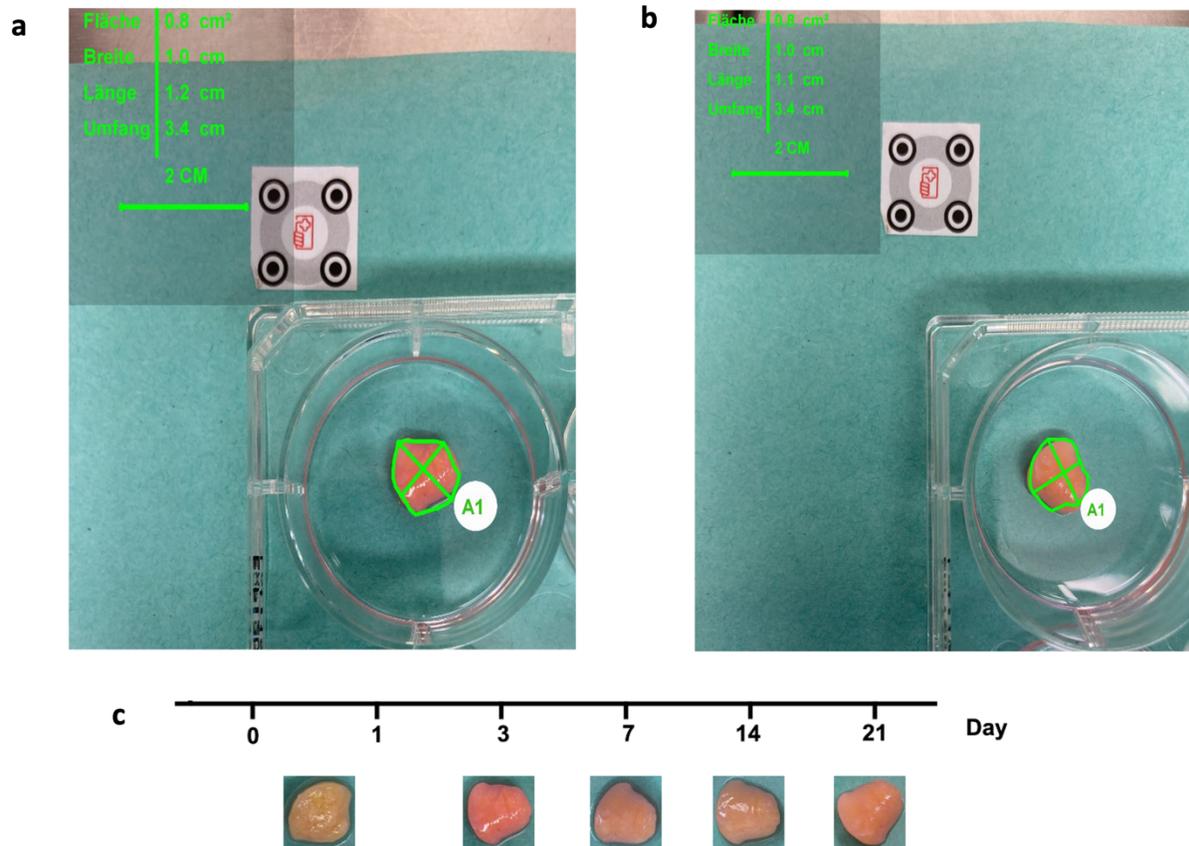


## Supplementary files

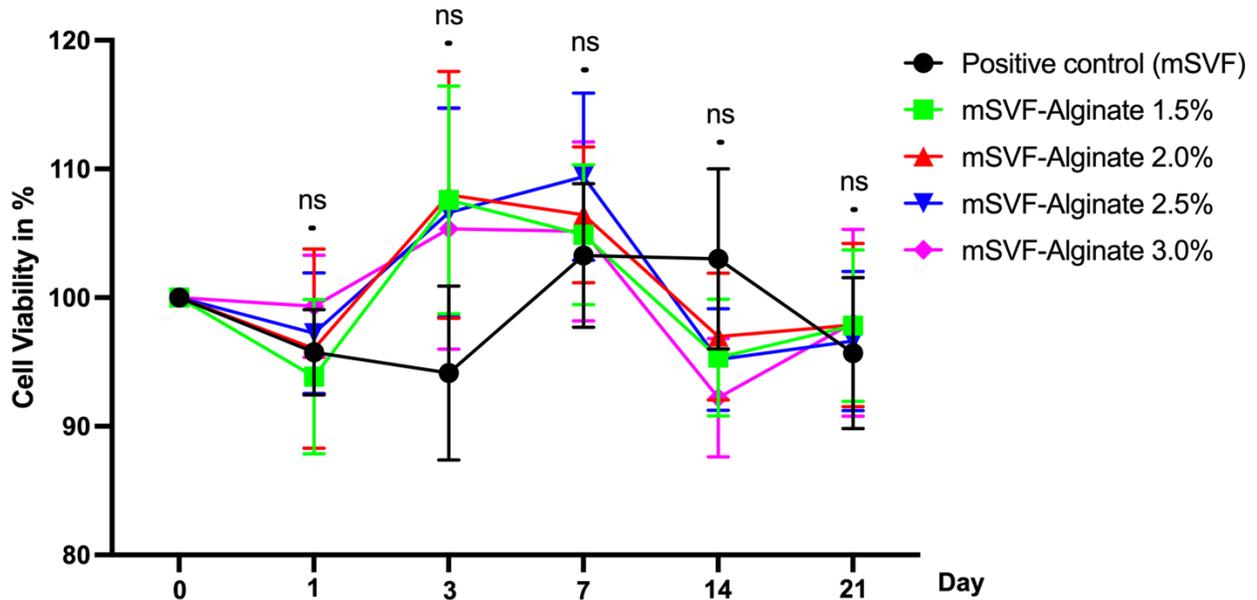
### Supplementary figure 1: Hydrogel size measurement



**Supplementary figure 1:** Exemplary measurement images using Imitocam software on **a)** day 1 and **b)** day 21. After removing the cell culture media, by zooming