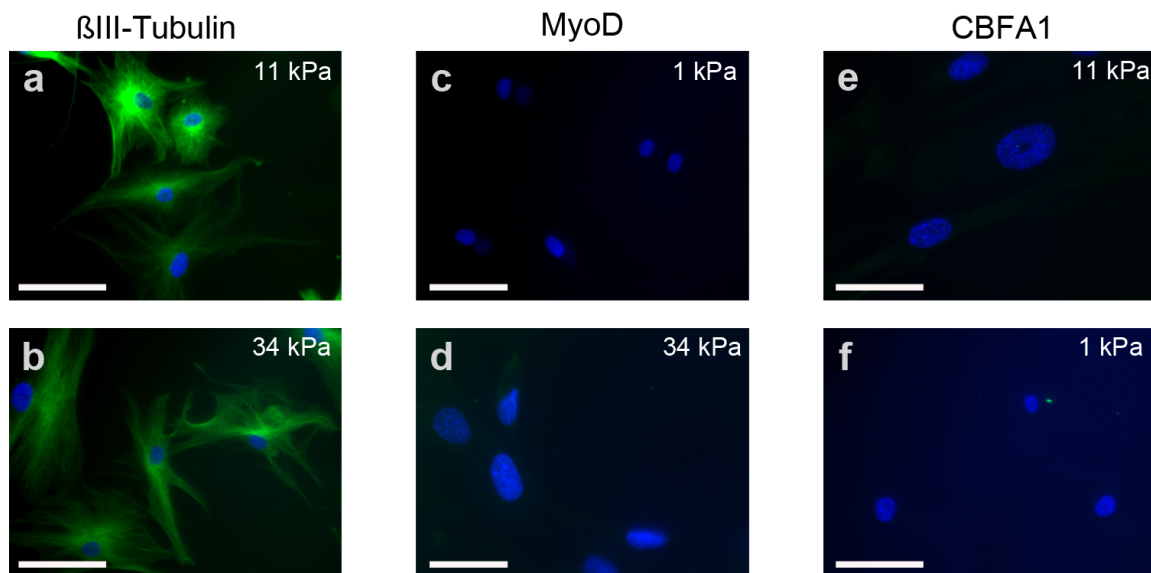


Supplementary figures and text:

Supplementary Figure 1

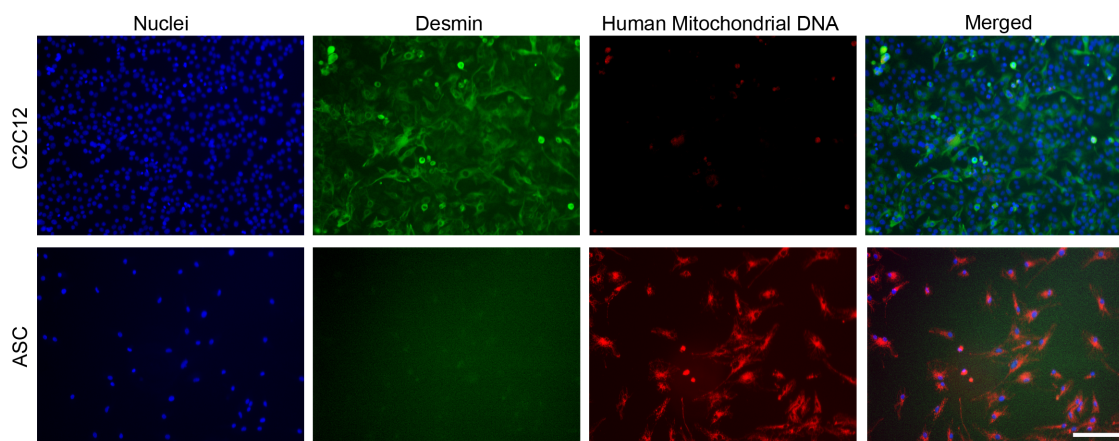
β III-Tubulin, MyoD, and CBFA1 antibody staining on polyacrylamide linked silicon combs



(A) β III-Tubulin (green) and nuclei (blue) staining on 11 kPa gels in (B) on 34 kPa gels show a spread out, fibroblast-like morphology, scale bar = 200 μ m. (C, D) Negative staining for MyoD (green) and nuclei (blue) on a 1 and 34 kPa gel respectively, scale bar = 200 μ m, 50 μ m. (E, F) Representative image of negative staining for CBFA1 (green) and nuclei (blue) on an 11 and 1 kPa gel (scale bar = 50 μ m, and 200 μ m respectively).

