

Supporting Information for:

Outside Looking In: Nanotube Transistor Intracellular Sensors

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Supplementary Figures S1, S2

Supplementary References

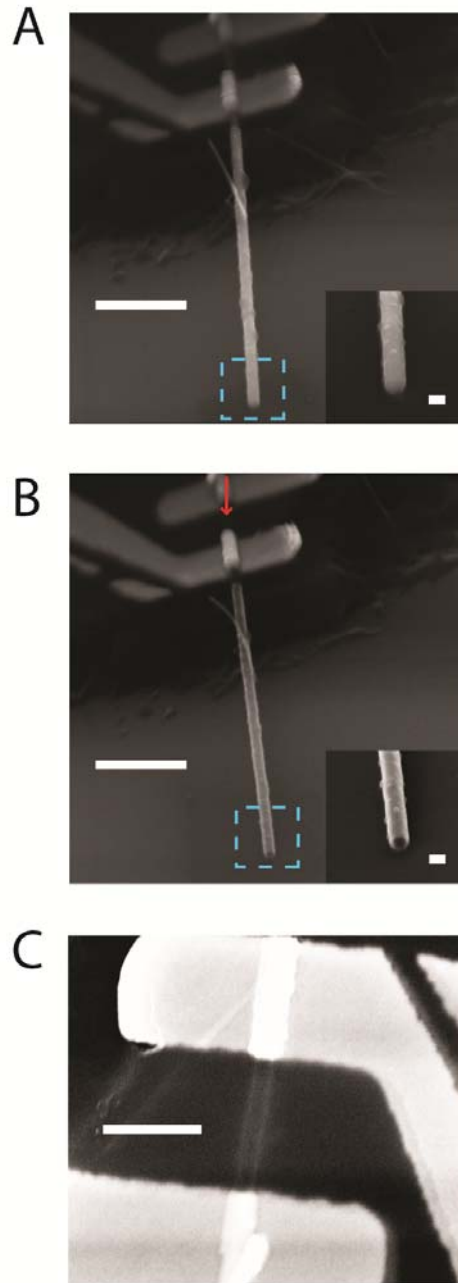


Figure S1. SEM images of an ANTT probe before and after Ge core nanowire etching. (A) SEM image of an ANTT probe before etching the Ge core of the Ge/Si core/shell nanowire. Scale bar, 1 μm . Inset, zoom of the probe tip from the dashed blue box. Scale bar, 100 nm. (B) SEM image of the same ANTT probe after etching of Ge nanowire core. Scale bar, 1 μm . Inset, zoom of the probe tip from the dashed blue box shows clearly the tube structure. Scale bar, 100 nm. (C) Zoomed top view of the S/D contact region of the ANTT probe in B (indicated by the red arrow). Scale bar, 500 nm. The ‘light-dark-light’ contrast variation demonstrates that the tube structure (light, Si nanotube walls; dark, hollow core) continues from tip to S/D region of the device.

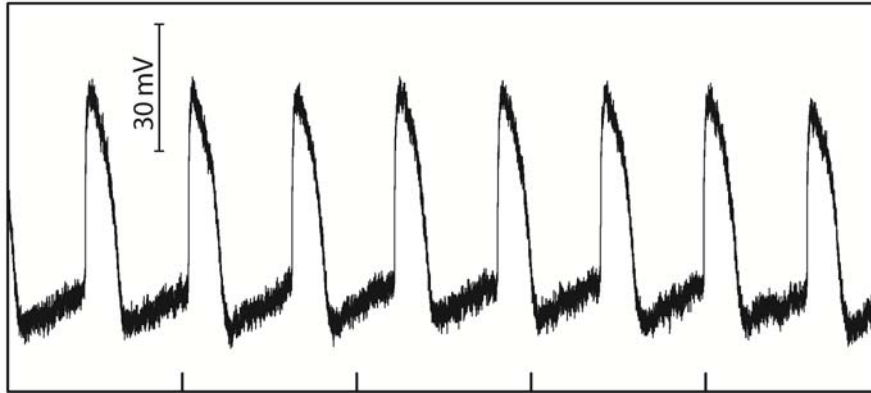


Figure S2. Intracellular recording with small diameter ANTT probe. Stable intracellular action potential recording from a spontaneously-beating cardiomyocytes. The amplitude was ca. 75 mV; tick marks correspond to 1 s. The dimensions of the silicon nanotube tip were controlled by growth time and Au catalyst size during nanowire synthesis, and have approximately 15 nm inner and 50 nm outer diameters. The spontaneously beating cells were cultured on thin PDMS sheets and then brought into gentle contact with the device as previously reported.^{S1,S2}

Supplementary References

- S1. Cohen-Karni, T.; Timko, B. P.; Weiss, L. E.; Lieber, C. M. *Proc. Natl. Acad. Sci. U.S.A.* **2009**, *106*, 7309-7313.
- S2. Tian, B.; Cohen-Karni, T.; Qing, Q.; Duan, X.; Xie P.; Lieber, C. M. *Science* **2010**, *329*, 831-834.