Supporting Information

Planar and Cell Aggregate-Like Assemblies Consisting of Microreactors and HepG2 Cells

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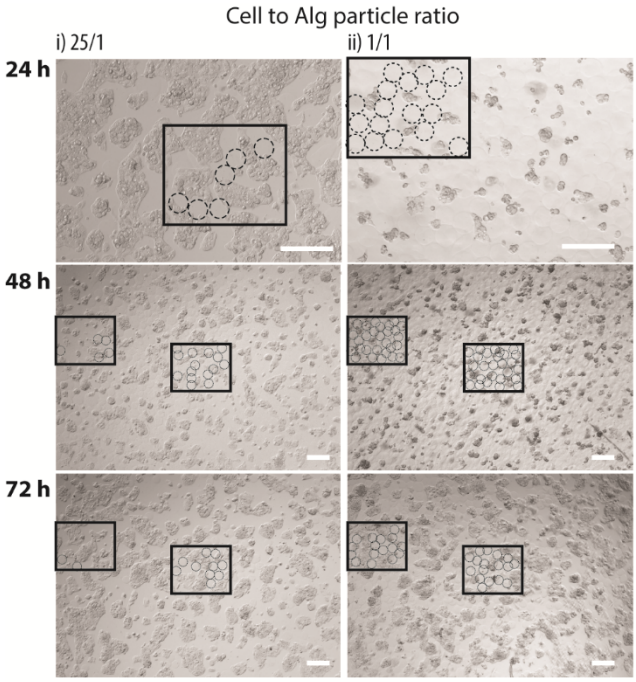

Figure S1. Bright field images of live co-cultured HepG2 cells and Alg particles at different number ratios (cell to Alg particle = 25/1 and 1/1) for 24 h, 48 h and 72 h. For better visualization, the particles are highlighted in selected areas of the images. The scale bars are 200 μm.

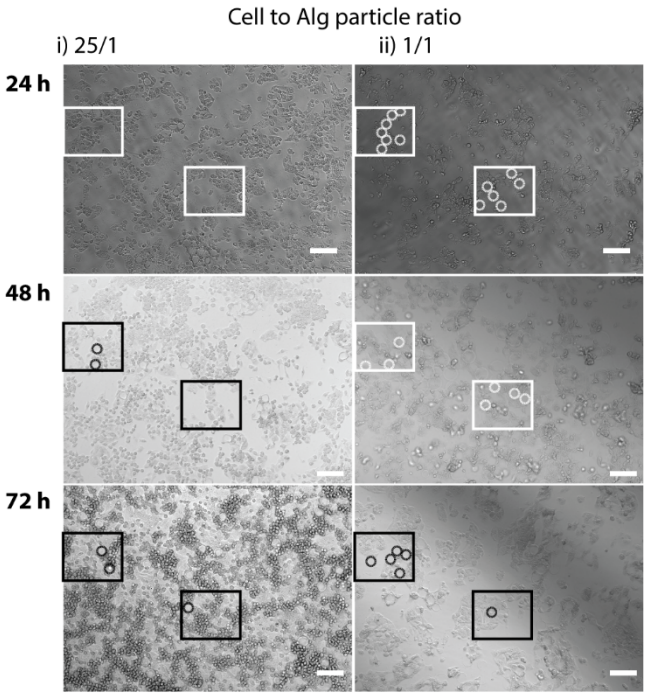

Figure S2. Bright field images of fixed co-cultured HepG2 cells and Alg particles at different number ratios (cell to Alg particle = 25/1 and 1/1) for 24 h, 48 h and 72 h. For better visualization, the particles are highlighted in selected areas of the images. The scale bars are 100 μm.

