Cl^-$ sensor in solutions containing 20, 40, and 80 mM NaCl, respectively. Data recording was paused for 30 s for each solution change.

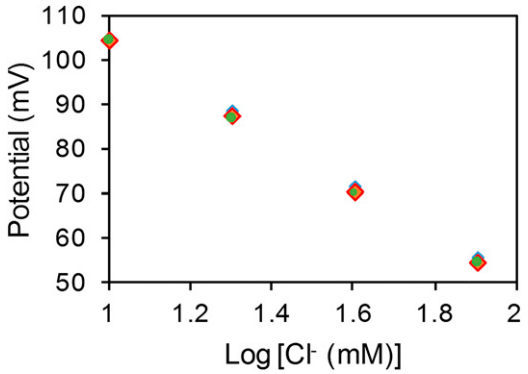


**Fig. S7.** Repeatability study of the three different Ag/AgCl-based $Cl^-$ sensors in NaCl solutions.

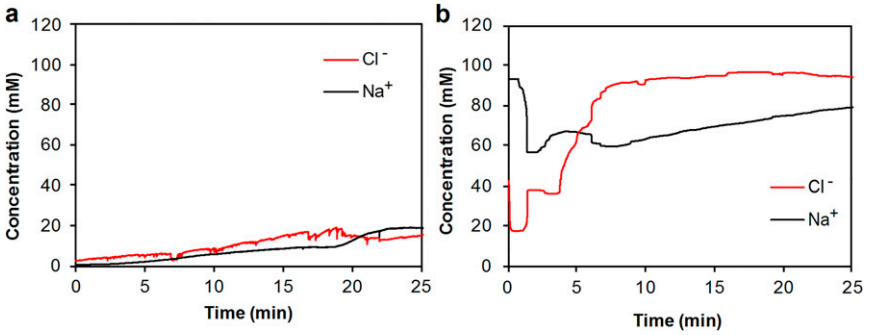


**Fig. S8.** (*A*) Real-time on-body measurement of sweat sodium ion and chloride ion levels of a representative healthy subject after iontophoresis-based sweat stimulation. (*B*) Real-time on-body measurement of sweat sodium ion and chloride ion levels of a representative CF patient after iontophoresis-based sweat stimulation.