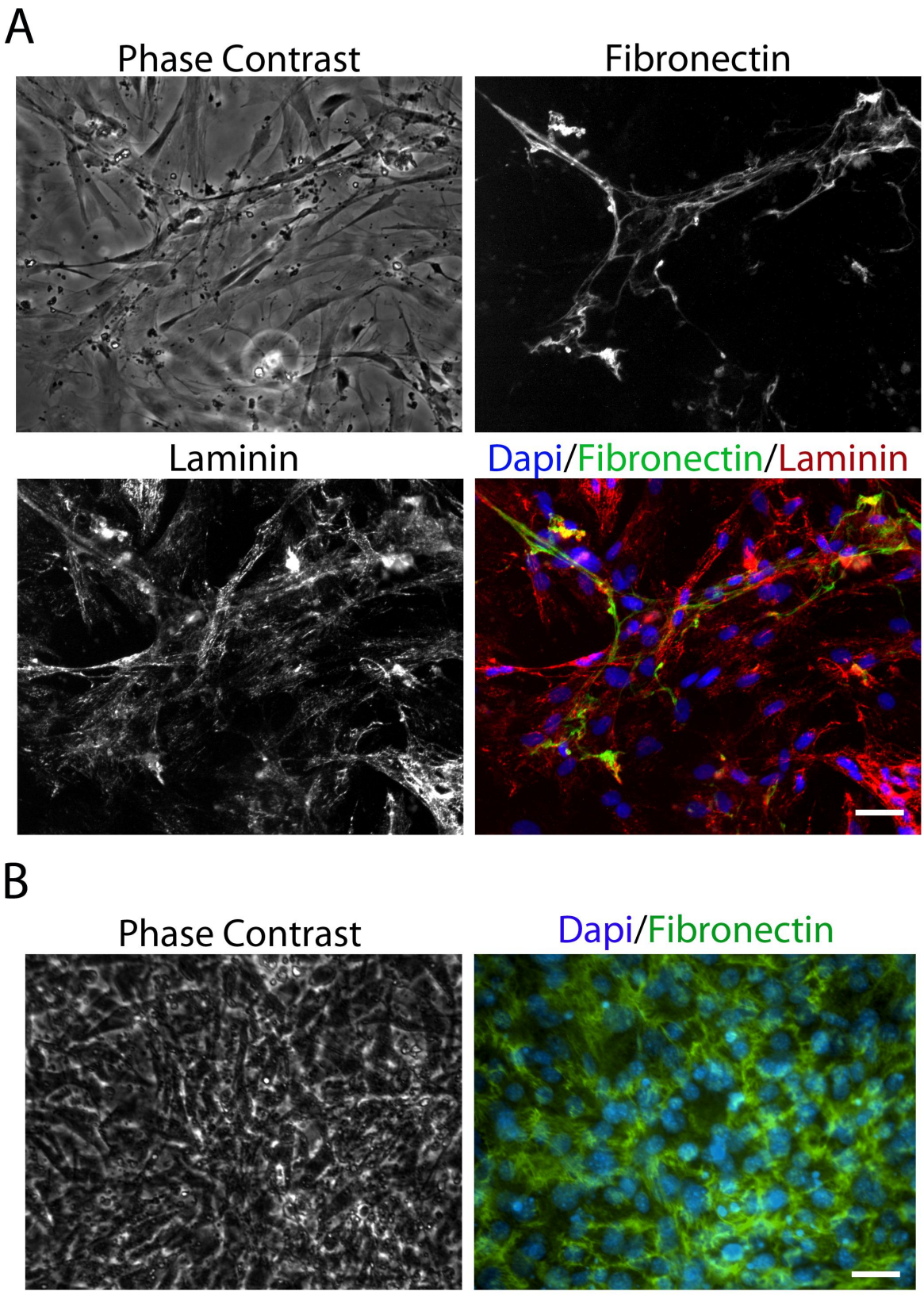
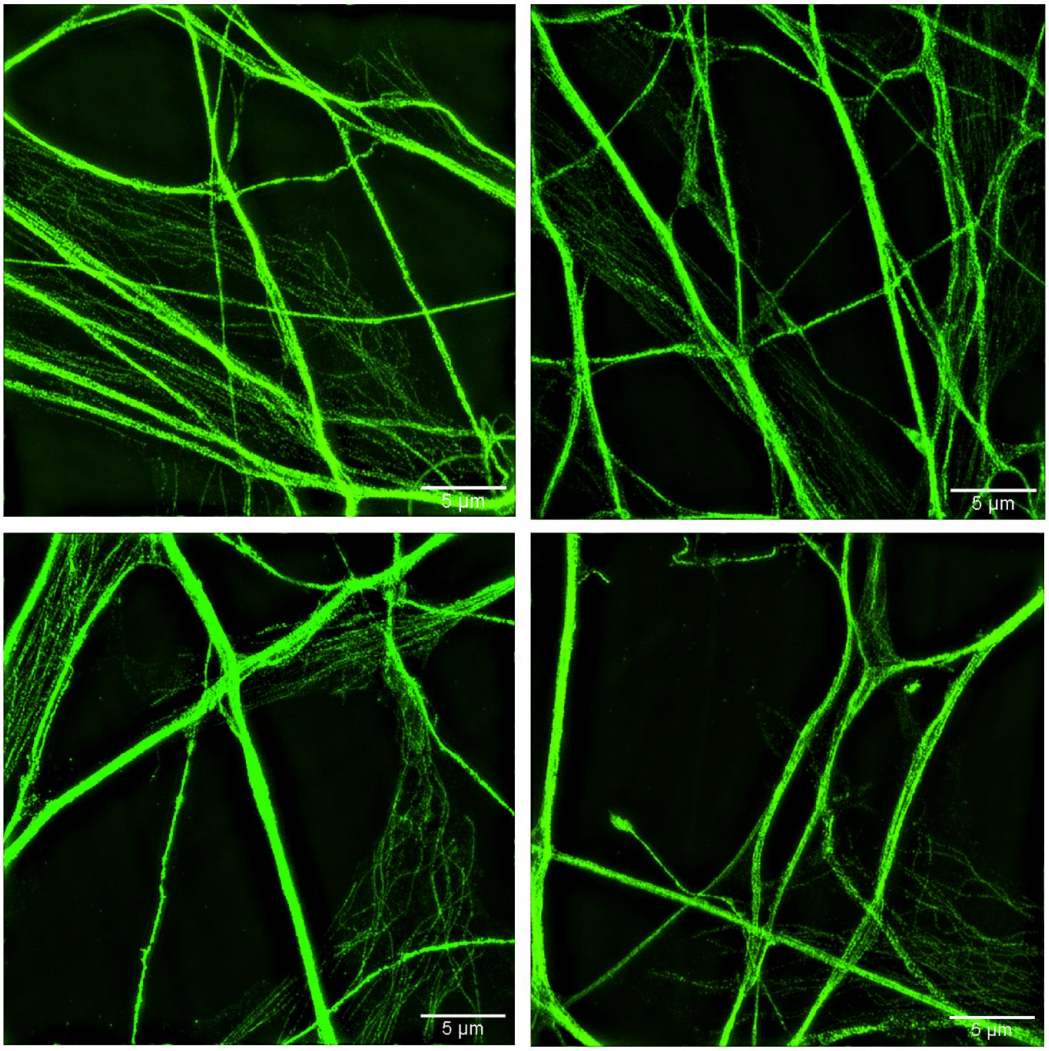
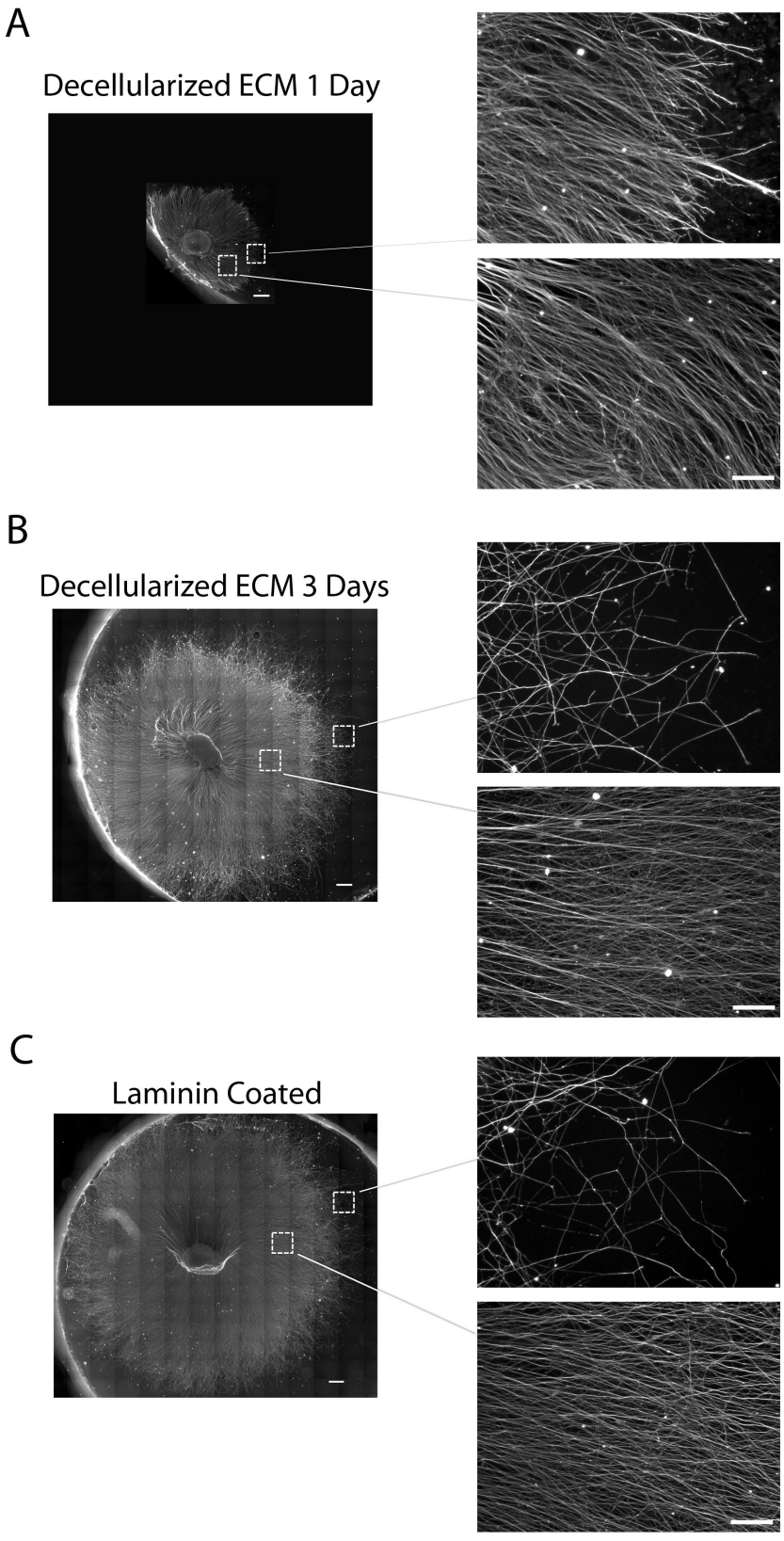


Supplemental Figure 1: (A) Schwann cells were cultured for 7 days and then stained with R457 anti-fibronectin antiserum, anti-laminin-111 antibodies, and DAPI. Laminin antibodies were kindly provided by Dr. Peter Yurchenco (Rutgers-RW Johnson Medical School, Piscataway, NJ). (B) NIH 3T3 cells grown for 4 days were stained with R457 antiserum for fibronectin and DAPI. Scale bars are 100 microns.

