Electronic Supplementary Material (ESI) for Lab on a Chip.

Hydrogel microstructure live-cell array for multiplexed analyses of cancer stem cells, tumor heterogeneity and differential drug response at single-element resolution

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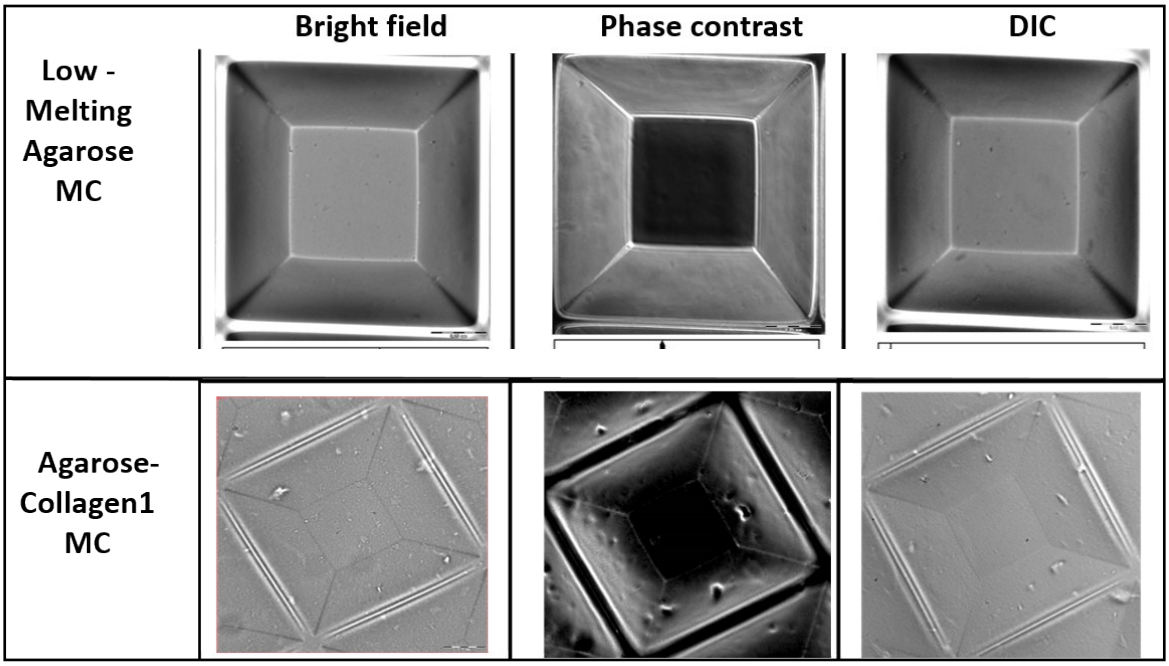
Electronic Supplementary Information

Figure S1.



