

## **Supplementary Information**

### **Development of a probability-based in vitro eye irritation screening platform**

Seep Arora<sup>#1</sup>, Anna Goralczyk<sup>#1</sup>, Sujana Andra<sup>^1</sup>, John Soon Yew Lim<sup>2</sup>, Yi-Chin Toh<sup>\* 1,3,4,5</sup>

<sup>1</sup>Department of Biomedical Engineering, National University of Singapore, Singapore 117583

<sup>2</sup>A\*STAR Microscopy Platform, 61 Biopolis Drive, #06-20 Proteos, Singapore 138673

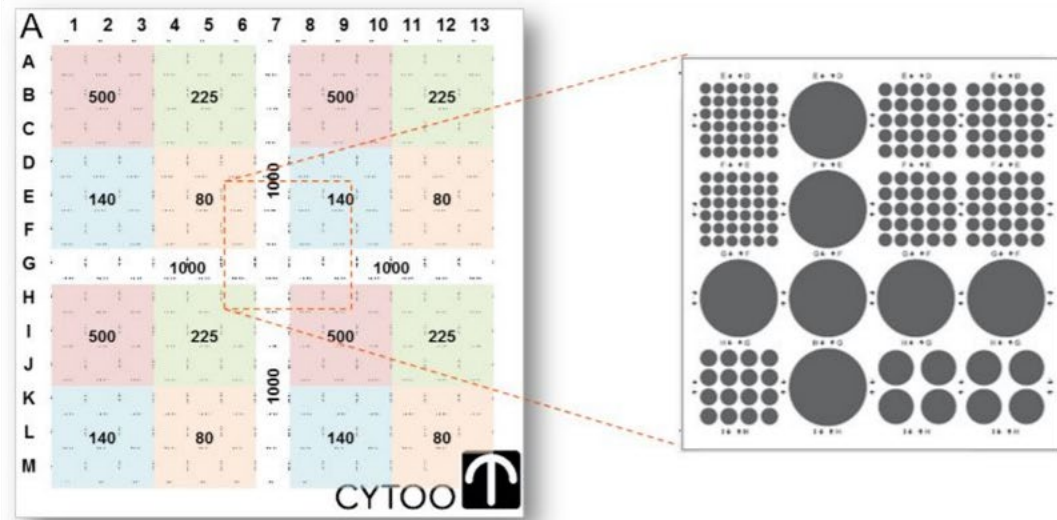
<sup>3</sup>School of Mechanical, Medical and Process Engineering, Queensland University of Technology, Brisbane, QLD 4000, Australia

<sup>4</sup>Centre for Biomedical Technologies, Queensland University of Technology, Kelvin Grove, QLD 4059, Australia

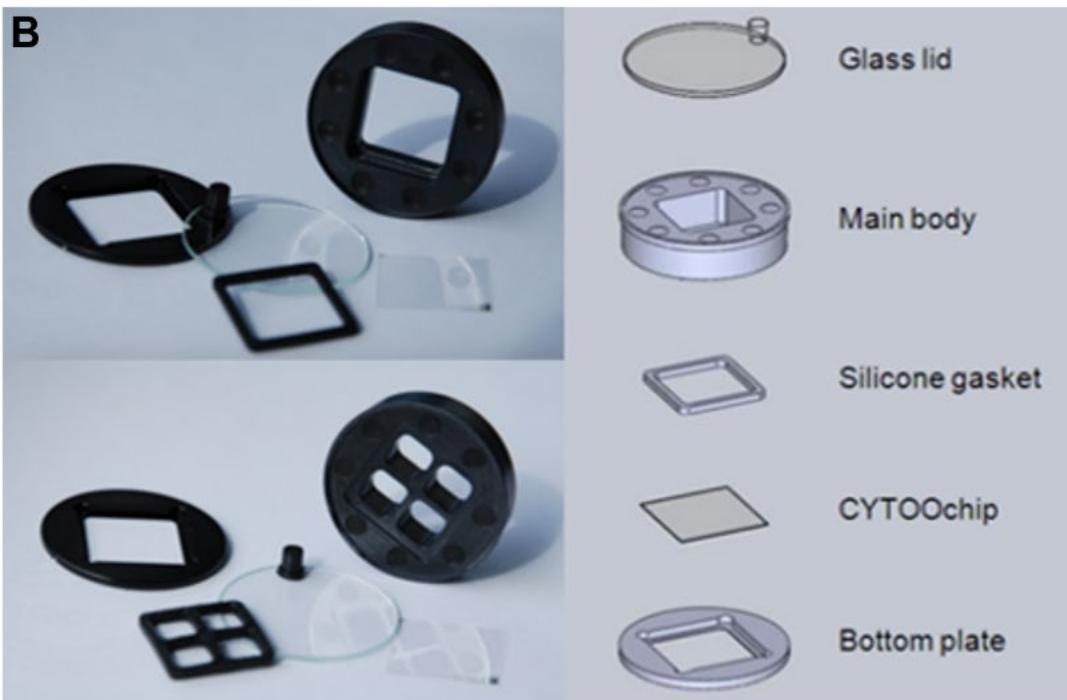
<sup>5</sup>ARC Training Centre for Cell and Tissue Engineering Technologies, Kelvin Grove, QLD 4059, Australia