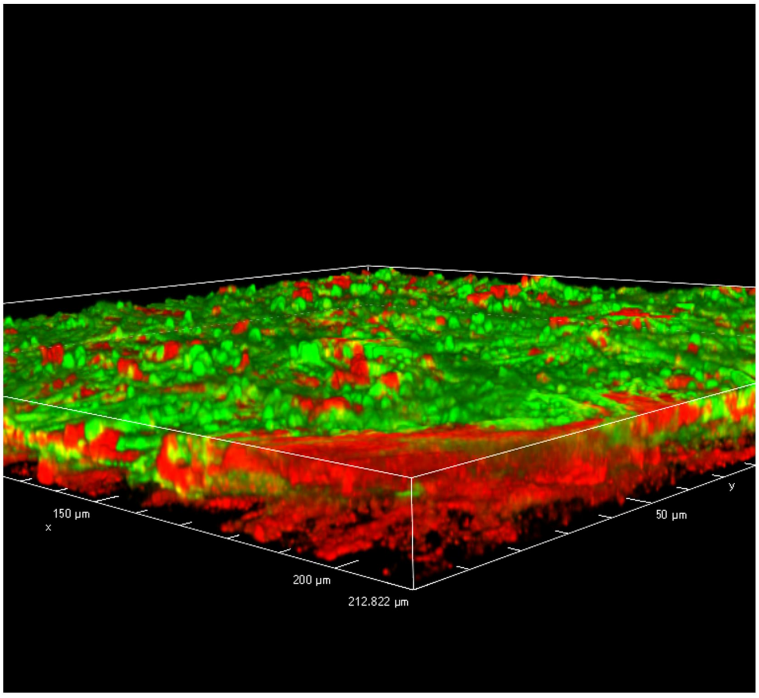


Supplemental Figure 2: Neurite morphologies on a fibronectin substrate. Images show neurites at the periphery of the outgrowth on fibronectin stained with anti-α-tubulin antibody. Images were captured using a Nikon structured illumination super-resolution microscope (N-SIM). Scale bars are 5 microns.

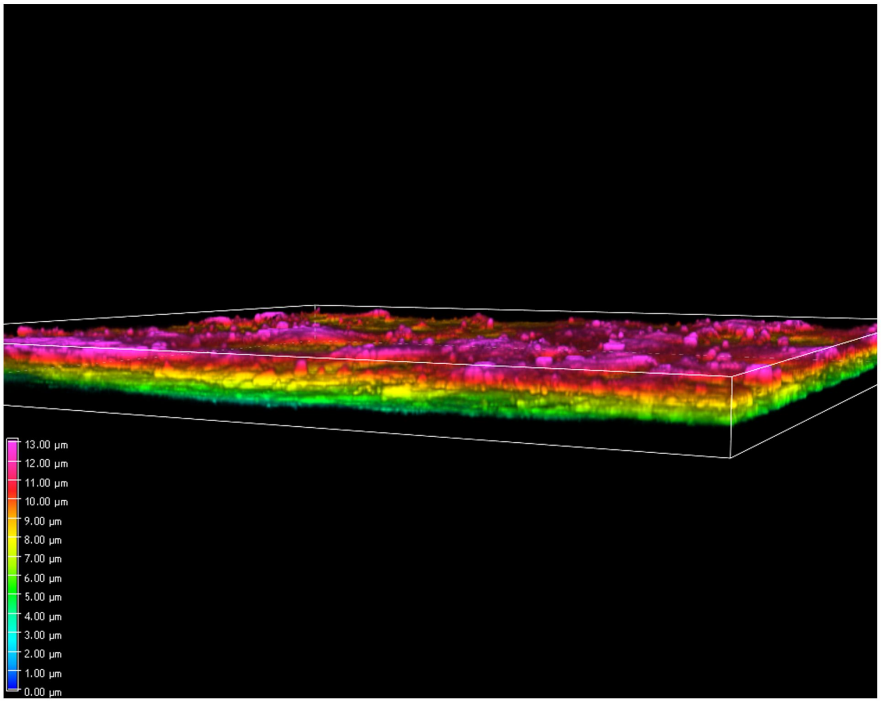


Supplemental Figure 3: Analysis of neurite outgrowth using an axon-specific antibody. SCGs were placed on the indicated substrates and cultured for 1 or 3 days to allow neurite outgrowth. SCGs on ECM were fixed and stained at (A) 1 day and (B) 3 days. (C) Laminin samples were fixed at 3 days. Samples were stained with antibodies against the axonal marker phospho-neurofilament H to observe neurite outgrowth and morphology. Scale bars on mosaics are 500 microns and magnified insets are 100 microns.