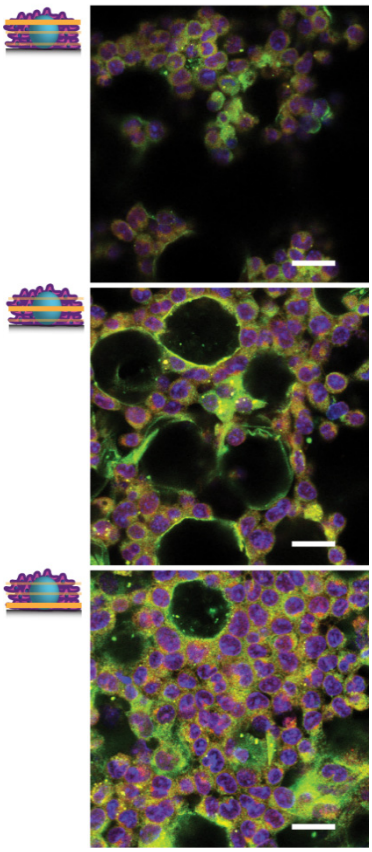

Figure S3. Representative CLSM images, taken at different focal planes, of uncoated Alg particles co-cultured with HepG2 cells for 72 h (cell to Alg particle = 25/1). The scale bars are 20 μm.

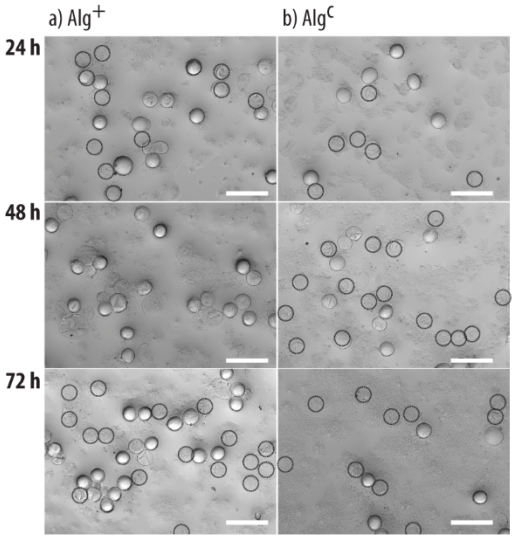

Figure S4. Surface coating: Bright field images of fixed co-cultures between HepG2 cells and and Alg^+ (a) and Alg^c (b) particles (cell to particle ratio 25/1) with different surface coatings after 24 h, 48 h and 72 h. The Alg particles are highlighted for visualization purposes. The scale bars are 200 μm.

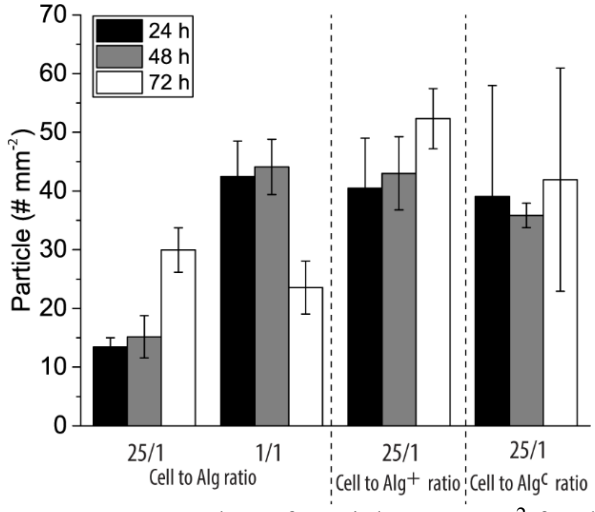

Figure S5. Number of particles per mm^2 for different cell to particle ratios using (uncoated) Alg, Alg^+ and Alg^c after 24 h, 48 h and 72 h incubation time with HepG2 cells.

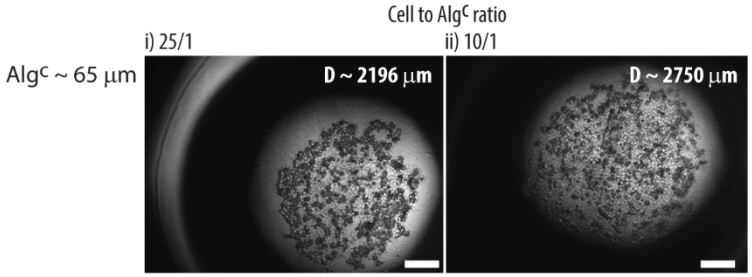

Figure S6. Bright field images and sizes of cell aggregates assembled from HepG2 cells and ~65 μm Algc particles in a cell to particle ratio of 25/1 (i) or 10/1 (ii) after 24 h incubation time. The scale bars are 500 μm.

