

## Supporting Information

### **Portable biohybrid odorant sensors using cell-laden collagen micropillars**

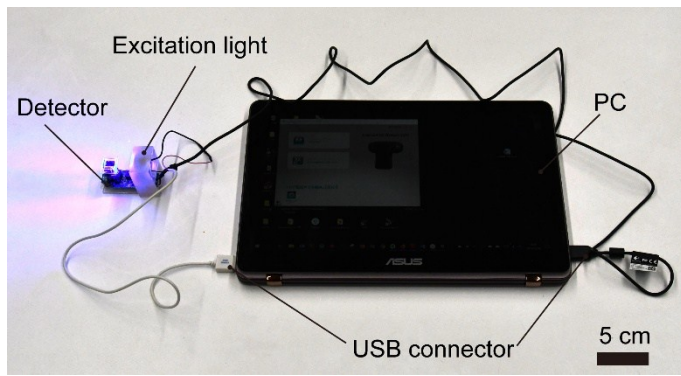
*Yusuke Hirata<sup>1</sup>, Yuya Morimoto<sup>1</sup>, Eunryel Nam<sup>1</sup> and Shoji Takeuchi<sup>1, 2</sup>*

<sup>1</sup> *Center for International Research on Integrative Biomedical Systems (CIBiS), Institute of Industrial Science (IIS), The University of Tokyo, 4-6-1 Komaba, Meguro-ku, Tokyo, 153-8505, Japan*

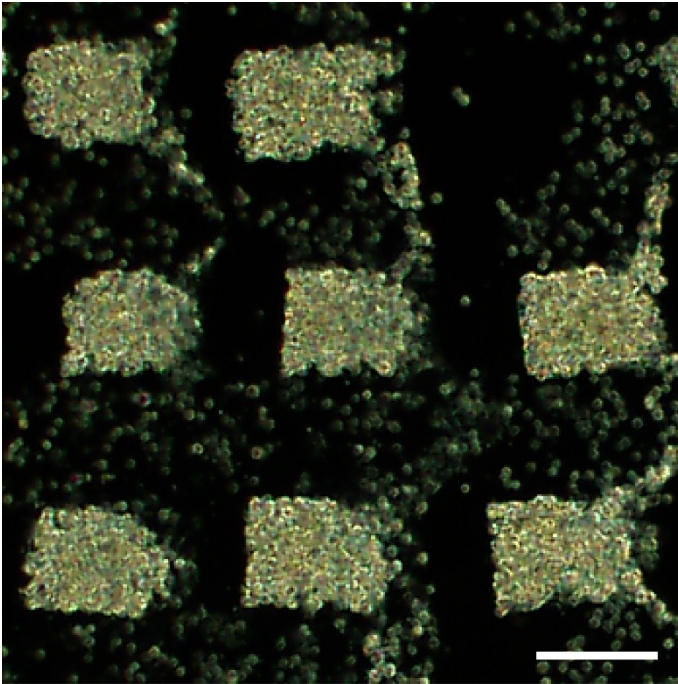
<sup>2</sup> *International Research Center for Neurointelligence, The University of Tokyo Institutes for Advanced Study, The University of Tokyo, Tokyo 153-8505, Japan.*