Supplementary Figure 2

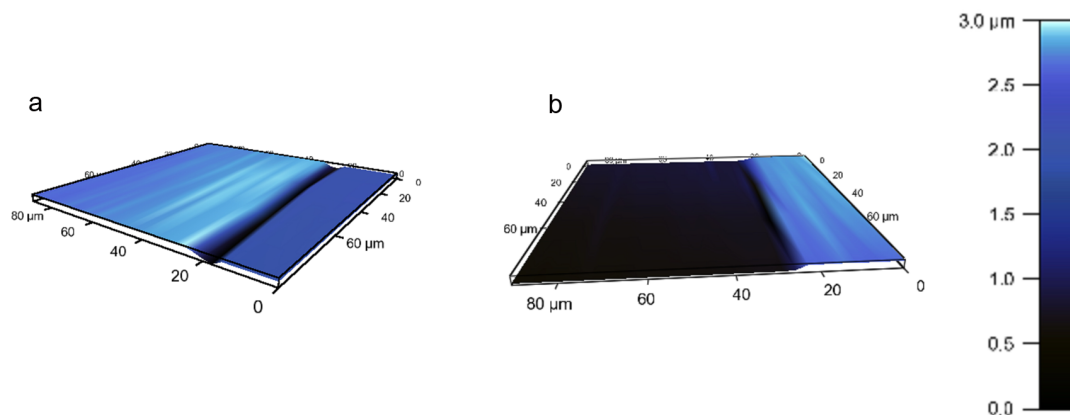
Human mitochondrial DNA and Desmin antibody staining on C2C12s and ASCs



C2C12s and ASCs in top and bottom rows respectively were plated in separate wells and once adhered, stained with desmin (green), human mitochondrial DNA (red), and Hoescht (blue). Exposure times for each channel were kept constant for both cell types to show specificity of each antibody, scale bar = 200 μm .

Supplementary Figure 3

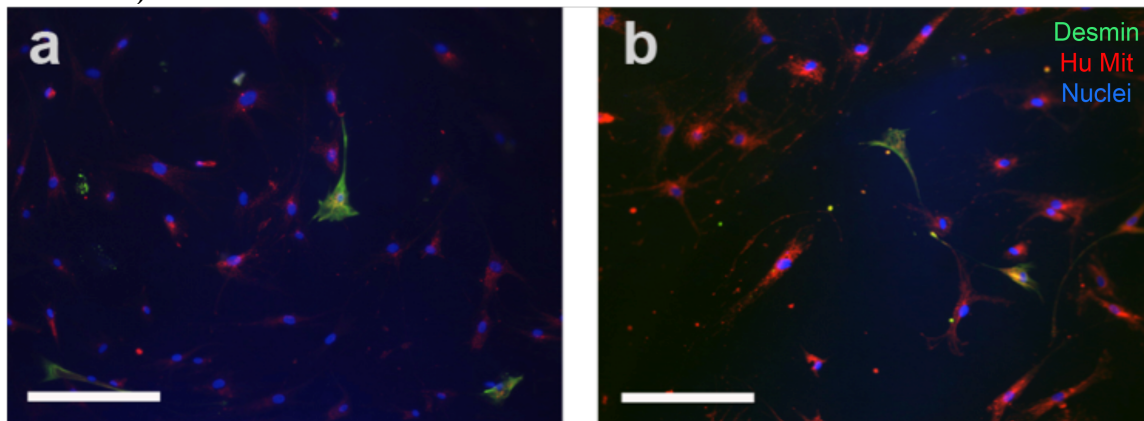
AFM height map of contiguous gels in *contact*



Two representative AFM height maps of the interface between two fingers of a 10 kPa and 40 kPa pair placed into contact and submerged in PBS. AFM topographical maps were generated to show that the gels were i) disparate or non continuous and ii) on similar enough heights in regard to the scale of a cell $\sim 10 \mu\text{m}$. Height maps with a z-axis scale from 0-3 μm . In a) the interface between the combs shows a valley, in b) the gels are closer on the surface and do not display a valley, but a shift in height. Note the 2-D nature of these graphs show that variation in the z-axis is small (3 μm) and that cells can physically touch on the z-axis plane from one comb to another.

Supplementary Figure 4

Desmin positive staining on ASCs 6 days in co-culture with myoblasts (10X resolution)



Two representative images of positive desmin staining (green) co-stained with human mitochondrial DNA stain (red) on ASC halves on a (A) 10 kPa gel and (B) 40 kPa gel after 6 days in culture, scale bar = 200 μ m. These images were taken in the middle of the finger of each ASC half.