Regulation of Cell Adhesion Strength by Peripheral Focal Adhesion Distribution

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Supporting Material

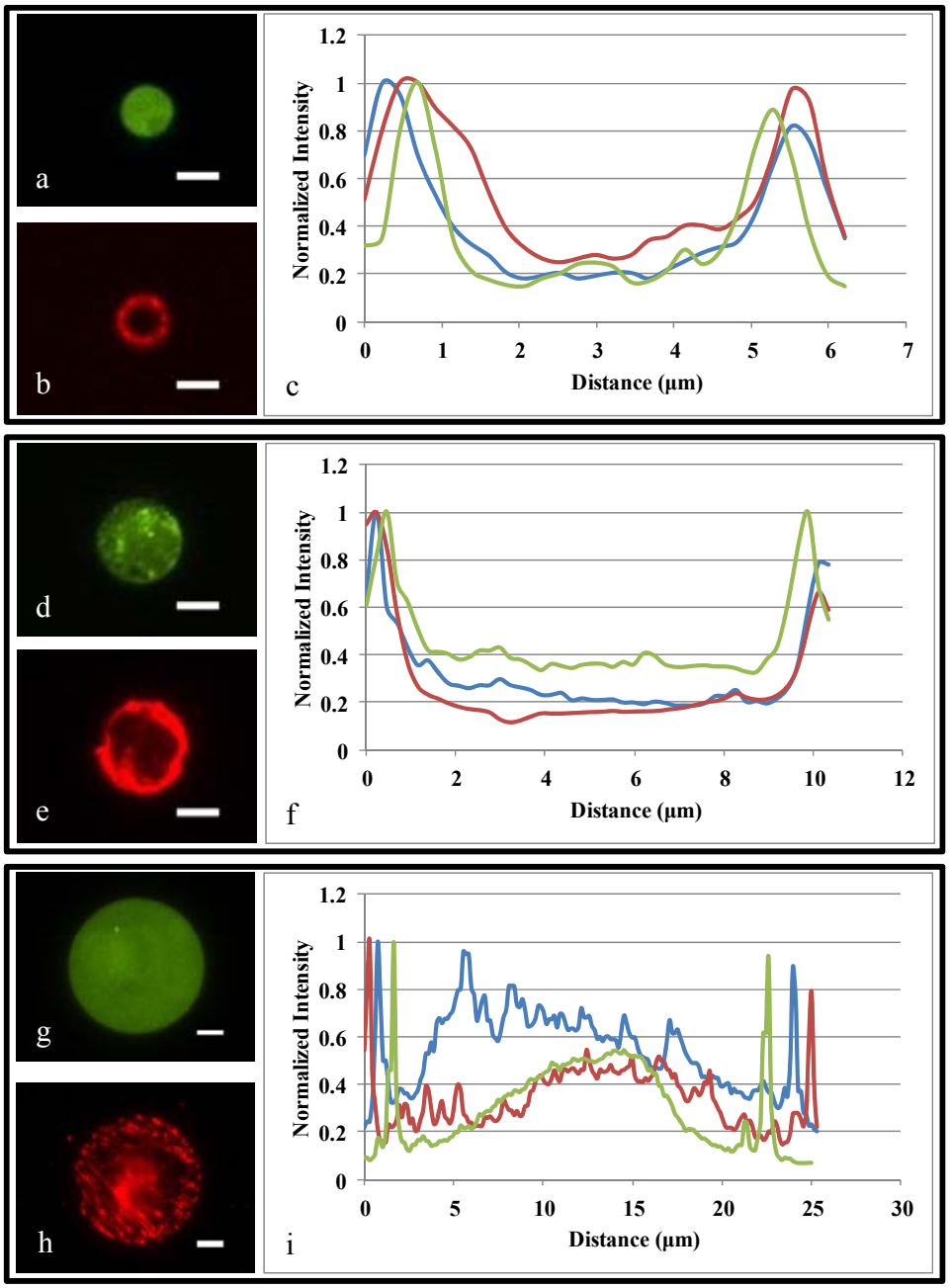

FIGURE S1 Cells on (a,d,g) fibronectin coated circular adhesive islands were immunostained to identify (b,e,h) vinculin containing adhesive structures. The variation of (c,f,g) normalized intensity (vinculin) across the diameter of circular islands for (a,b,c) 6 µm, (d,e,f) 10 µm, and (g,e,h) 25 µm diameter circular islands was quantified by image analysis. The intensity distributions have peak intensities at the periphery of the adhesive islands indicating preferential peripheral recruitment of vinculin containing adhesive structures. Immunostaining for vinculin containing adhesive structures in cells mechanically cleaved to remove cell bodies was performed as previously published (reference 5). (Bars=5 µm)

