Supporting Information

Long-Term Stability of Nanowire Nanoelectronics in Physiological Environments

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This file includes:

Supplementary Figures S1-S2

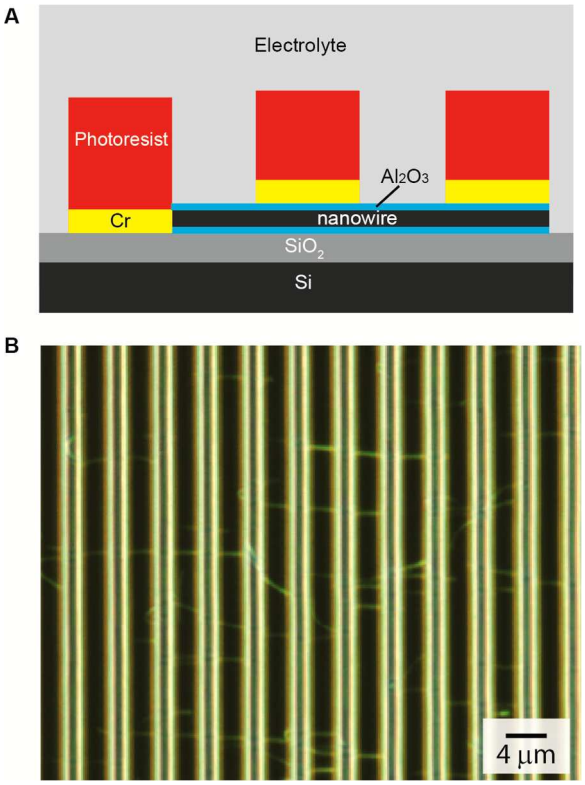

Figure S1 (A) Cross-section schematic illustrating the patterned photoresist stripes (end-on) used in the experiments. (B) Top-view dark field image of Si nanowires covered by photoresist stripe patterns. The Si nanowires are oriented in the horizontal direction and the photoresist stripes in the vertical direction in the image. The regions of the nanowires not covered by photoresist were exposed to either 1X PBS (pH 7.4) or 1X Neurobasal solutions (pH 7.3) at either 37 ^{o}C or at a room temperature for fixed time periods. After removal of photoresist stripes (and underlying Cr) on the nanowires and substrates, the dissolution of nanowire in the solution exposed regions can be sensitively assessed using dark-field optical microscopy by comparing contrast in the exposed and protected regions.

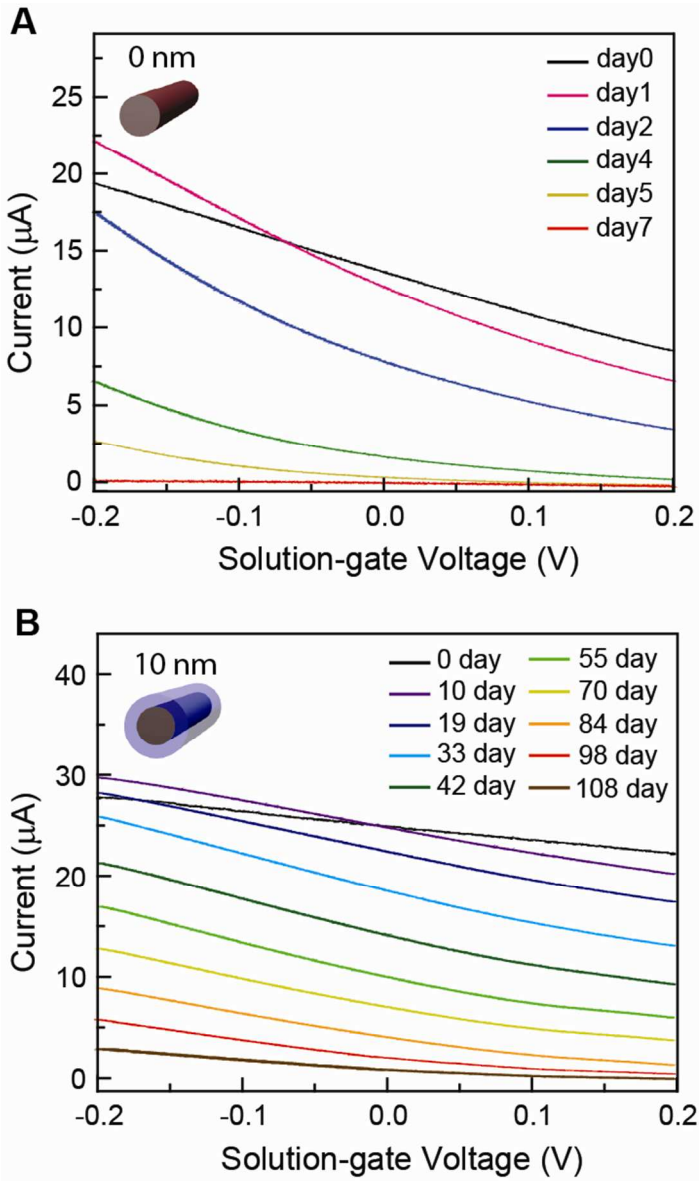

Figure S2 Time-dependent evolution of current versus solution-gate-voltage curves for a representative Si nanowire-FET device (A) without and (B) with the Al_2O_3 shell (10 nm) in 1X PBS at 37 °C. Although the conductance of the Si/Al_2O_3 nanowire FET device decreased significantly at day 108 compared to the value at day 0, the transconductance values (slope of current vs. solution gate voltage) for day 0 and 108 are comparable.