

Table S1. Model parameter values

Parameter	Description	Value(s)	Notes and References
$d_h$	Average hotspot spacing	$3.6 \mu m$	E.E.*
$T_i$	Total trail imaging time	600 s	E.E.*
$L_w$	Imaging window size	$50 - 80 \mu m$	E.E.*
$N_a$	Mean number of anterograde trails imaged	20.4	E.E.*
$N_r$	Mean number of retrograde trails imaged	14.9	E.E.*
$r$	Radius of the axon	$70 - 100 nm$	E.E.*
$D$	Diffusion coefficient of actin monomers	$6 \mu m^2/s$	McGrath et al., 1998
$L_m$	Effective actin monomer length	$2.7 nm$	Squire, 1981
$L_{ph}$	Length of the photo-activation window	$\sim 15 \mu m$	E.E.*
*E.E.: Estimated from Experiments.			

## References

McGrath, J.L., Y. Tardy, C.F. Dewey Jr., J.J. Meister, and J.H. Hartwig. 1998. Simultaneous measurements of actin filament turnover, filament fraction, and monomer diffusion in endothelial cells. *Biophys. J.* 75:2070–2078. [https://doi.org/10.1016/S0006-3495\(98\)77649-0](https://doi.org/10.1016/S0006-3495(98)77649-0)

Squire, J. 1981. The Structural Basis of Muscular Contraction. Plenum Press, New York. 698 pp.