in, the ROI is defined using a manually assigned boundary. The automatic software detection is trained using the calibration square seen above the well plate.

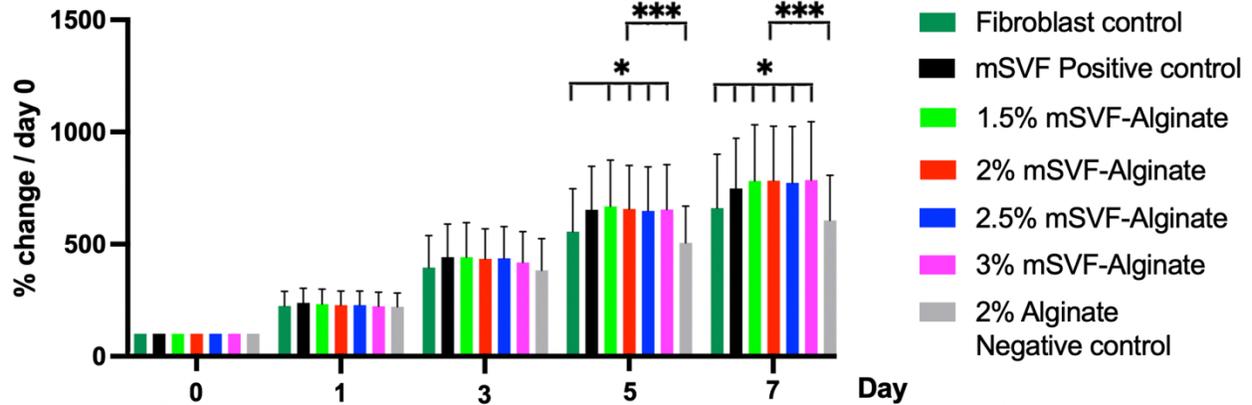
**c)** Exemplary photographic size comparisons of Alginate 2% hydrogels with mSVF, from 1 experiment, at days 0, 3, 7, 14 and 21.

