Electronic Supplementary Material (ESI) for Lab on a Chip

Supplemental Information

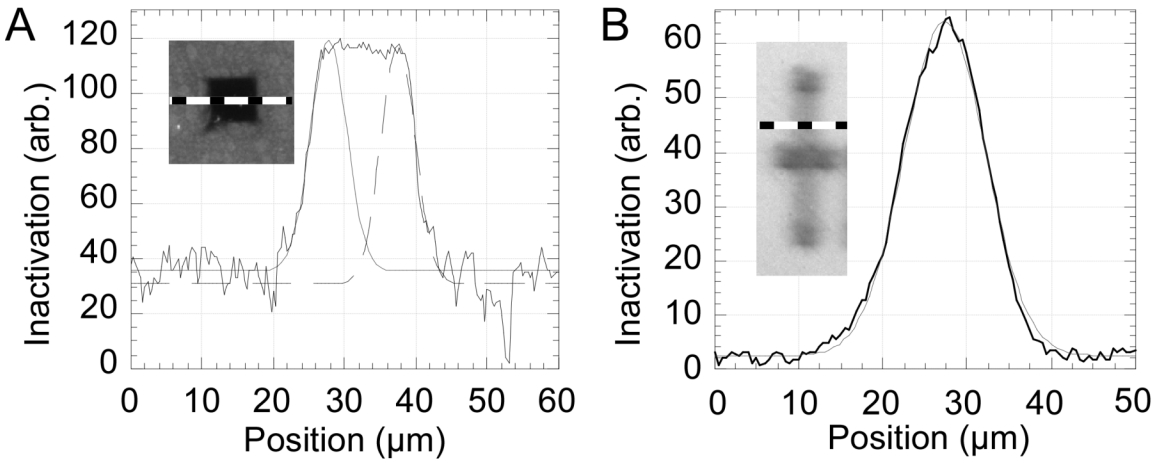

Figure S1. Inactivated features have Gaussian shaped edges. Our laser system has a rectangular aperture in the back focal plane of the objective, and the x and y sizes of that aperture are under user control. In combination with beam conditioning optics, the set-up allows uniform exposure of predefined rectangular areas. A. For apertures less than ~2 μm on a side, the profile of the inactivated area is effectively defined only by the edges. For apertures greater than ~2 μm (the smallest accessible size) on a side, the profile of the inactivated region is flat. The edges of inactivated pattern have a Gaussian profile. The left (red) and right (blue) sides of the pattern fit to Gaussians with R values of 0.969 and 0.947, respectively. B. To ensure that the Gaussian edges are not solely due to the point-spread function of the fluorescence microscope, we defocused the inactivation laser and produced an unfocused pattern. A defocused exposure through a square aperture results in a Gaussian profiles for the inactivation (black) profile. The fit (red) has R value of 0.998. The profiles were inverted for the fitting.