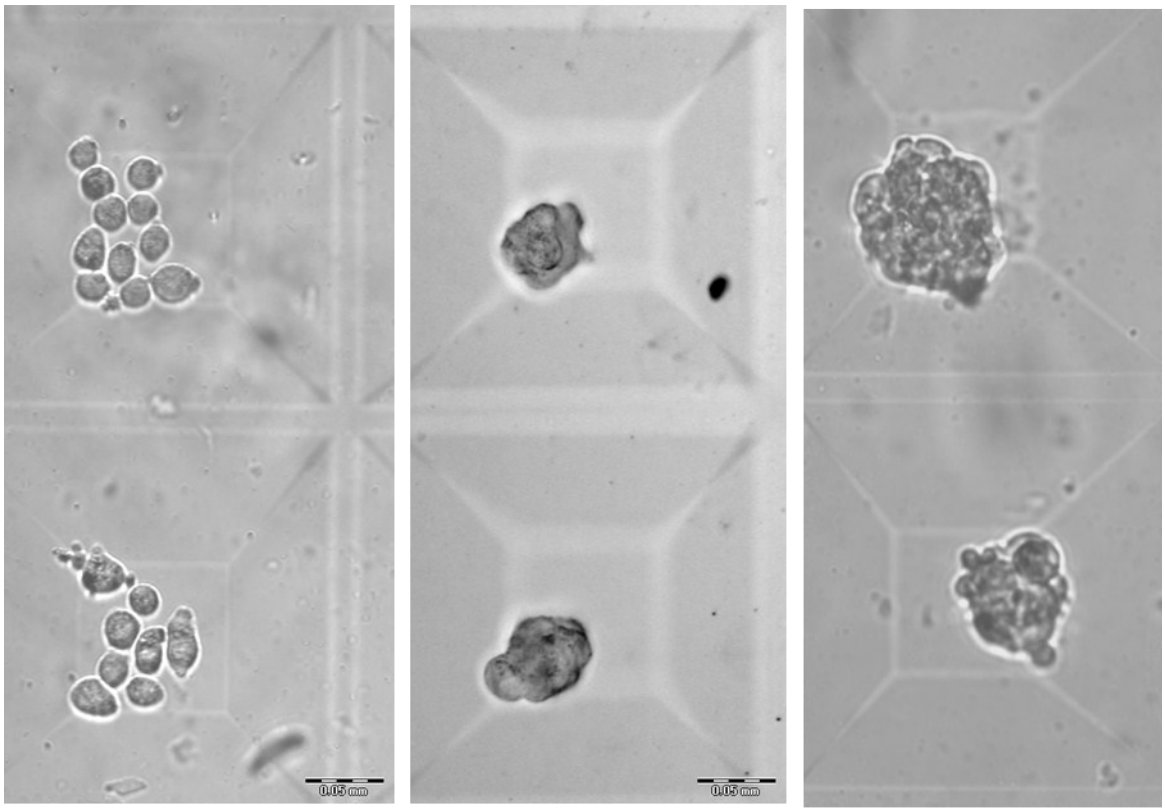
Optical characteristics of HMA. Bright field, phase contrast and DIC images of a representative single MC made of LMA alone (upper panel) and from a collagen I-agarose mixture (lower panel).

Table 1.

Evaluations of pixel gray values throughout two adjacent MCs made of PDMC, LMA and a mixture of Collagen I-LMA. Images were acquired by bright field (BF), phase contrast (PC) and differential interference contrast (DIC).