Supplementary figure 2: Cell viability analysis for alginate 1.5%; 2%; 2.5%; 3% hydrogels



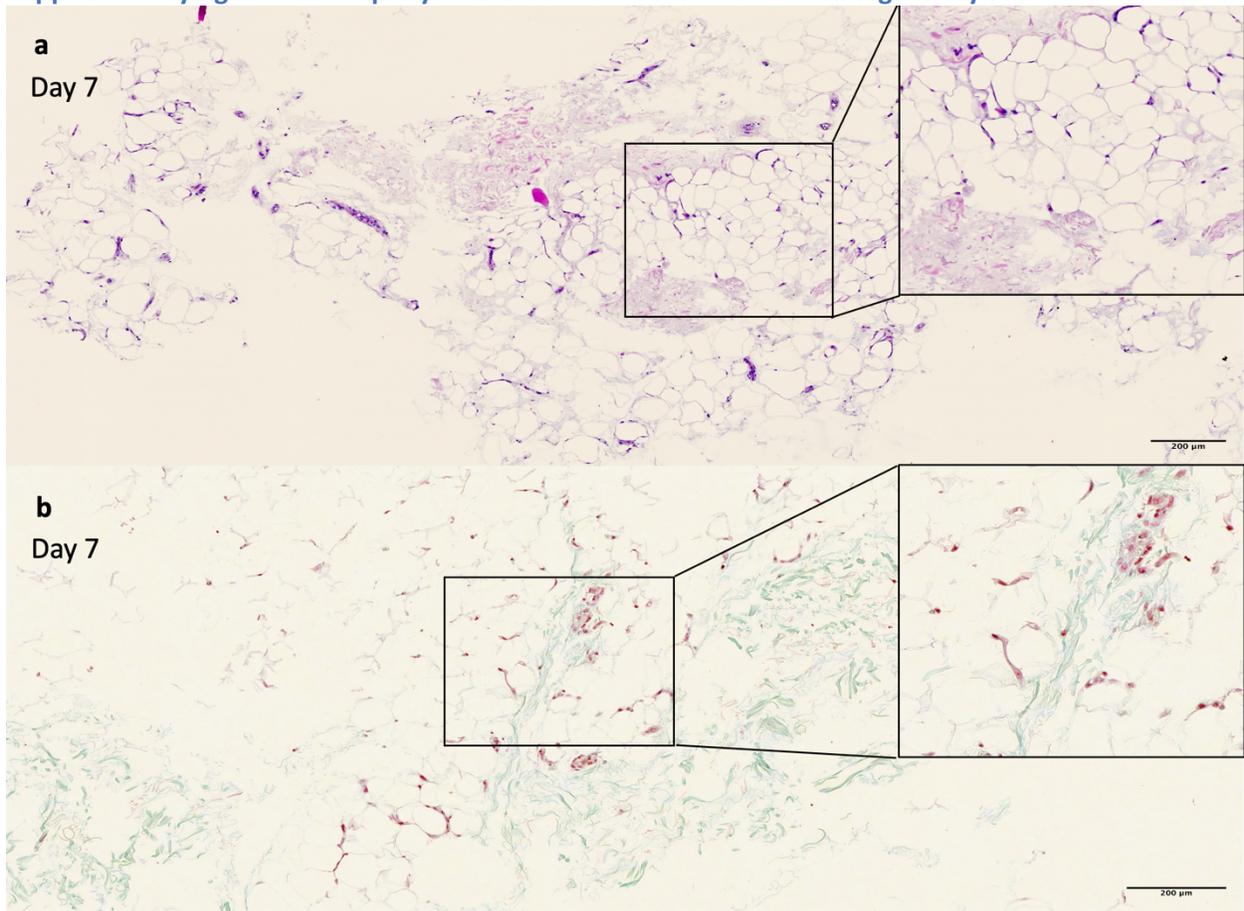
Supplementary figure 2: Cell viability analysis for alginate 1.5%; 2%; 2.5%; 3% hydrogels compared to positive control of only mSVF. Baseline was determined as cell viability on day 0. ns = no significant difference determined by means of multiple unpaired student's T-Tests. All data is showed as mean  $\pm$  SEM. A minimum of 9 measurements per timepoint from 6 independent experiments were acquired.