## Supplementary Figures

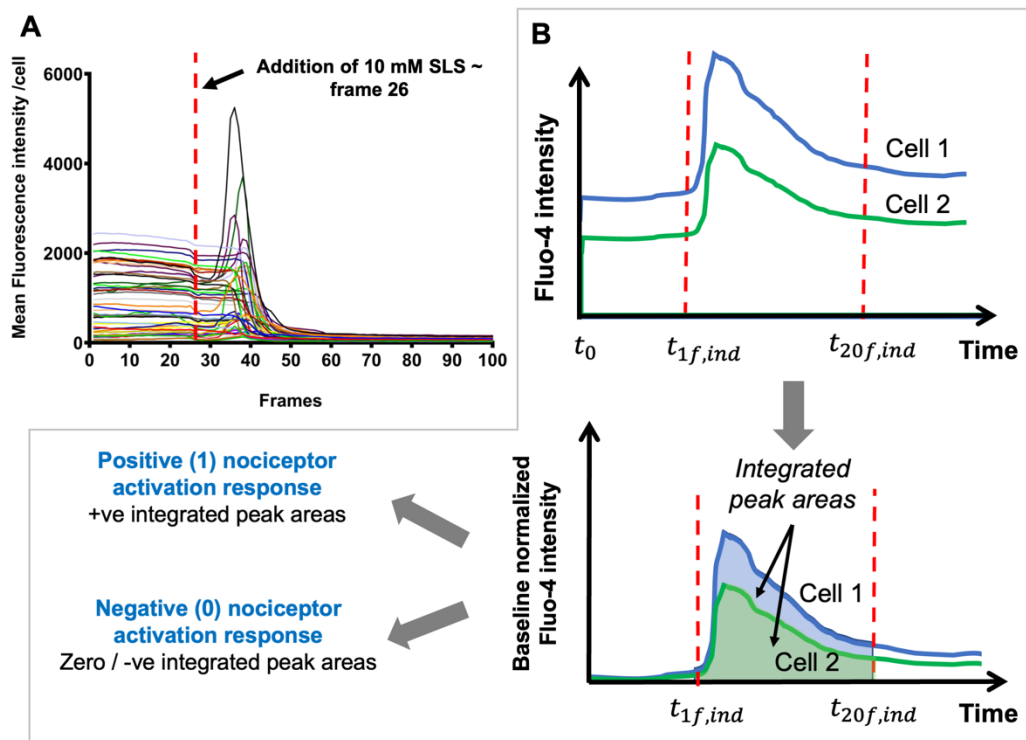
**A**



**B**



**SI Figure S1. Commercial cell micropatterning platform.** (A) CYTOO chip design. Different diameters (from 500 down to 80  $\mu\text{m}$ ) are organized over the chip in 4 identical quadrants. Each quadrant is again divided into 4 zones and each disc diameter width is arrayed over 3x3 blocks. The blocks separating the 4 quadrants feature the discs of 1000  $\mu\text{m}$  (one disc per block) (B) Components of CYTOO chamber to partition CYTOO chip into 4 wells. Photos are harnessed from the supplier: <https://cytoo.com/>



**SI Figure S2. Quantification and binarization of TRPV1 activation based on  $\text{Ca}^{2+}$  responses elicited by SLS and SMA. (A) Change in Fluo-4 fluorescence intensity per cell over time triggered by 10 mM SLS in primary hCECs. (B) Process flow to binarize  $\text{Ca}^{2+}$  influx response.**