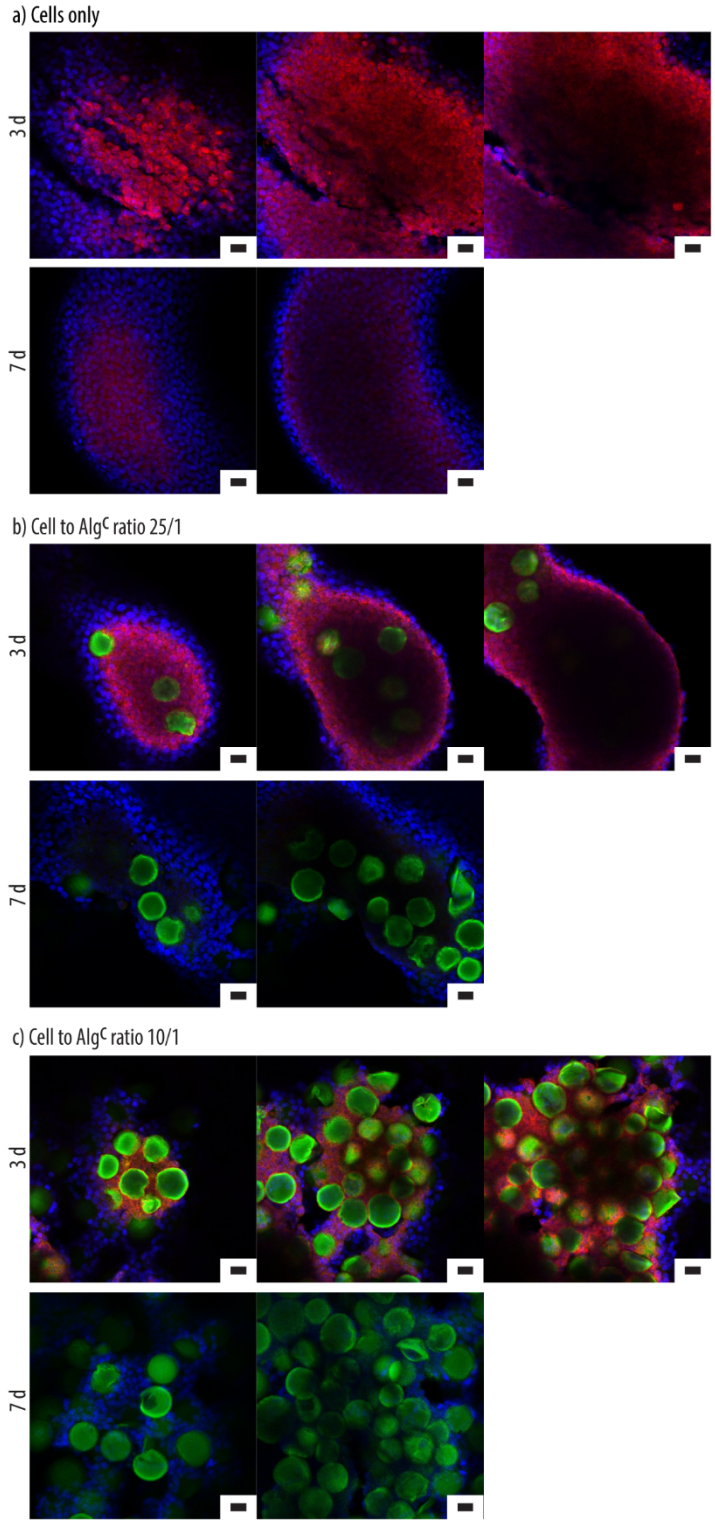

Figure S7. Representative CLSM images of cell aggregates only (a), aggregates containing cell and Alg^c in a ratio 25/1 (b) and 10/1 (c) after 3 d (top row) and 7 d (bottom row). The images in a sequence were taken at the same x-y location in different z-planes (separation between the z-planes left to right was ~70 µm). (Blue: DAPI stained nuclei; green: PLL_F of the coated Alg^c, red: phalloidin stain). The scale bars are 20 µm.