Supplementary Figure 3: Co-Culture viability varying conditions



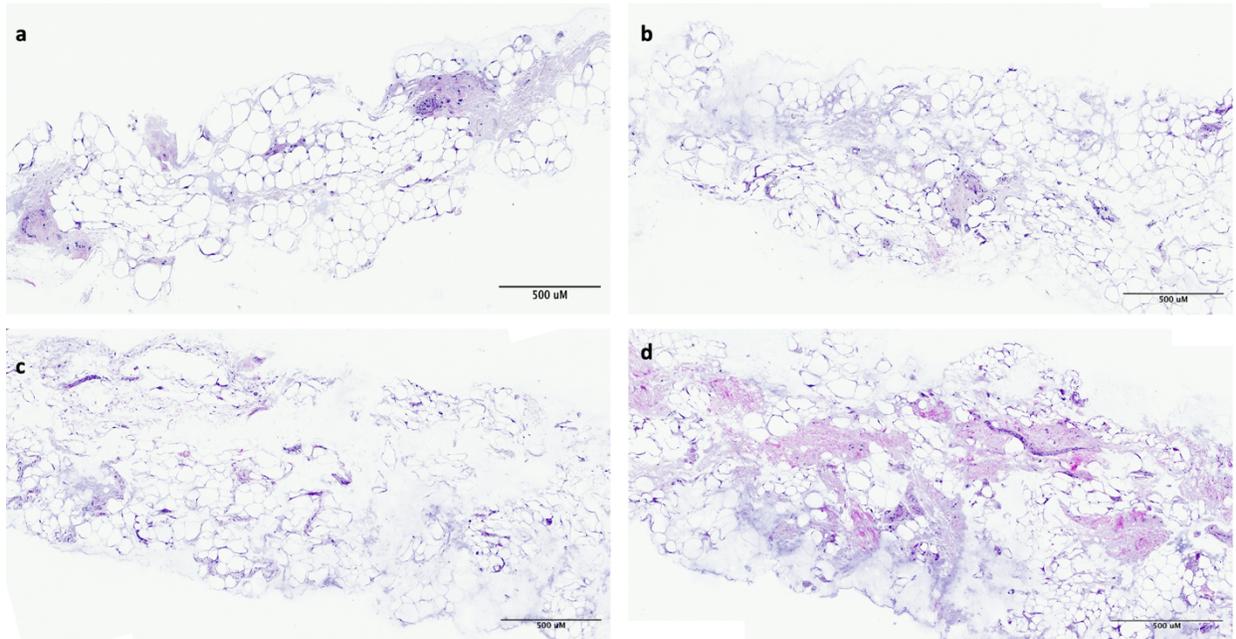
Supplementary Figure 3: Cell viability analysis for alginate 1.5%; 2%; 2.5%; 3% hydrogels in co-culture with fibroblast monolayer. Fibroblast monolayer served as a negative control and only mSVF as a positive control. \*  $p < 0.05$ , \*\*  $p < 0.01$  determined by means of a one-way ANOVA. All data is showed as mean  $\pm$  SD. A minimum of 3 measurements per timepoint from 3 independent experiments were acquired.

Supplementary figure 4: Exemplary H&E and masson's trichrome staining on day 7.



Supplementary figure 4: **a** Exemplary H&E and **b** masson's trichrome staining on day 7. Scale bar reference at 200 micrometers. Close-up magnification inset in the top right corner.

Supplementary figure 5: Exemplary H&E staining on day 1 of varying alginate concentrations



Supplementary figure 5: Exemplary H&E staining on day 1 of varying alginate concentrations: **a** 1.5%; **b** 2%; **c** 2.5% and **d** 3%. Scale bar reference at 500 micrometers.