Supplementary Information

Cell viability and proliferation

For cell viability and counting tests, the cell-laden fibers (20 cm long) were cut from the collecting spool and incubated in 24-well plate filled with cell medium under standard culturing conditions (i.e., 37 ^{o}C and 5% CO_2). For live/dead assays, we stained the cells within the gel for qualitative and after removal from the gel for quantitative results. We used LIVE/DEAD® Viability/Cytotoxicity Kitaccording to the manufacturer's protocol on days 1, 3, and 7 of incubation. To remove cells from the gel, cell-coated threads were placed in 1.5 ml centrifuge tubes and 1.2 mL of EDTA (20 mM) in PBS was added to dissolve the alginate gel for 5 minutes. Threads were then removed from the tube and the mixture was centrifuged at 3500 rpm for 5 minutes. Supernatant was removed and cells were stained with the viability kit according to the manufacturer's instructions. Briefly, after the removal of the supernatant, cells were resuspended in live/dead assay reagent mixture (200 µL) and incubated for 20 minutes. The mixture was centrifuged at 3500 rpm for 5 minutes and the supernatant was removed. Cells were resuspended in HEPES-buffered saline solution (HBSS) (50 µL). We used 20 µL of the mixture for measuring the density of the cells and the rest for determining the cell viability. The labeled cells were evaluated under fluorescence microscopy. Two images of each frame, one with green (live cells) and one with red (dead cells) fluorescence were captured using an inverted fluorescence microscope (Nikon TE2000). For in-gel viability test, cell-laden threads were removed from the incubation plate and were washed with PBS. The fibers were then treated with the live/dead assay kit for 30 minutes, and then placed in a Petri dish containing HBSS and the number of live and dead cells were determined as described before.

Weaving cell-laden fabrics

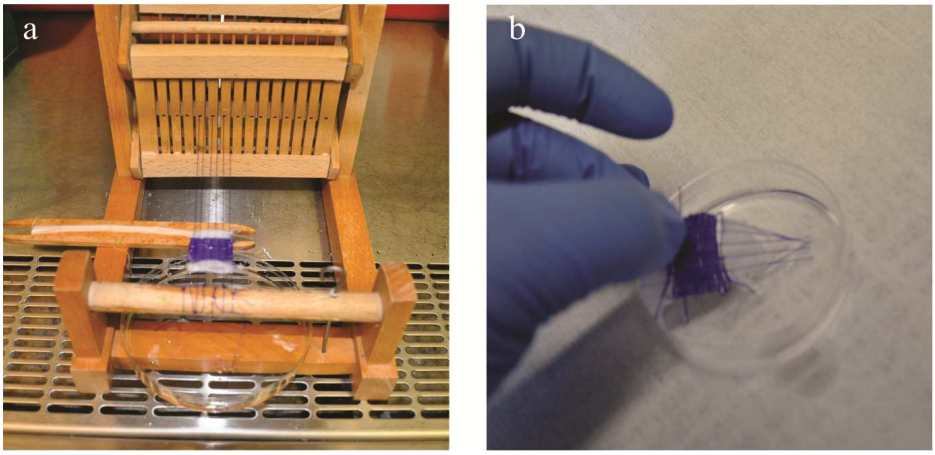

Figure S 1. Creating a cell-laden woven structure. a) Off-the-shelf weaving loom was purchased and modified to create cell-laden fibers. b) woven structure is mechanically robust and can be handled without embedding it in another polymer.

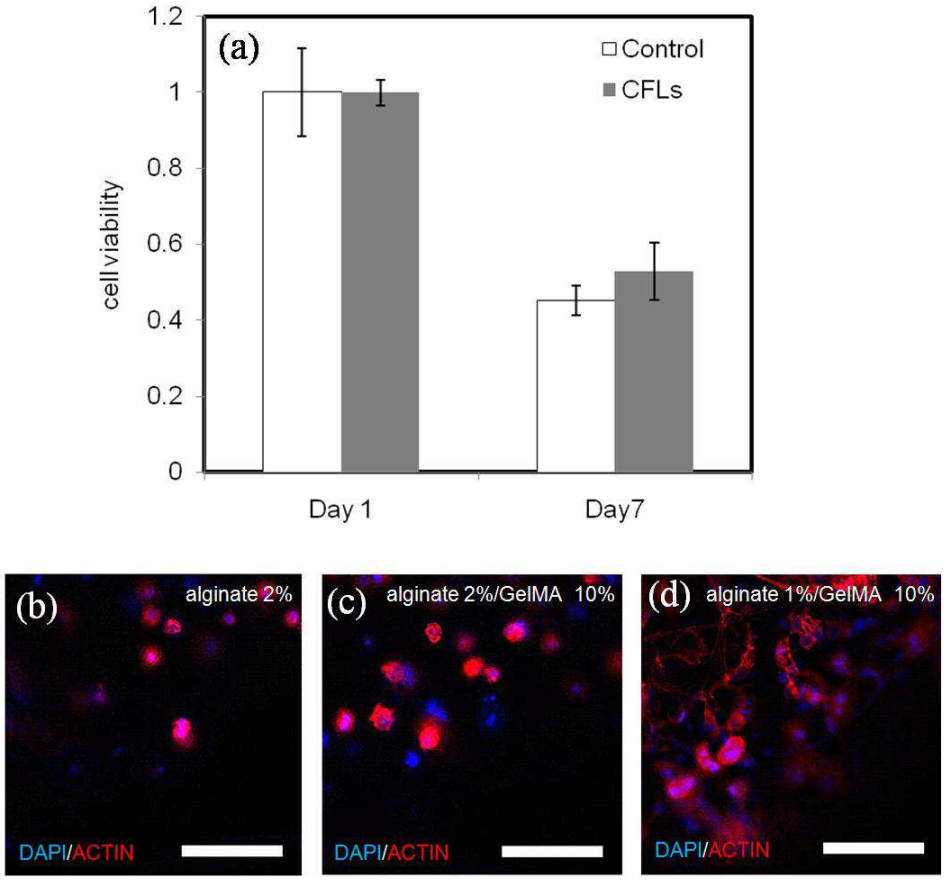

Figure S 2. Cell adhesion and viability in the coating hydrogel layer over 7 days of culture. (a) Cell viability in CFLs and control wetspun fibers both made from unmodified alginate (2% w/v). Cell viability for each sample is normalized with respect to Day 1. Error bars are standard deviation calculated from three independent samples. Cell adhesion in (b) unmodified alginate (2% w/v), (c) GelMA(10% w/v) and alginate (2% w/v) IPN, and (d) GelMA (10% w/v) and alginate (1% w/v) IPN after 7 days of culture. F-actin and cell nuclei were labeled with fluorescent red and blue, respectively. The lower ratio of alginate to GelMA enhances cell adhesion to the hydrogel matrix. Scale bar shows 100 μm.