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Supplemental Information

**Determinants of Polar versus Nematic Organization
in Networks of Dynamic Microtubules
and Mitotic Motors**

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TABLE S1. Related to STAR Methods.

Parameter	Value	Note
<i>Simulation</i>		
Time step	0.01 s	Computational parameter. Smaller time step gave the same result.
Total time simulated	50 mins	Similar to experiments
Geometry	40 x 40 x 0.4 μm	Periodic boundary conditions in x and y-dimension. Confinement in z-dimension.
<i>Experimental chamber</i>		
Viscosity	0.2 pN s/ μm^2	ref (Letort et al., 2015)
<i>Microtubule</i>		
Rigidity	30 pN μm^2	ref (Dogterom and Yurke, 1997)
Steric radius	0.05 μm	ref (Nogales et al., 1999)
Steric force constant (κ_s)	50 pN/ μm	Constrained by strength of thermal fluctuations and force of motors.
Average length (L)	2.5 μm	
Growth rate (v_g)	0.005- 0.03 $\mu\text{m/s}$	Measured in this study.
Shrinkage rate (v_s)	0.5 $\mu\text{m/s}$	ref (Walker et al., 1988)
Catastrophe rate (k_{cat})	0.00067 - 0.012 /s	Calculated as v_g / L .
Sensitivity of growth to force (f_g)	1.67 pN	ref (Dogterom and Yurke, 1997)
Nucleation rate (k_{nuc})	0.1 /s	Time for all microtubules to nucleate is short relative to total simulation time.
<i>Motor</i>		
Motor domain		
Stall force (f_{stall})	5 pN	ref (Valentine et al., 2006)
Unbinding force (f_{unbind})	5 pN	ref (Schnitzer et al., 2000)
Maximum motor speed (v_m)	0.03 $\mu\text{m/s}$	Measured in this study.
Binding radius (r_b)	0.1 μm	Twice the steric radius so motors can bind neighbouring microtubules.
Binding rate (k_{on})	5 /s	ref (Leduc et al., 2004)
Unbinding rate from side (k_{off})	0.1 /s	From run length = 0.3 μm , (Kapitein et al., 2005)
Unbinding rate from end (k_{end})	0.1 /s	ref (Surrey et al., 2001)
Dual motor complex		
Resting length (d_m)	0.08 μm	ref (Kashina et al., 1996)
Link stiffness (κ_m)	100 pN/ μm	ref (Loughlin et al., 2010)
Discretization parameters		
MT section length	1 μm	For bending elasticity.
MT initial length (L_0)	0.025 μm	Length of MTs when nucleated.
MT minimum length	0.02 μm	Shorter MTs are deleted.