

## Supplemental Figure Legends:

**Supplementary figure 1.** Viability of MCF-7 cell line was analyzed by flow cytometry. Apoptotic MCF-7 cells were assessed with Annexin V-AF488 conjugated and dead cells assessed with SytoxRed dye. Non-treated control MCF-7 cells **(A)** and the 10x PBS treated MCF-7 cells **(B)** show that live cells have different side and forward scattering characteristics from dead cells but have the same as apoptotic cells (compare right plot of the panel of **(A)** and **(B)**).

**Supplementary figure 2.** Viability of non-treated N2a cell line by flow cytometry. Apoptotic cells were assessed with Annexin V-AF488 conjugated and dead cells assessed with SytoxRed dye. Non-treated N2a cells **(A)** and the 10x PBS treated N2a cells **(B)** show that live cells have different cell characteristics from the dead cells (compare the second forward vs side scatter plot).

**Supplementary figure 3.** Viability of differentiated N2a cell line by flow cytometry. Apoptotic cells were assessed with Annexin V-AF488 conjugated and dead cells assessed with SytoxRed dye. Differentiated N2a cells for 3 days **(A)**, 6 days **(C)** or treated with STS **(B)** or DMSO **(C)**. Cells treated with STS **(B)**, the right plot of the panel, show that live, apoptotic and dead cells have not too different side and forward scattering characteristics. Cells treated with DMSO **(C)** show that live, apoptotic and dead cells have similar, overlapping side and forward scattering. Cells differentiated for 6 days **(D)** show that live, apoptotic and dead cells have also similar, overlapping side and forward scattering.

**Supplementary figure 4.** Representative flow cytometry plots for hESC showing the presence of stem cells in culture. **(A)** Non-acoustophoresis unstained sorted hESCs and compared to stained hESCs with SSEA4 **(B)**. Post-acoustophoresis center outlet fraction and side outlet fraction obtained at a 7.5 V separation voltage are shown on panel **(C)** and **(D)**, respectively. Numbers on the histogram refer to percentages of SSEA4 positive cells.