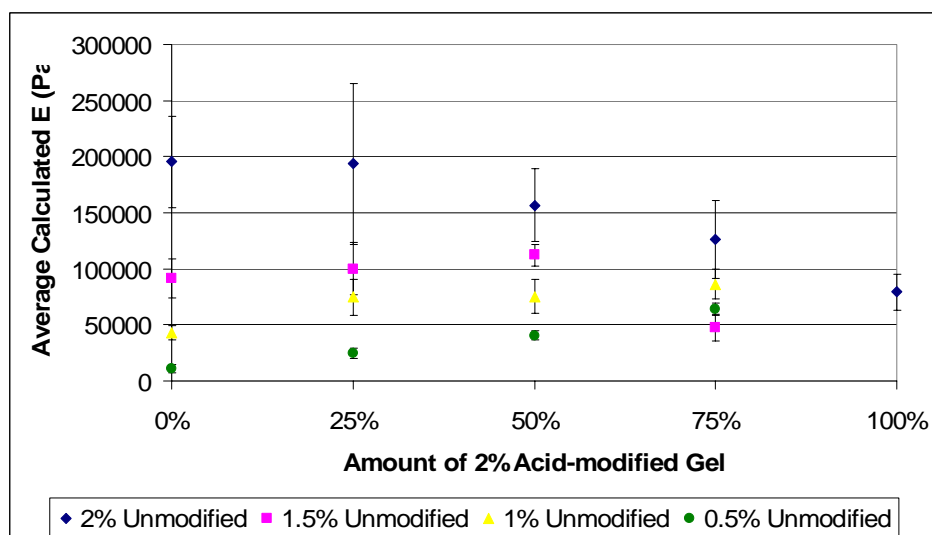


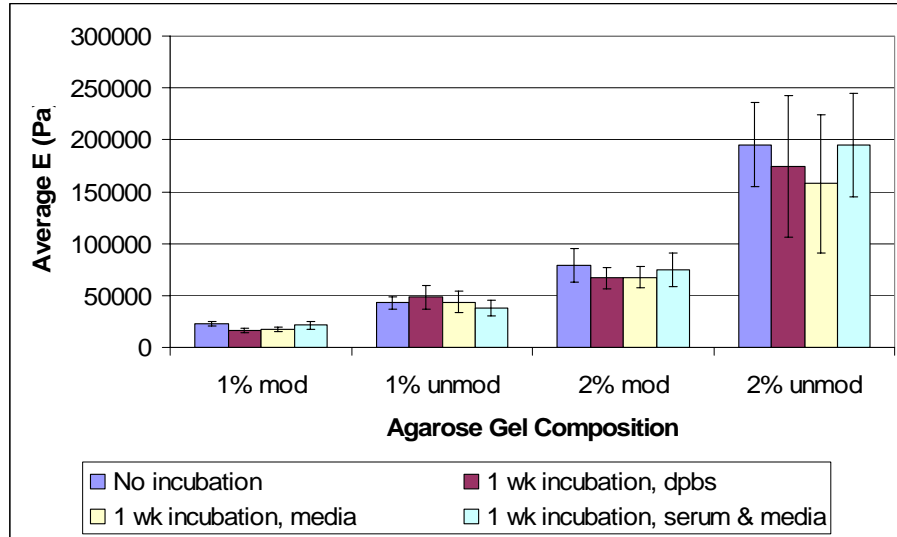
## Supplementary Data:

**Supporting Table 1.** The resulting final channel depths after transferring to glass substrates for a variety of spin-coating conditions. The wall height of the masters used was 100 $\mu$ m so a final wall height of 60 $\mu$ m represents a master pattern filled 40 $\mu$ m below the tops of the features.

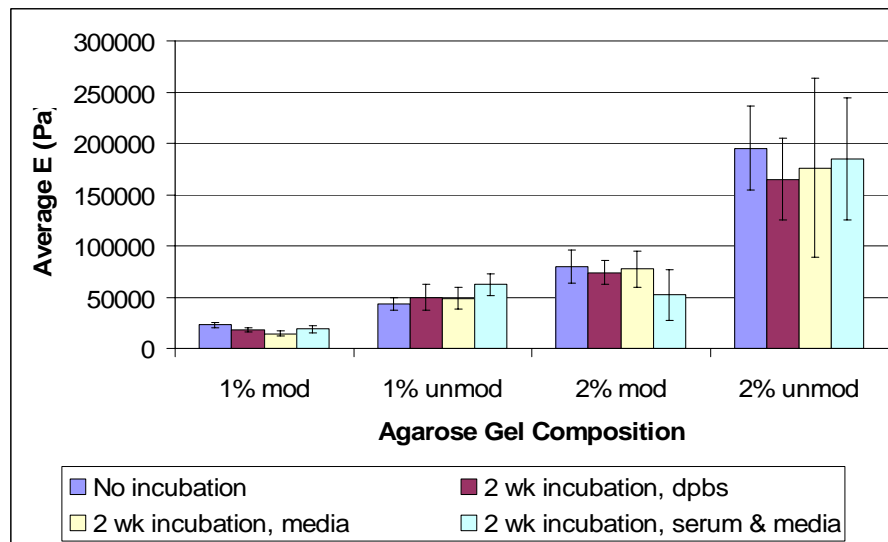
Spin Coat Conditions	Wall Height ( $\text{\AA}$ )
1000 RPM – 1min, 2000 RPM – 15 sec	59.5 $\pm$ 2.1
1000 RPM – 1min, 2000 RPM – 30 sec	44.3 $\pm$ 18.7
1000 RPM – 1min, 2000 RPM – 1.0 min	23.0 $\pm$ 1.4
1000 RPM – 1min, 2000 RPM – 1.5 min	18.5 $\pm$ 0.7
1000 RPM – 1min, 2000 RPM – 2.0 min	7.5 $\pm$ 0.7



