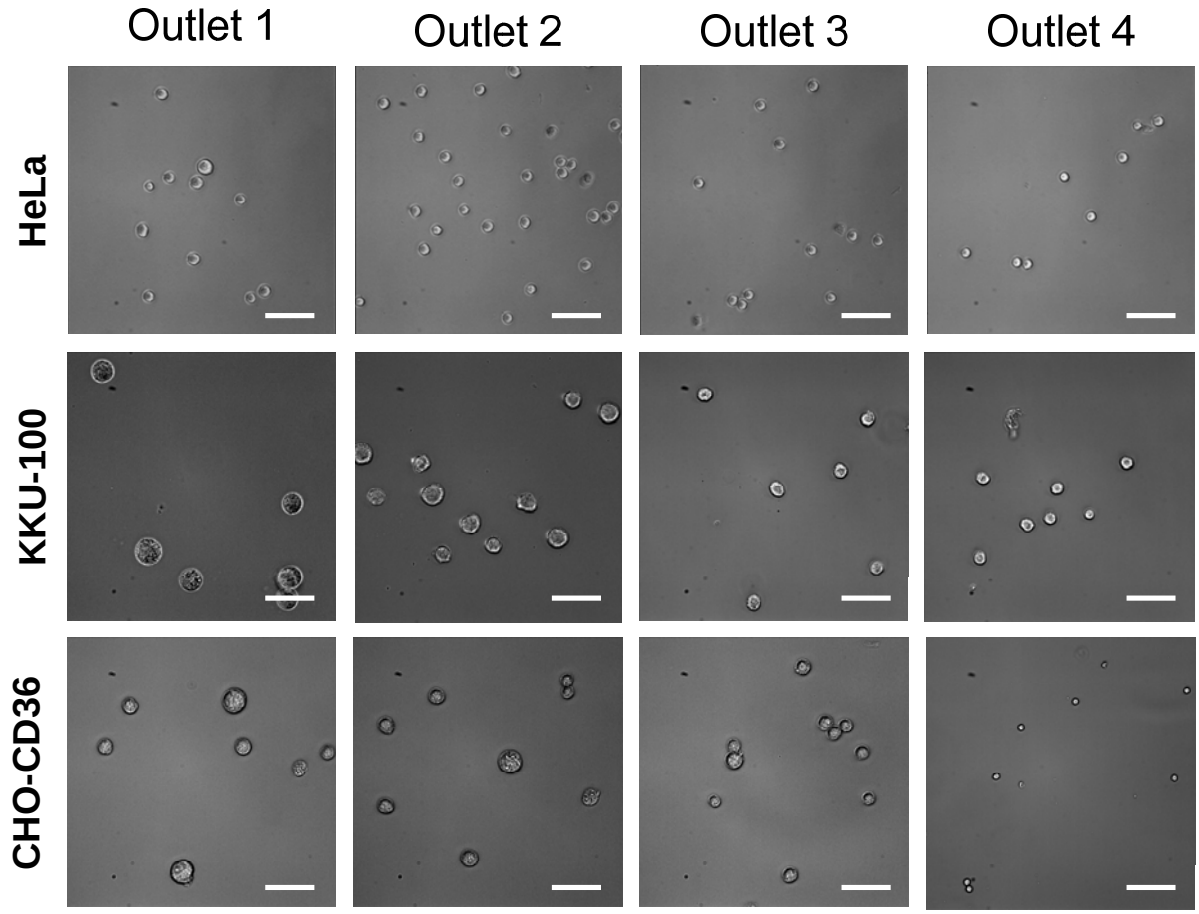
Supplementary Material (ESI) for Lab on a Chip

High-throughput cell cycle synchronization using inertial forces in spiral microchannels

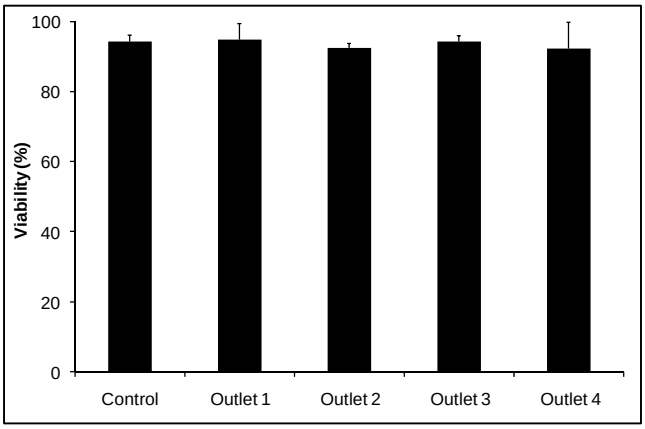
Supporting Information

SI Figure S1



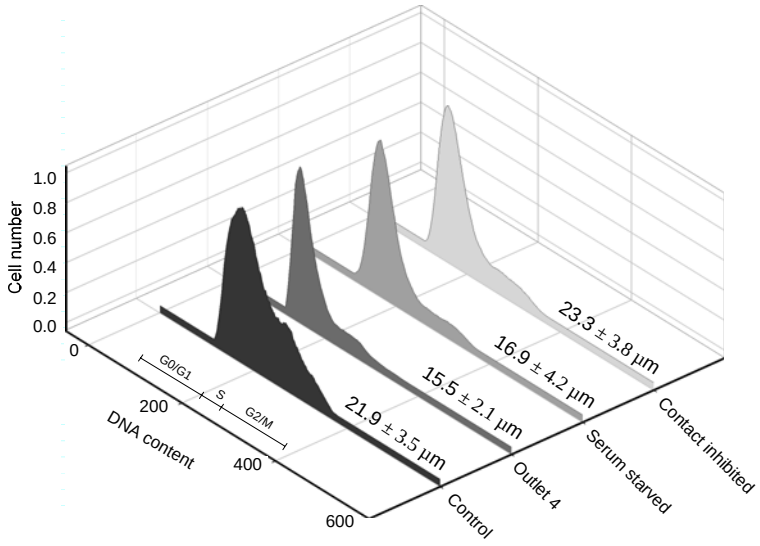
Optical micrographs of the size sorted HeLa, KKU-100 and CHO-CD36 cells collected from outlets 1-4 of the spiral microchannels. Scale bar = 50 μm

SI Figure S2



Viability results of the sorted hMSCs assessed using trypan blue dye exclusion assay on post sorted cells. The number of viable cells (cells which excluded the dye) was quantified by hemocytometer and expressed as a percentage of the total number of cells collected from each outlet. Results indicate >90% cell viability from each outlet with no significant differences from the control unsorted cells.

SI Figure S3



Comparison of the developed microfluidic synchronization technique with serum starvation and contact inhibition based G0/G1 phase synchronization methods. The histogram indicates the distribution of the DNA content of the singlet cells in the G0/G1, S and G2/M phase. The results indicate the superior synchronization capability of the microfluidic device with ~85% cells collected in the G0/G1 phase from outlet 4 compared to ~75% cells synchronized using the other techniques. Size distribution of hMSCs synchronized using the three techniques are also indicated on the plot ($p < 0.001$).

SI Table S1

Phase	Distribution (%)			
	Control	**Outlet 4**	**Serum starved**	**Contact inhibited**
G0/G1	56.4	**86.2**	**77.5**	**76.4**
S	16.6	5.9	11.9	10.4
G2/M	27.0	7.9	10.6	13.2

Distribution of the cell cycle phase of the hMSCs synchronized by the spiral microfluidic device, serum starvation and contact inhibition based synchronization methods.