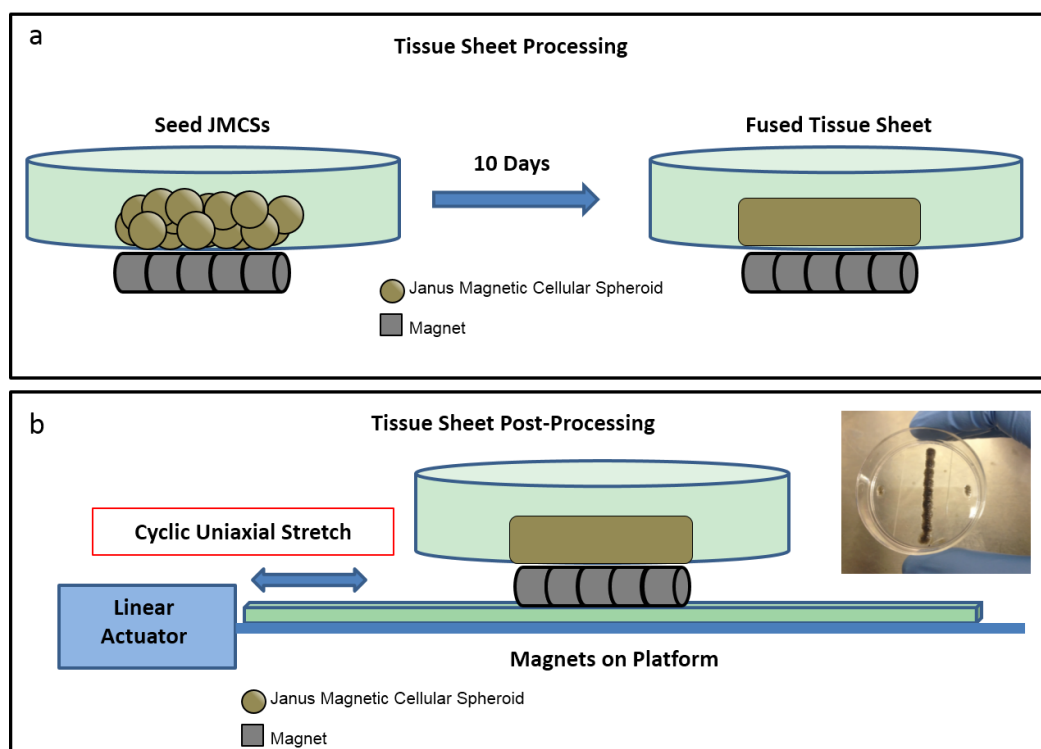


Supplementary Materials

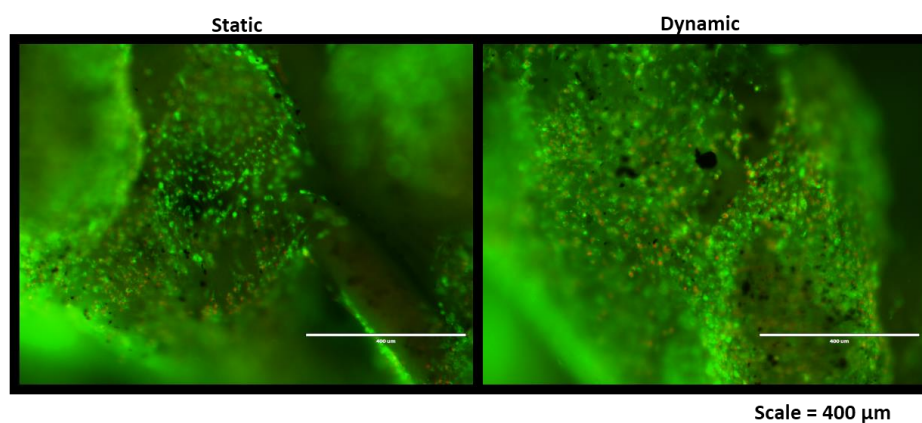
# Longitudinal Stretching for Maturation of Vascular Tissues Using Magnetic Forces

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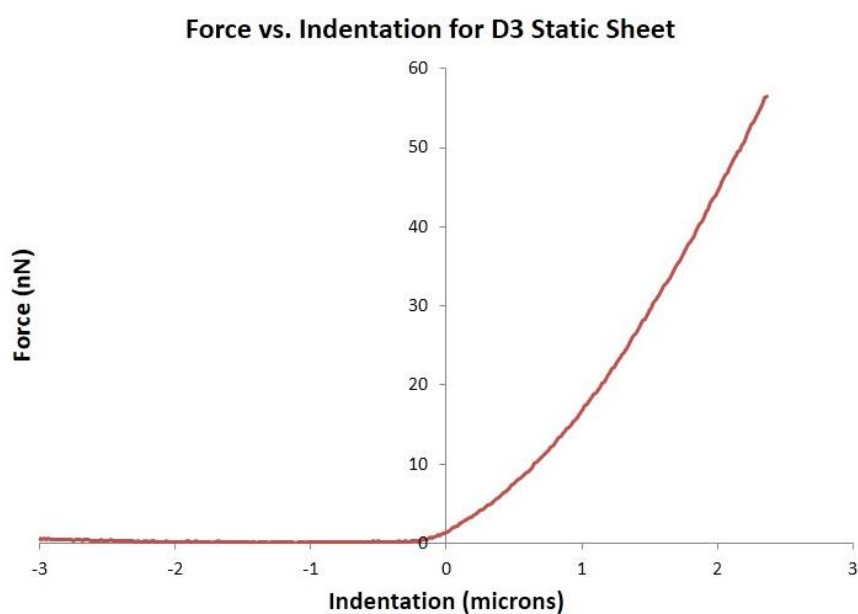


**Figure S1.** Processing and Post-Processing of Tissue Sheets Composed of JMCSs. **(a)** Schematic depicting tissue sheet processing. 1000 JMCSs were formed for three days using the hanging drop method. Spheroids were then seeded into a 6 well plate with a glass slide on the inside bottom surface. Magnets attached to the bottom of the 6 well plate allow for patterning of the spheroids into a rectangular sheet. Sheets were allowed to fuse for 10 days. **(b)** Schematic depicting tissue sheet post-processing. The magnetic templates were removed from the bottom of the well plates containing fused tissue sheets. The well plates containing the fused sheets were placed onto a platform inside an incubator. Using a linear actuator, an array of magnets was translated in a cyclic, uniaxial direction beneath the fused tissue sheets. The device allows for precise control over frequency, magnitude of stretch and duration of conditioning.

**Day 7 Tissue Sheets—LIVE/DEAD**



**Figure S2.** LIVE/DEAD Images of Tissue Sheets at Day 7. Images display LIVE/DEAD results of tissue sheets without (left) and with (right) cyclic longitudinal stretching mediated by magnetic forces after 7 days of culture. Scale = 400  $\mu\text{m}$ .



**Figure S3.** Force vs. Indentation Curve for D3 Static Tissue Sheet. Representative force-indentation curve, obtained from AFM, for a day 3 statically conditioned tissue sheet.



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