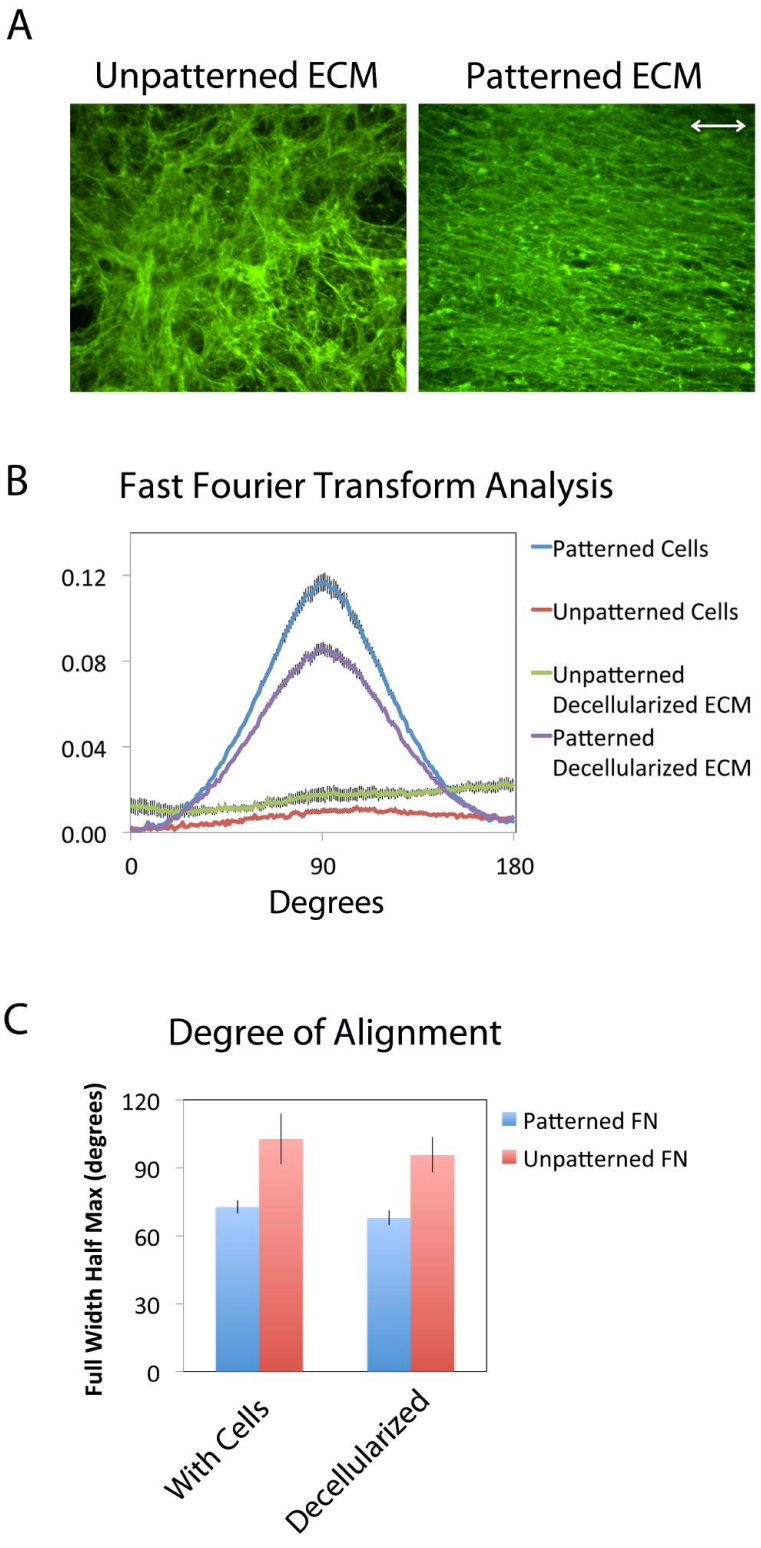
A



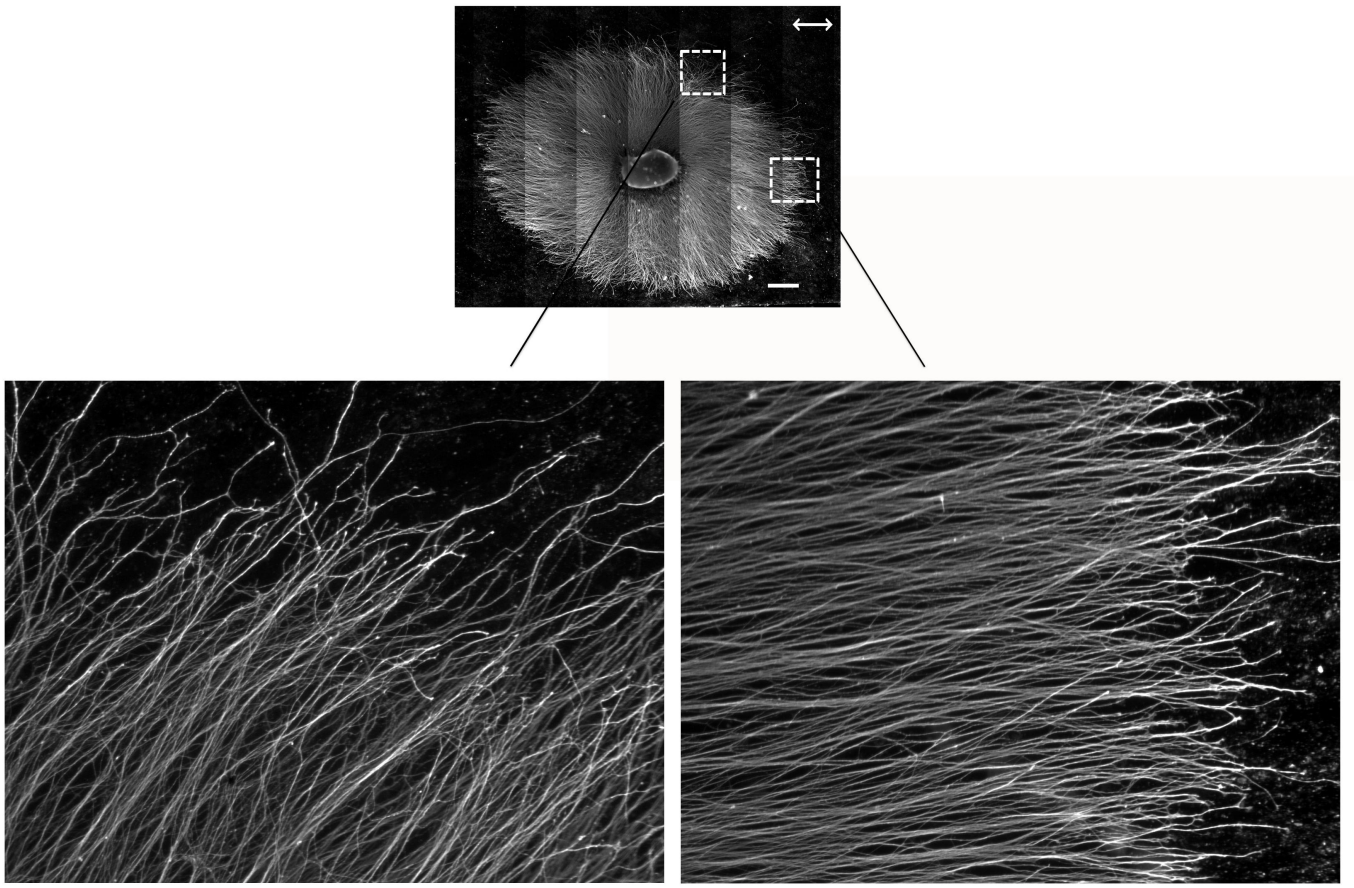
B



Supplemental Figure 4: (A) This perspective 3D view of neurites stained with anti-α-tubulin antibody (green) on decellularized ECM stained with anti-fibronectin antiserum (red) shows the density of neurites near the SCG and the presence of neurites within the ECM fibrillar network. (B) A depth-coded confocal z-stack shows only the neurites from the image in A. The region nearest the coverslip is blue and the top of the neurites is magenta. Thickness is ~13 microns.



Supplemental Figure 5: (A) NIH 3T3 cells were grown on unpatterned or patterned PET and the ECM was stained for fibronectin. Double headed arrow indicates the direction of the striped pattern. (B) FFT analyses were carried out on images of ECM stained with anti-fibronectin antibodies (as in A) either before or after decellularization. Pixel intensity plots show the range of values for 5 images from each condition. (C) FWHM values were calculated for the 5 curves in B. Averages ± standard error are graphed for matrices before (with cells) and after decellularization.



Supplemental Figure 6: SCG explant on patterned ECM. A mosaic was prepared from images captured across the culture of SCG with neurites. Insets are magnified below. Neurites aligned with the pattern (right) appear more linear compared to neurites that were initially extended perpendicular to the pattern (left).