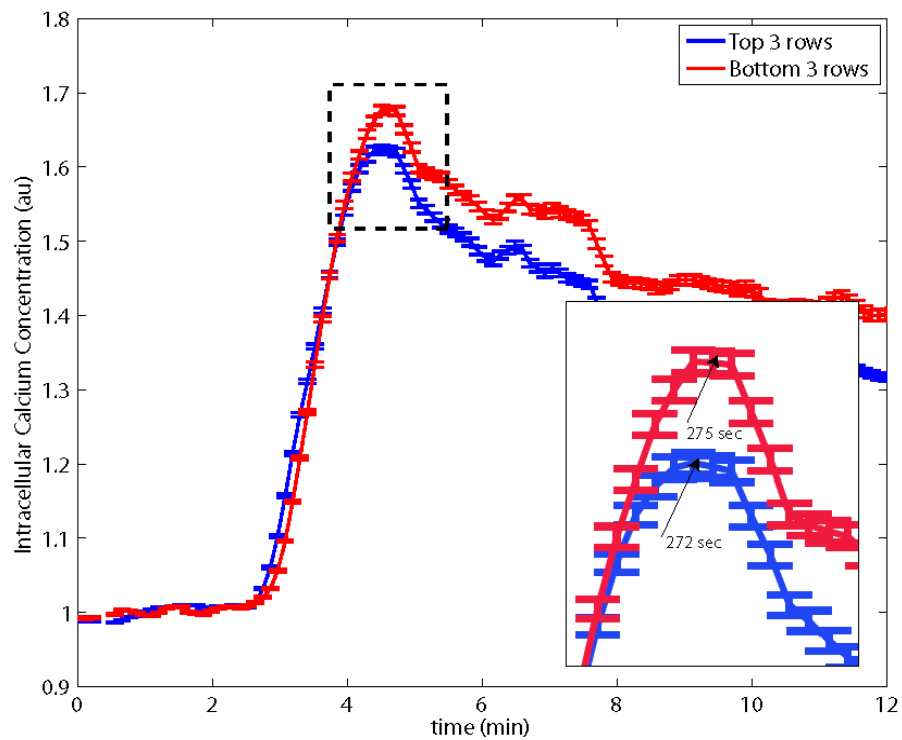
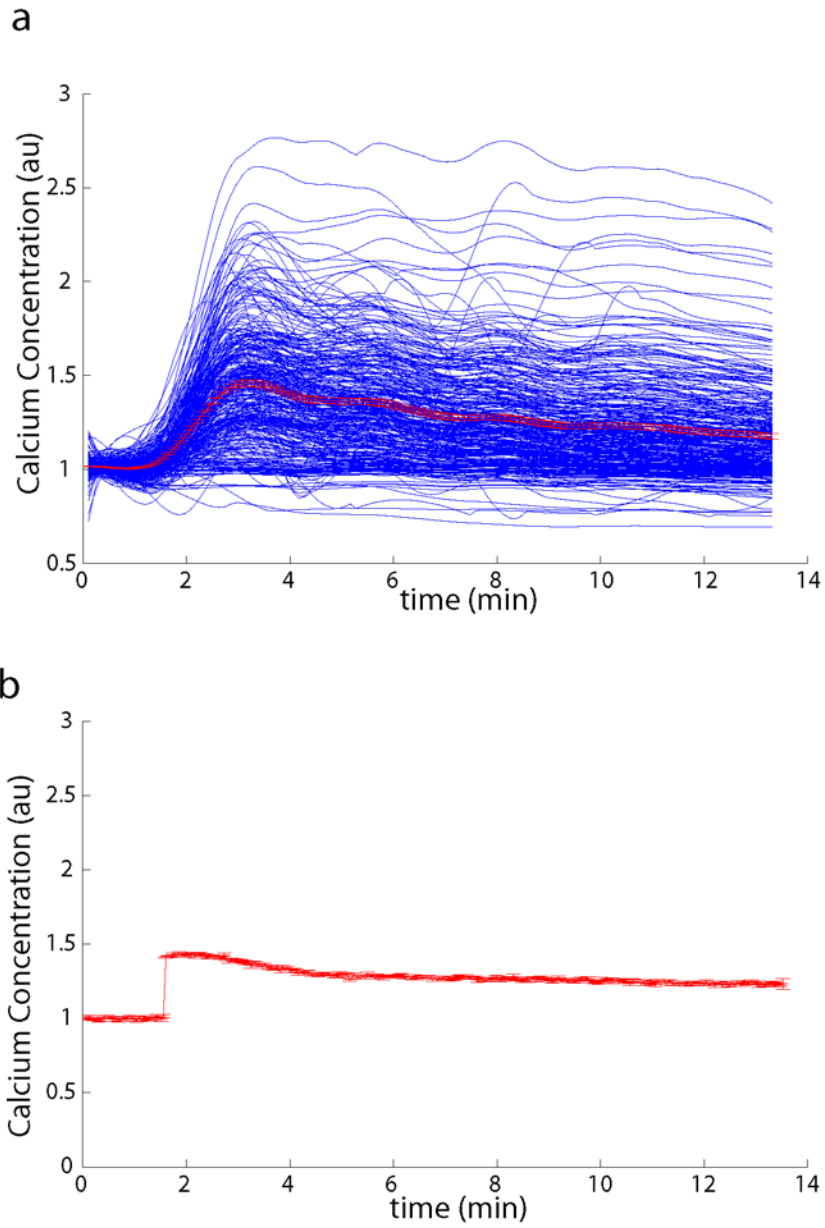


## Supporting Information



**Figure S1.** Calcium kinetics of Jurkat cell in response to 2.5 mM of ionomycin. The average response of ~ 70 cells in the top 3 rows and bottom 3 rows of the trap array shows little delay in the arrival of the stimulus for cells in the top versus the bottom of the array.



**Figure S2.** Calcium kinetics of Jurkat cell in response to 2.5 mM of ionomycin. (a) Measurements using microfluidic single -cell trap array. (b) Measurements by flow cytometry.

**Supporting Movie 1.** Loading Jurkat cells in a chamber in real time.

**Supporting Movie 2.** Loading Jurkat cells in a chamber shown in three segments (bright field, fluorescent, and processed bright field imaging where each cell is identified and labeled with a black dot to aid the eye).