Large-scale Analysis of Neurite Growth Dynamics on Micropatterned Substrates

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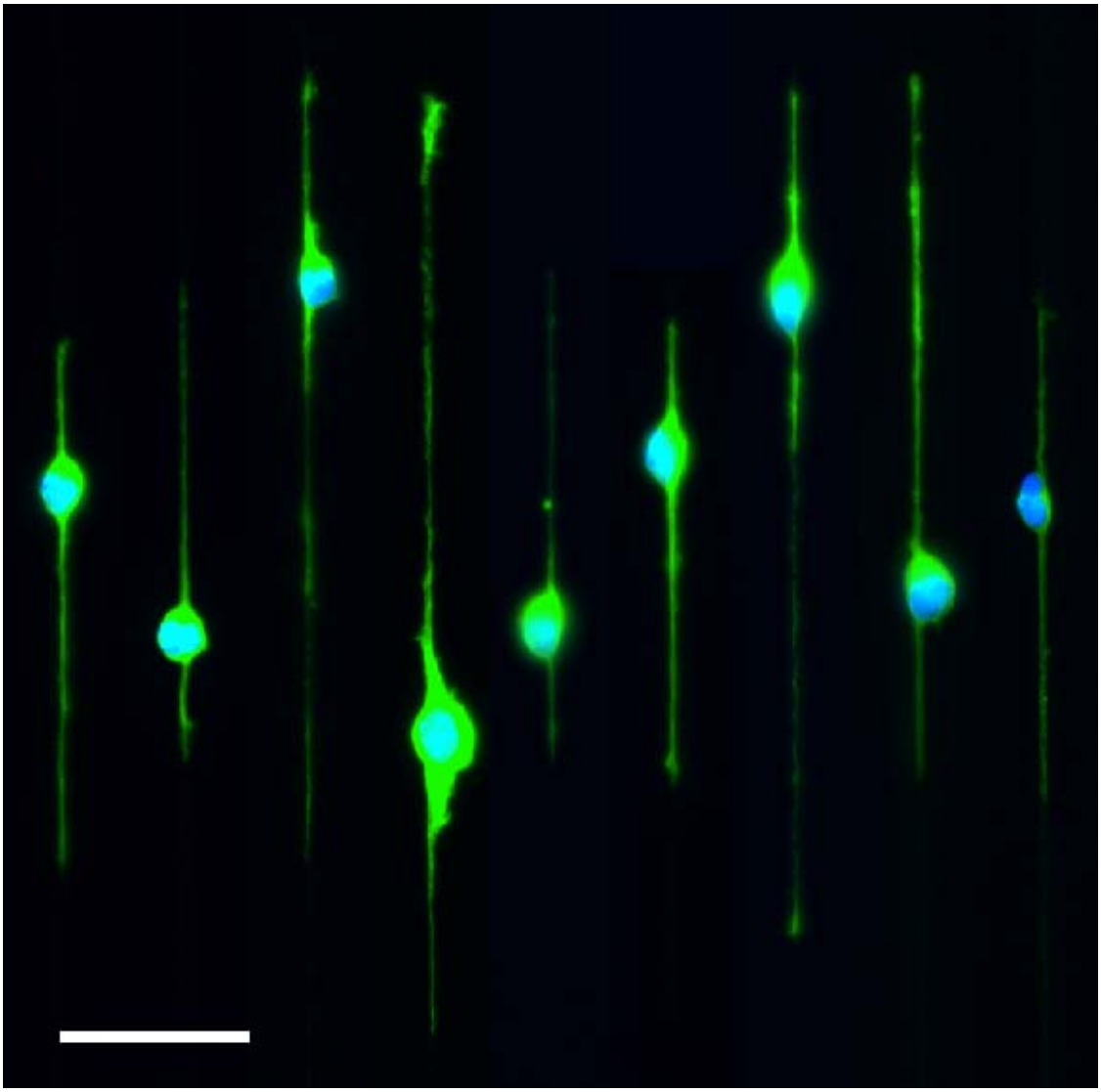

Fig. S1: Immunohistochemical staining of hippocampal neurons and their neurites. Nuclei are shown in blue (DAPI) and tubulin in green (see Methods). The average full-width at half-maximum of the tubulin profiles was 1.15 μm, and showed little variation (± 0.15 μm, SD), consistent with the diameter of single immature neurites of hippocampal neurons on two-dimensional PDL-coated surfaces (scale bar: 50 μm).

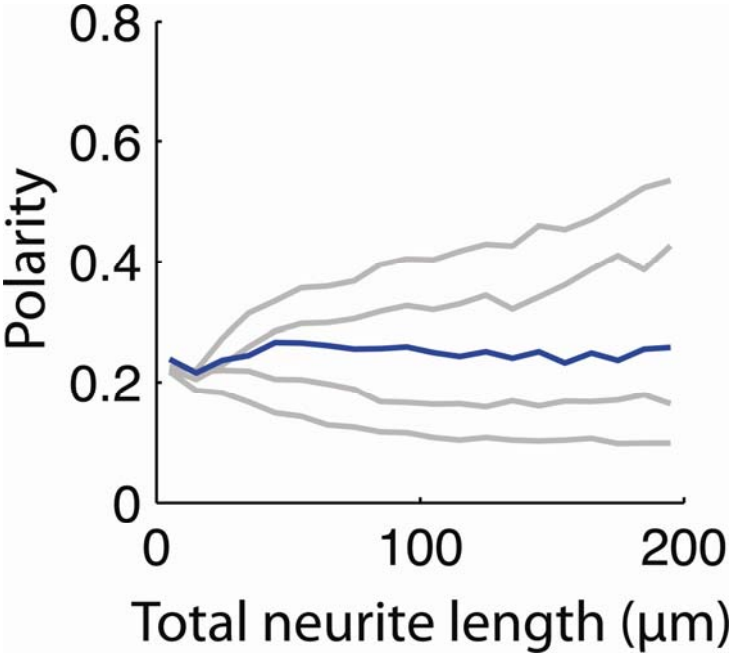

Fig. S2: Effect of vesicle trafficking rate on neuronal polarization in the Fivaz *et al.* model. Each line shows how neuronal polarity evolves as a function of total neurite length for different fixed vesicle trafficking rates. The bottom-most line was generated using a vesicle trafficking rate of 0.2 vesicles/minute, and successive lines represent increases of 0.2 vesicles/minute. The polarization diminished for the lowest three rates (0.2, 0.4, and 0.6 vesicles/minute) once the total neurite length exceeded 100 μm. For the highest two rates (0.8 and 1.0 vesicles/minute), neurons continued to polarize after 100 μm. The blue line (0.6 vesicles/minute) indicates where this behavioral transition occurs.