

# Imaging Dendritic Spines in *Caenorhabditis elegans*

 Andrea Cuentas-Condori<sup>1</sup>, D. M. Miller III<sup>1,2</sup>
<sup>1</sup>Department of Cell and Developmental Biology, Vanderbilt University <sup>2</sup>Program of Neuroscience, Vanderbilt University

## Corresponding Author

 D. M. Miller  
 david.miller@vanderbilt.edu

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jove.com/video/62676

## Materials

Name	Company	Catalog Number	Comments
All-trans retinal (ATR)	Sigma-Aldrich	R2500-100MG	Necessary cofactor for neuronal excitation with Chrimson
diH <sub>2</sub> O	MilliQ		To prepare M9 buffer
Ethanol 100%	Sigma	64-17-5	To dilute ATR and make control plates for neuronal excitation
Ethyl 3-aminobenzoate methanesulfonate salt (tricaine)			To immobilize animals for imaging dendritic spines
ImageJ	NIH	(Schindelin J et al., 2012)	Open source image processing software
KH <sub>2</sub> PO <sub>4</sub>	Fisher Bioreagents	7758-11-4	To prepare M9 buffer
Levamisole hydrochloride	Sigma	16595-80-5	To immobilize animals for imaging dendritic spines
MgSO <sub>4</sub>	Fisher Chemical	M63-500	To prepare M9 buffer
Microscope cover glass	Fisherbrand	12542B	To mount animals for microscopy acquisition
Na <sub>2</sub> HPO <sub>4</sub>	Fisher Scientific	S369-500	To prepare M9 buffer
NaCl	Fisher Chemical	S671-3	To prepare M9 buffer
NIS Elements version 05.21	Nikon		To analyze images and movies (e.g., Deconvolution, image alignment)
Polybeads carboxylate 0.05um microspheres	Polysciences, Inc	15913-10	To immobilize animals for imaging Ca <sup>++</sup> transients
Prism			For statistical analysis and graphing normalized Ca <sup>++</sup> transients
SeaKen ME agarose	Lonza	50014	To make agarose pads to mount animals for imaging
Super Glue	The gorilla company		To immobilize animals for imaging Ca <sup>++</sup> transients
Superfrost microscope slides	Fisherbrand	22-034-980	To mount animals for microscopy acquisition
vaseline	Covidien	8884430300	To seal sample for confocal snapshots
Wax	Fisherbrand	23-021-399	Paraplast tissue embedding medium
<b>Microscope for super-resolution imaging</b>			

LSM880	Zeiss		
AiryScan detector	Zeiss		
Plan Apochromat (oil) 63x/ 1.40 NA, WD = 0.19 mm			
Laser lines			
Stage controller			
<b>Microscope for Nyquist image acquisition</b>			
A1R Confocal	Nikon		
Plan Fluor (oil) 40x/1.3 NA, WD 0.24 mm			
488 nm, 16mW			
561 nm, 17mW			
<b>Microscope to monitor evoked Ca<sup>+</sup> transients in dendritic spines</b>			
Spinning Disk Confocal	Nikon		
Andor DU-897 EMCCD camera			
Spinning disk Head CSU-X1	Yokogawa		
Apo TIRF (oil) 100x/1.49 NA ,WD 0.12 mm			
488 nm, 65mW			
561 nm, 86mW			
525 nm (+/- 18 nm)			
605 nm (+/- 35 nm)			