

# Analyses of Actin Dynamics, Clutch Coupling and Traction Force for Growth Cone Advance

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jove.com/video/63227

## Materials

Name	Company	Catalog Number	Comments
0.5% trypan blue stain solution	Nacalai	29853-34	
3-aminopropyltrimethoxysilane	Sigma	281778-100ML	
Acrylamide monomer	Nacalai	00809-85	
Ammonium persulphate	Cytiva	17-1311-1	
Axio Observer Z1	Zeiss	431007-9902-000	Epi-fluorescence microscope (single speckle imaging)
B-27 supplement (50x)	Thermo Fisher Scientific	17504-044	
Bovine serum albmine	Sigma	A7906-10G	
C-Apochromat 63x/1.2 W Corr	Zeiss	421787-9970-799	Objective lens (traction force microscopy)
Coverslip (diameter 18 mm)	Matsunami	C018001	
D-glucose	Nacalai	16806-25	
DNaseI	Sigma	DN25-100MG	
Fetal bovine serum	Thermo Fisher Scientific	10270-106	
Fiji	Open source software package	<a href="https://imagej.net/software/fiji/">https://imagej.net/software/fiji/</a>	
FluoSpheres carboxylate-modified 0.2 mm, red (580/605), 2% solid	Thermo Fisher Scientific	F8810	carboxylate-modified microspheres
Glass bottom dish (14 mm diameter)	Matsunami	D1130H	
Glass bottom dish (27 mm diameter)	Matsunami	D1140H	
Glutaraldehyde solution	Sigma	G5882-10X10ML	
HaloTag TMR ligand	Promega	G8251	
HBO103 W/2	Osram	4050300382128	Mercury lamp (single speckle imaging)
Image Processing Toolbox	MathWork	<a href="https://www.mathworks.com/products/image.html">https://www.mathworks.com/products/image.html</a>	
Laminin solution from mouse EHS tumor	Wako	120-05751	
Leibovitz's L-15 medium	Thermo Fisher Scientific	11415064	
L-glutamine	Nacalai	16919-42	

LSM710	Zeiss	N/A	Conforcal laser microscope (traction force microscopy)
MATLAB2018a	MathWork	<a href="https://www.mathworks.com/products/new_products/release2018a.html">https://www.mathworks.com/products/new_products/release2018a.html</a>	
Mouse C57BL/6	Japan SLC	N/A	
Mouse neuron nucleofector kit	Lonza	VPG-1001	
N,N,N',N'-tetramethylethylenediamine (TEMED)	Nacalai	33401-72	
N,N'-methylenebisacrylamide	Nacalai	22402-02	
Neurobasal medium	Thermo Fisher Scientific	21103-049	
Nucleofector I	Amaza	AAD-1001	Electroporation apparatus
ORCA Flash 4.0 V2	Hamamatsu	C11440-22CU	CMOS camera (single speckle imaging)
Papain	Nacalai	26036-34	
Parallel Computing Toolbox	MathWork	<a href="https://www.mathworks.com/products/parallel-computing.html">https://www.mathworks.com/products/parallel-computing.html</a>	
pEGFP-C1	Clontech	1528177	
Penicillin-streptomycin (100x)	Nacalai Tesque	26253-84	
pFN21A-HaloTag-actin	(Minegishi et al., 2018)	N/A	
Phosphate buffered saline (PBS) pH 7.4 (10x)	Thermo Fisher Scientific	70011-044	
Plan-Apochromat 100x/1.4 Oil	Zeiss	420790-9901-000	Objective lens (single speckle imaging)
pmNeonGreen-N1-Lifeact	(Kastian et al., 2021)	N/A	
Poly-D-lysine hydrobromide	Sigma	P6407-5MG	
Slulfo-SAMPHA	Thermo Fisher Scientific	22589	
Sodium dodecyl sulfate	Nacalai	08933-05	
Sodium hydrate (NaOH)	Nacalai	31511-05	
Steel ball	Sako tekkou	N/A	Microshpere to determin PAA gel rigidity. 0.6 mm diameter, 7.87 g/cm <sup>3</sup> .
ZEN2009	Zeiss	<a href="https://www.zeiss.com/microscopy/us/products/microscope-software/zen.html#introduction">https://www.zeiss.com/microscopy/us/products/microscope-software/zen.html#introduction</a>	Image acquisition software (traction force microscopy)
ZEN2012	Zeiss	<a href="https://www.zeiss.com/microscopy/us/products/microscope-software/zen.html#introduction">https://www.zeiss.com/microscopy/us/products/microscope-software/zen.html#introduction</a>	Image acquisition software (single speckle imaging)