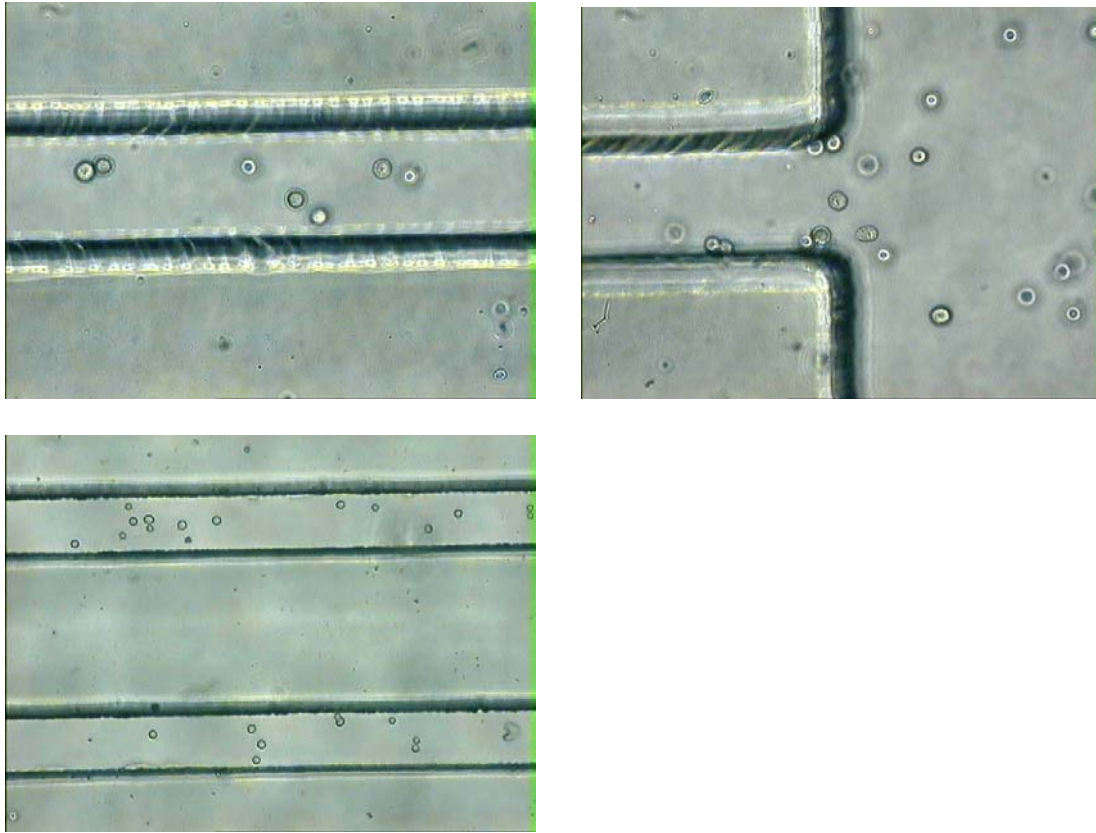
**Supporting Figure 1.** Elastic modulus parameter space resulting from the combination of 2 wt/vol% acid-modified agarose gel with various compositions of unmodified gel in different proportions (0.5, 1.0, 1.5, and 2.0 wt/vol% unmodified gel). Each percentage (0, 25, 50, 75, and 100) represents similar wt/vol concentrations of acid modified gel mixed with different amounts of unmodified gel. Data is shown as the lumped parameters from the conical tip approximation.



**Supporting Figure 2a.** Comparison of the average elastic modulus value for modified and unmodified agarose gels placed under 3 different incubation conditions for a week (DMEM, Dulbeccos PBS, and DMEM with 10% FBS). The first column is the average E value for each gel type without incubation. Data is shown as the lumped parameters from the conical tip approximation.



**Supporting Figure 2b.** Comparison of the average elastic modulus value for modified and unmodified agarose gels placed under 3 different incubation conditions for two weeks (DMEM, Dulbeccos PBS, and DMEM with 10% FBS). The first column is the average E value for each gel type without incubation. Data is shown as the lumped parameters from the conical tip approximation.



**Supporting Figure 3.** NIH-3T3 cells embedded in agarose gels and patterned into channels via capillary action. The agarose used in these images is SeaPrep Agarose (Cambrex) with a gelling temperature of 8-17°C. Images are taken after 24 hours of incubation at 37°C and 5% CO<sub>2</sub>.