

## Supporting Information

### **A self-powered (In,Ga)N biosensor with Au nanoparticles for monitoring live cell activities**

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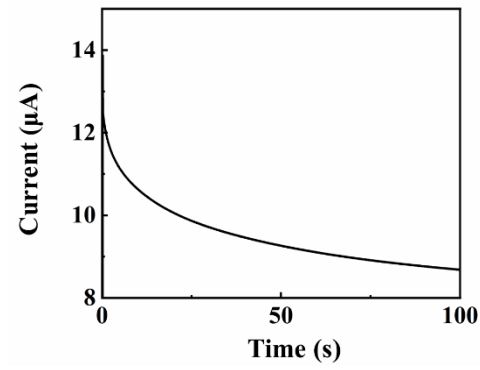
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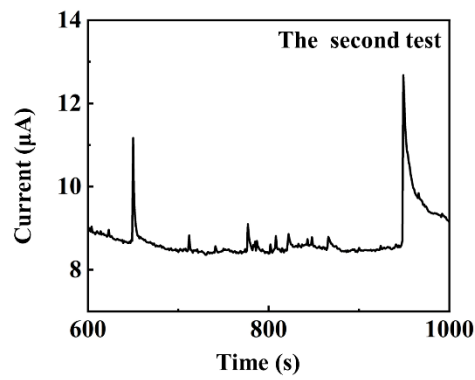
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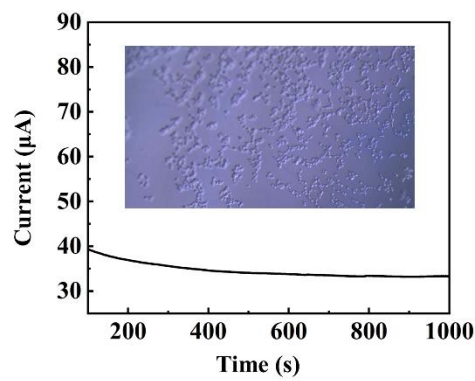
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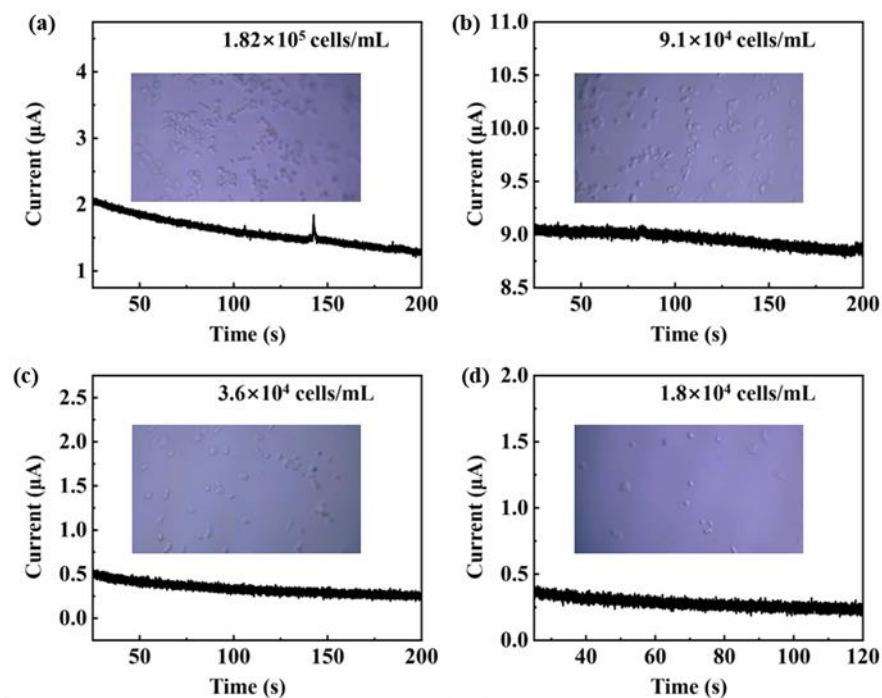
**Figure S1.** Current curve of sample A.



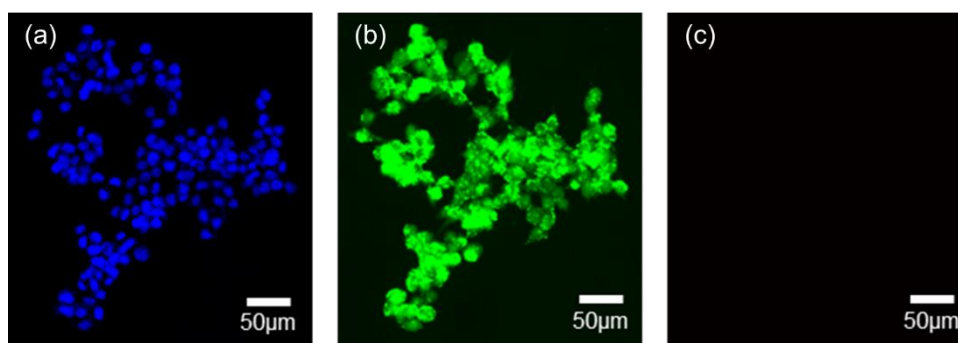
**Figure S2.** The current change of the device with Au NPs in the second test.



**Figure S3.** The result of testing 293T cells. The inset shows an optical microscope (OM) image of the cells on the device surface (magnified 200x).



**Figure S4.** Current response of devices at different cell concentrations: (a)  $1.82 \times 10^5$  cells/mL, (b)  $9.1 \times 10^4$  cells/mL, (c)  $3.6 \times 10^4$  cells/mL, (d)  $1.8 \times 10^4$  cells/mL. The insets show the OM images of the corresponding cells on the device surfaces (magnified 200x).



**Figure S5.** Fluorescence images of HCT-116 cells on the surface of the device after live/dead staining. (a) The blue channel displays the nuclei of all cells (live and dead). (b) The green channel displays live cells with complete esterase activity. (c) The red channel displays dead cells with damaged cell membranes. Cells are stained with Hoechst 33342 (blue, nucleus staining), Calcein AM (green, live cells), and propidium iodide (PI, red, dead cells).