*Corresponding author: Shoji Takeuchi*

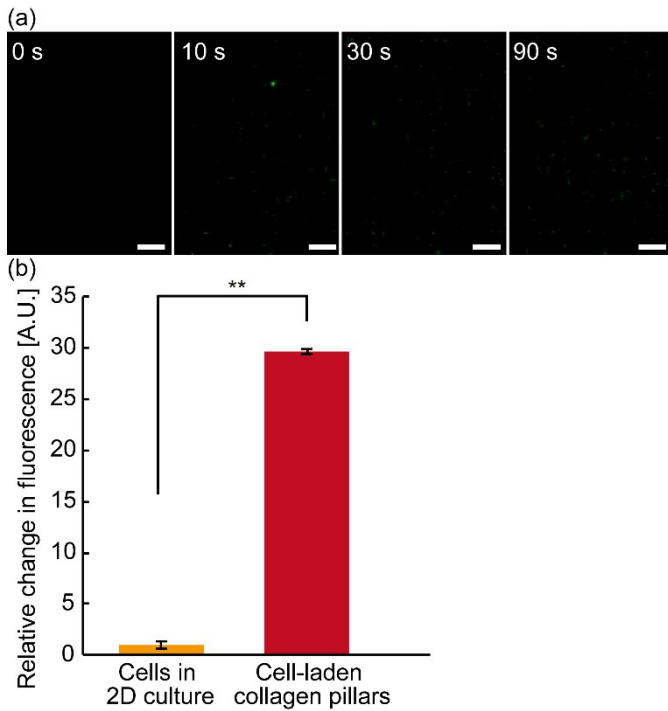
*E-mail: [takeuchi@iis.u-tokyo.ac.jp](mailto:takeuchi@iis.u-tokyo.ac.jp)    Tel: +81-3-5452-6650    Fax: +81-3-5452-6649*



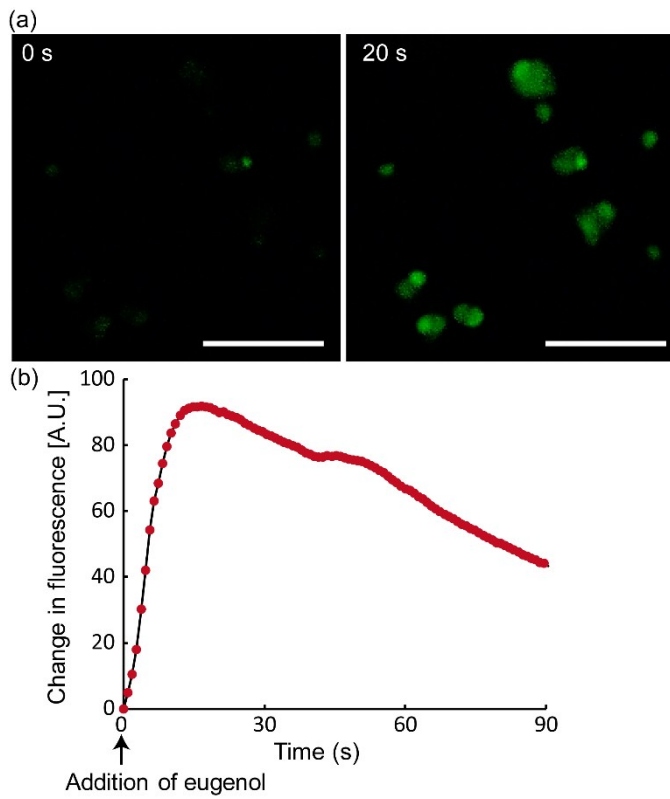
Sup. Fig. 1 All components of our portable BOS. Camera and LED are powered from a PC via USB cables.



Sup. Fig. 2 Cell-laden collagen micropillars (250  $\mu\text{m}$  height) collapsed on a glass plate. The scale bar represents 200  $\mu\text{m}$ .



Sup. Fig. 3 (a) Fluorescence response of cells in 2D culture on the portable BOS after addition of 2 mM eugenol. Scale bars represent 200  $\mu\text{m}$ . (b) Comparison of change in fluorescence intensity of cell-laden collagen micropillars and cells in 2D culture from before to 30s after addition of 2 mM eugenol. Bars were normalized according to the change in fluorescence intensity of cells in 2D culture. Bars represent the mean  $\pm$  SEM. **\*\*** $p < 0.005$ , Student's t test (cells in 2D culture,  $n = 76$  cells based on three independent chambers, cell-laden collagen micropillars,  $n = 84$  pillars based on four independent chambers).



Sup. Fig. 4 (a) Fluorescence image of cells in 2D culture taken by a fluorescence microscope, after addition of 2 mM eugenol. Scale bars represent 50  $\mu\text{m}$ . (b) The temporal change in fluorescence intensity from 21 transfected cells in 2D culture.