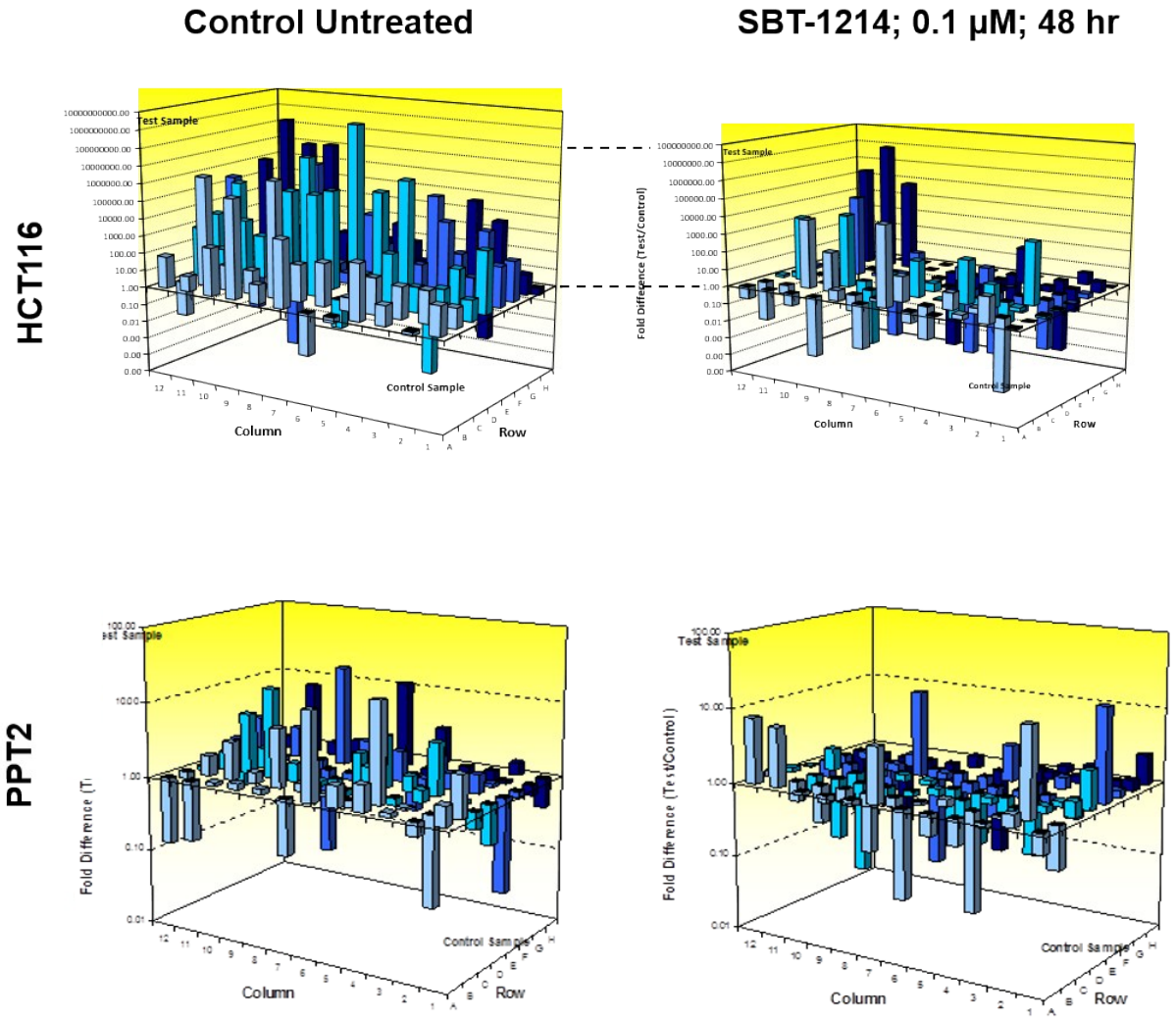
	BF PDMS	**LMA**	**Collagen I-LMA**
Average	2629.9	1646.9	467.1
STD	384.4	78.1	25.7
CV (%)	14.6	4.7	5.5
max/min	4.9	2.5	2.4
	PC PDMS	**LMA**	**Collagen I-LMA**
Average	1672.5	2047.3	404.7
STD	193.4	99.9	90.1
CV (%)	11.6	4.8	22.2
max/min	3.6	1.7	6.6
	DIC PDMS	**LMA**	**Collagen I-LMA**
Average	2054.3	1981	520.8
STD	270	53.9	27.8
CV (%)	13.1	2.7	5.3
max/min	3.5	1.2	2.4

Figure S2.



Seeding of A172 glioblastoma cancer cells and generation of glioblastoma spheroids within the HMA

Figure S3.

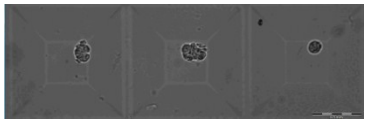


Left panel: Up-regulation of SC genes. (A; SABiosciences; PAHS-405) in colon HCT116 and prostate PPT2 $CD133^{+}/CD44^{+}$ cell populations (upper quadrants) compared to their differentiated counterparts (lower quadrants). Right panel: Alterations in the stemness-related gene expression profile induced by SBT-1214. Treatment with SBT-1214 (0.1μM for 48 h) induced dramatic down-regulation of stemness in the majority of SC-related genes in all three types of cells. Thus, significant drug-induced down-regulation of gene expression in HCT116 cells was detected for *SOX1, BMP1, BMP3, NEUROG2, S100B, FGF1, FGFR1, RB1, ALDH1A1, FZD1, NUMB, ABCG2* and others, many of which are related to SC self-renewal, regulation of symmetric/asymmetric division, pluripotency and drug resistance.

Video Clip 1:

Video clip displaying movement of individual spheroids within the HMA in the course of 65 h. When the cells are seeded atop the non-adherent surface, non-adherent, free-floating spheroids are generated in aqueous environment.

MCF7-65h-Dec2015.avi



Video Clip 2:

Video clip showing a single PPT2 cell within the HMA in the course of cell division.

004 BF-PPT2 single cell-twice division.avi