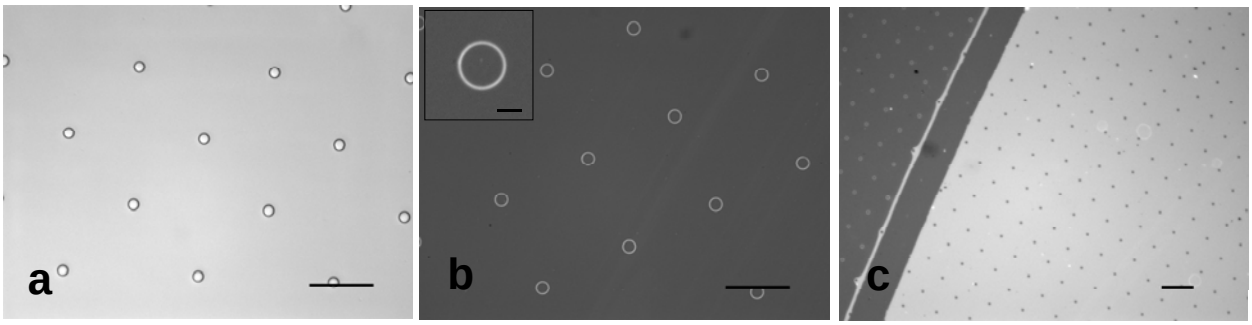

FIGURE S2 Representative images of (a) 6 μm diameter stamp features (bar=50 μm); (b) etched substrate indicating roof collapse (bar=50 μm, inset bar=5 μm); (c) successful patterning in the zone circumscribed by the annular column (bar=100 μm). Cyanide etching indicates areas of gold substrates (b,c) that have been contacted by the inked stamp (dark regions indicate ink protected gold; bright regions indicate etched gold).

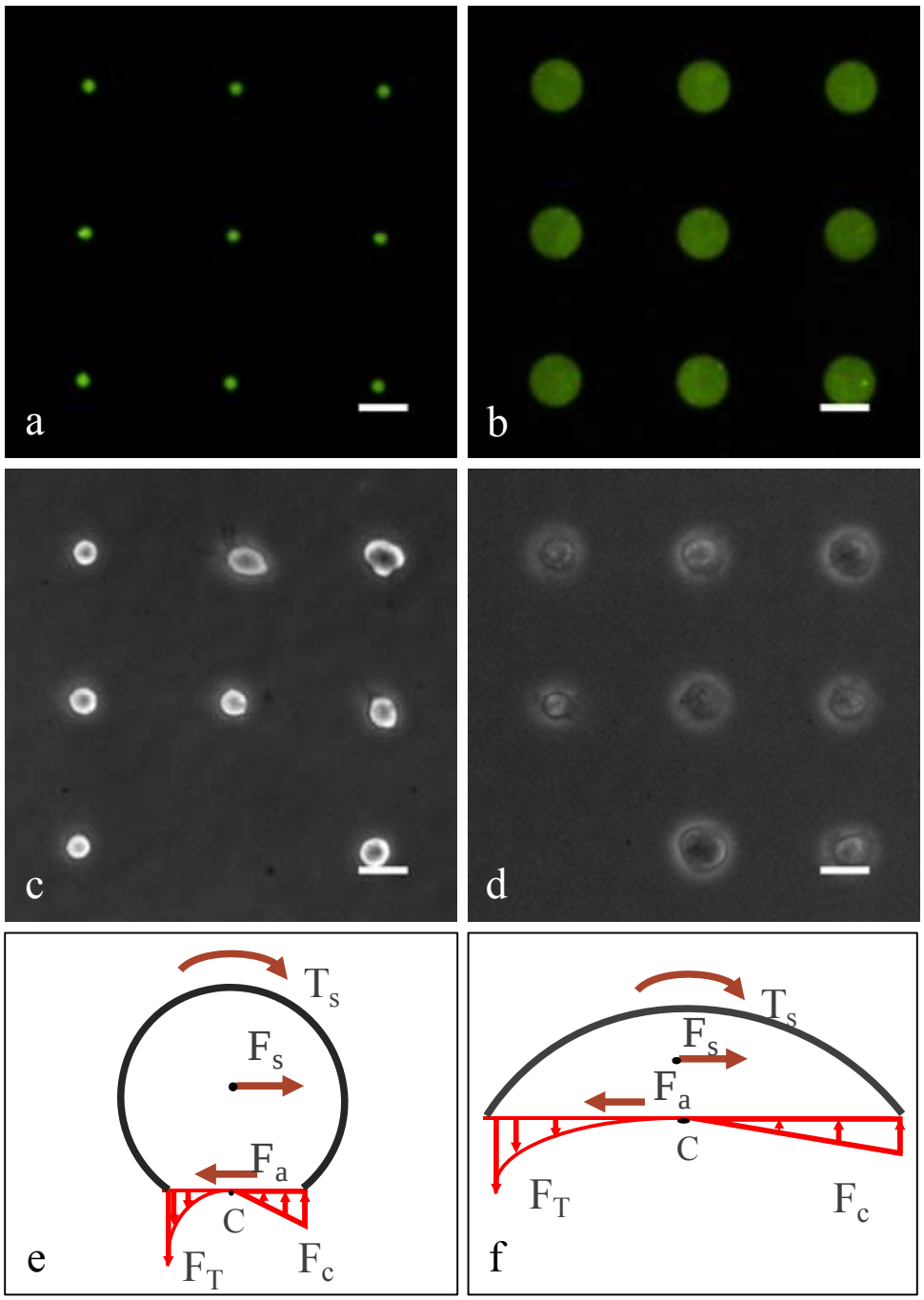

FIGURE S3 Representative images of (a) 6 µm diameter and (b) 25 µm diameter fibronectin coated adhesive islands and corresponding (c,d) phase contrast images of adherent cells indicating cell shape. Free body diagrams of cell profiles subjected to hydrodynamic flow for cells adhered to islands of diameters (e) less than and (f) greater than the native cell diameter, which represent cells in (c) and (d), and are approximately spherical and hemispherical, respectively. F_s, F_a, F_T, and F_c refer to the externally applied drag, interfacial, bound receptor, and compressive forces, respectively. T_s represents the torque on the cell, and C is the moment center of the adhesive area. (Bars=25 µm)