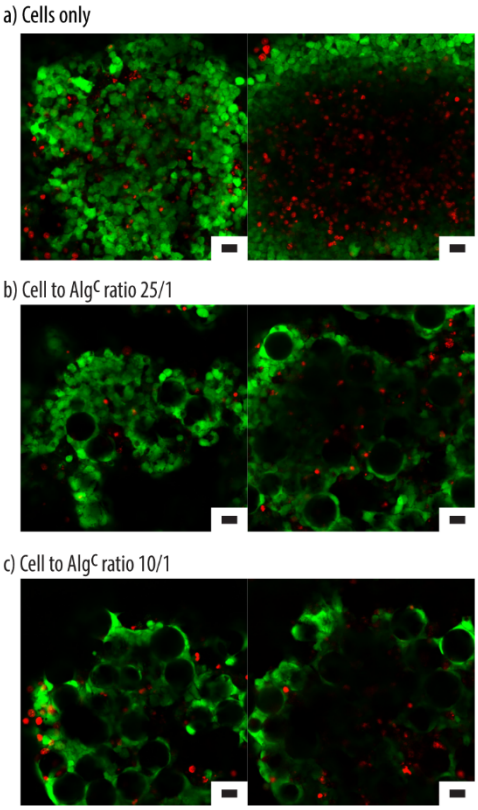

Figure S8. Representative CLSM images of live (green) – dead (red) stained cell aggregates assembled from HepG2 cells only (a) or HepG2 cells and Alg^c in a cell to particle ratio of 25/1 (b) or 10/1 (c). Images were taken after 7 d at the same x-y location in different z-planes (separation between the z-planes left to right was ~70 μm). The scale bars are 20 μm.

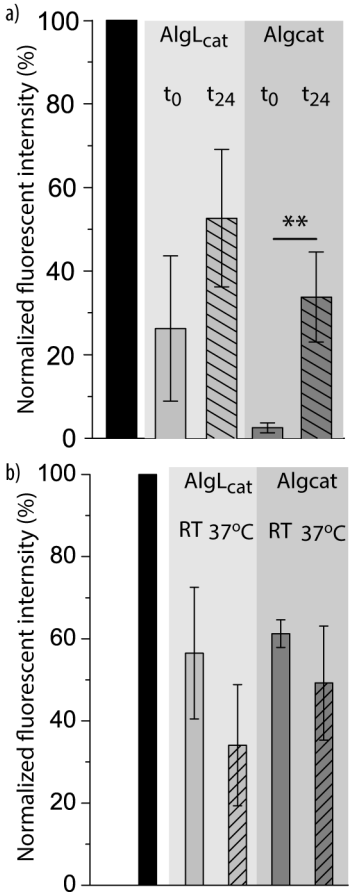

Figure S9. a) The normalized fluorescence intensity of a H_2O_2-containing solution assessed by the Amplex red assay after being exposed to AlgLcat and Algcat for 30 min at 37 °C. (40 µM H_2O_2 starting concentration, 25000 microreactors per mL used, t_0: microreactor directly after assembly, t_{24}: microreactors after 24 h HEPES1 buffer incubation at 37°C, n = 3) b) The normalized fluorescence intensity of a H_2O_2-containing solution assessed by the Amplex red assay (at room temperature RT) after being exposed to AlgLcat and Algcat for 30 min at room temperature or 37 °C. (40 µM H_2O_2 starting concentration, 10000 microreactors per mL used, n = 3)

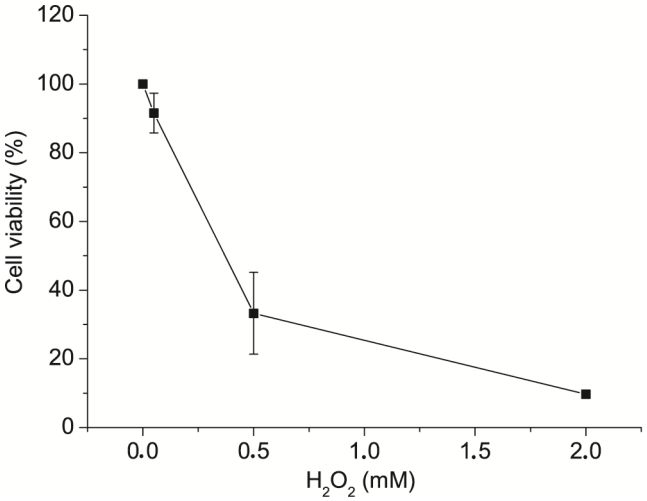

Figure S10. Dose response curves of HepG2 cells exposed to different concentrations of H_2O_2 for 24 h.