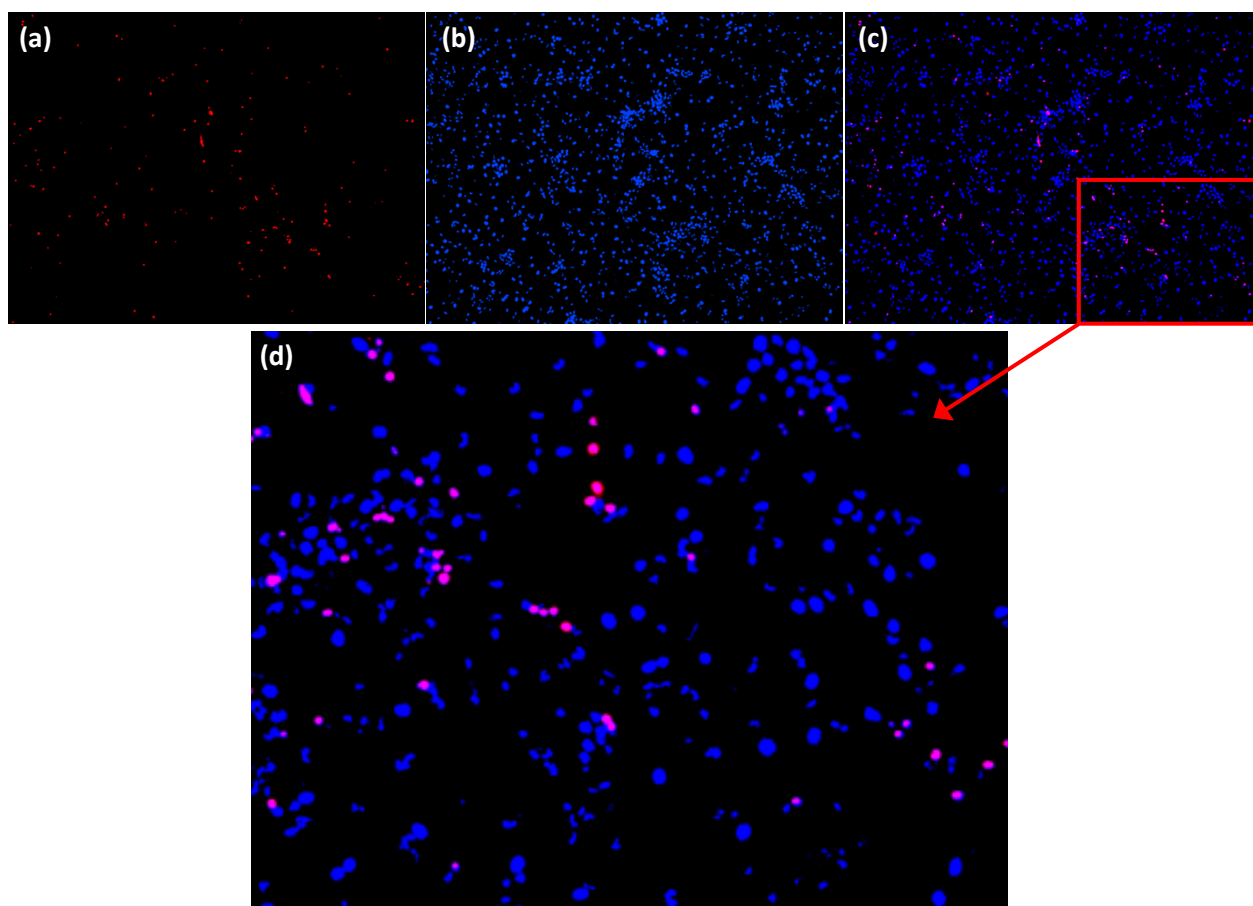
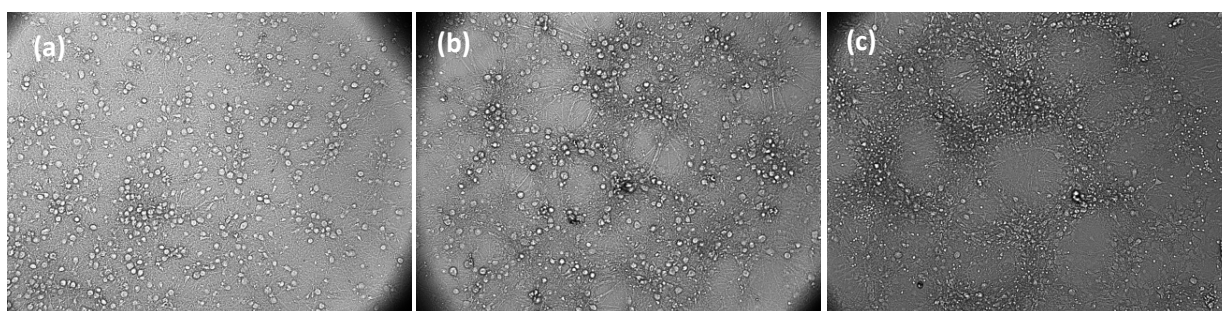


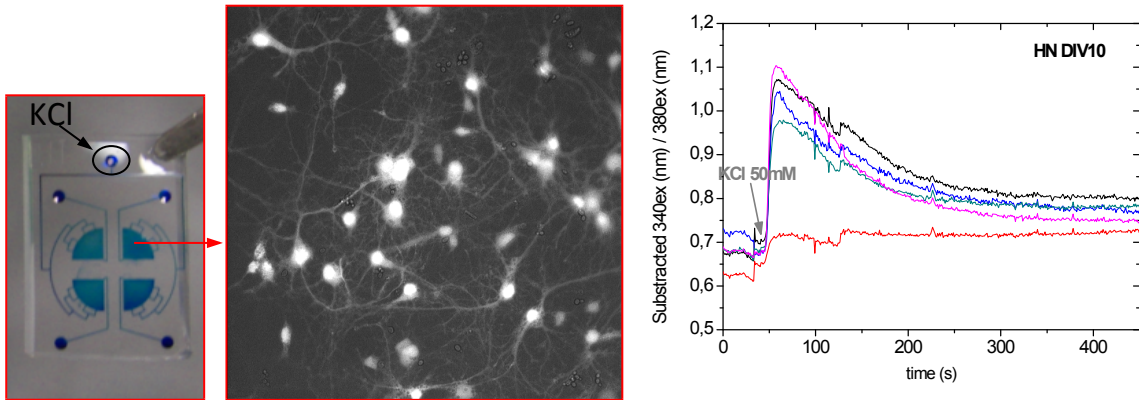
Supplementary information



Supplementary Figure 1. Fluorescence images of a whole cell chamber showing the PI positive cells in red (a) and the Hoescht 33342 staining in blue of all cell nuclei (b). (c) shows the overlay of the PI and Hoescht fluorescence images, where dead cells appear in violet, and (d) shows a magnified image of the region in the red box in (c).



Supplementary Figure 2. Images of the cells plated in different chambers of one chip. (a) 1000 neurons, (b) 1000 neurons with 1000 microglial cells, (c) 1000 neurons with 1000 astrocytes. Neurons are at DIV20, microglia at DIV11 and astrocytes at DIV11.



Supplementary Figure 3. Real time changes of $[Ca^{2+}]$ measured as variation in the F340/F380 fluorescence ratio in 10 days old neurons cultured in the microfluidic device after stimulation with 50mM KCl.