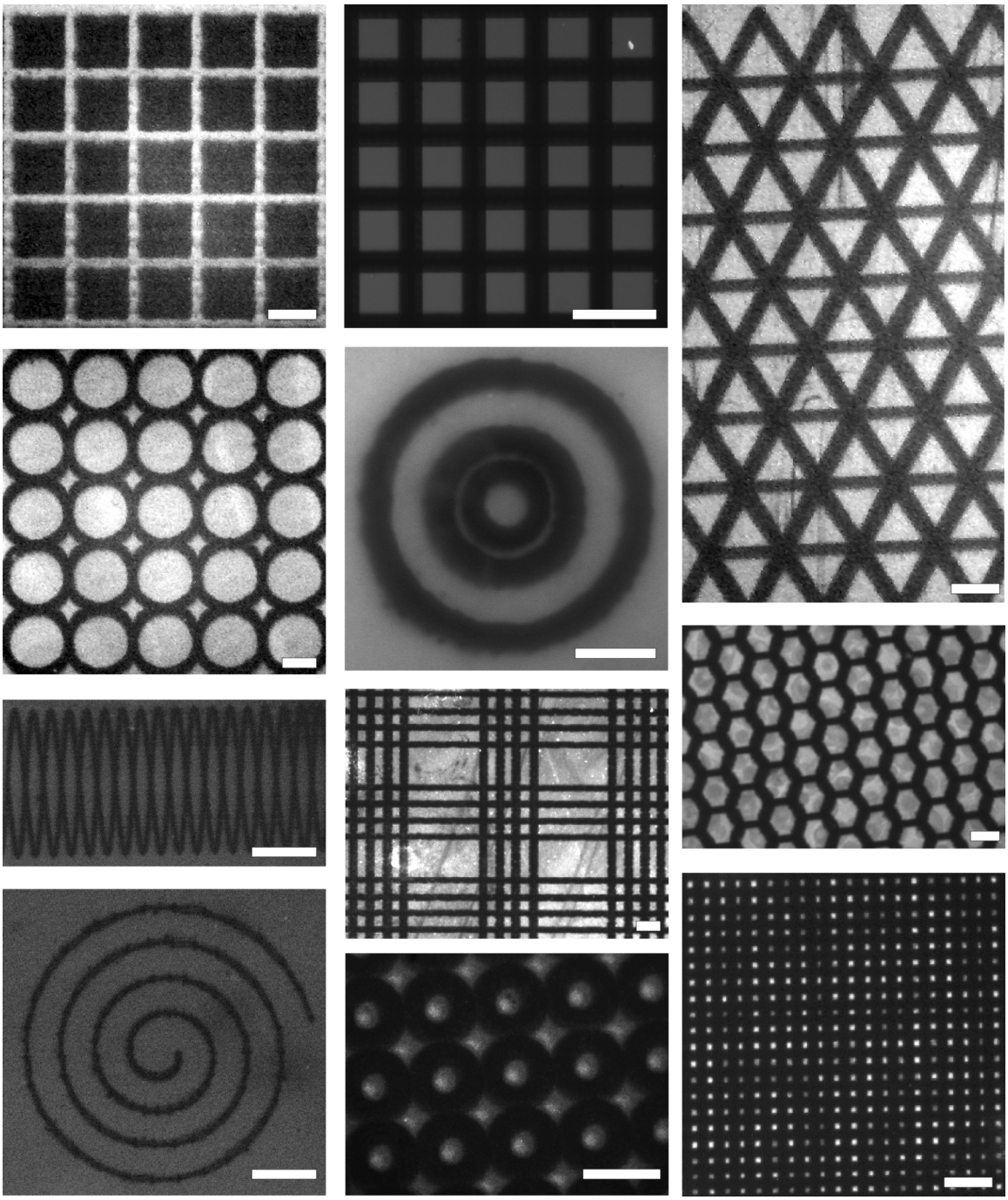

Figure S2. Examples of the variety of shapes and patterns of protein features that can be made with the laser inactivation method. Patterns are fibronectin on glass, visualized by immunofluorescence. Scale bars are 50 µm.

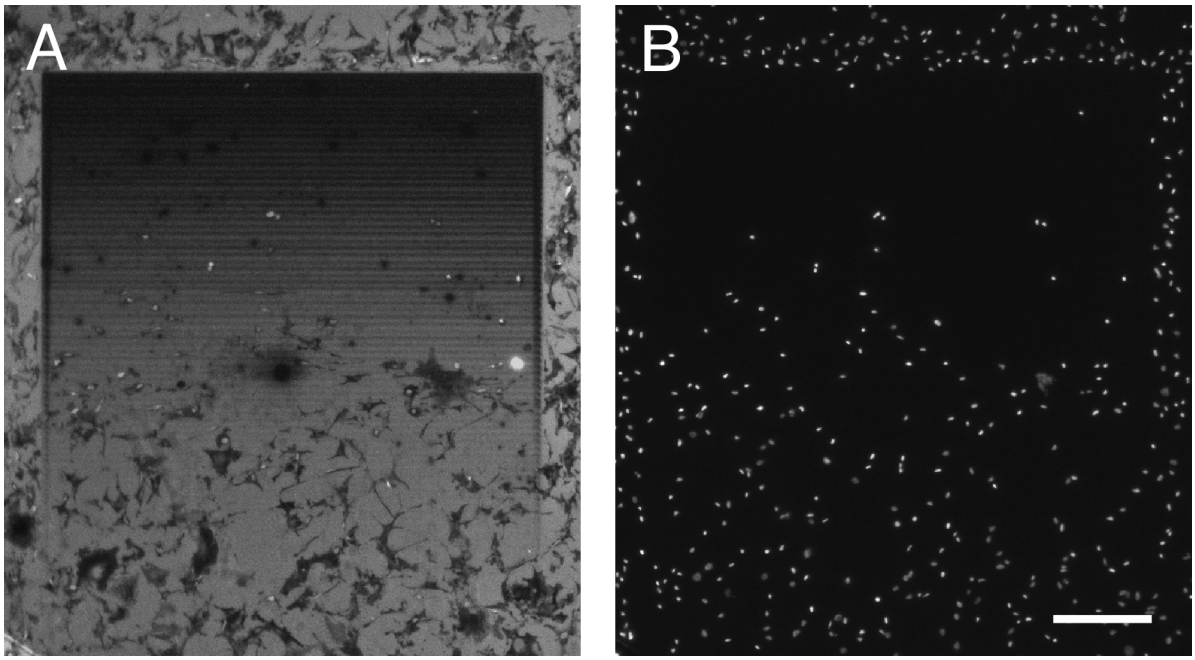

Figure S3. Swiss 3T3 cells attach in a density dependent fashion to a fibronectin gradient. A. Flourescence micrograph of the cells on a gradient stained for fibronectin. B. Fluorescence micrograph from the DAPI channel of the same image showing the nuclei, the frequency of which decreases at lower FN concentrations. Scale bar is 200 μm.