

Materials List for:

A Simple, Robust, and High Throughput Single Molecule Flow Stretching Assay Implementation for Studying Transport of Molecules Along DNA

Kan Xiong^{1,2}, Paul C. Blainey^{1,2}

¹Broad Institute, Massachusetts Institute of Technology and Harvard Medical School

²Dept. of Biological Engineering, Massachusetts Institute of Technology

Correspondence to: Paul C. Blainey at pblainey@broadinstitute.org

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Materials

Name	Company	Catalog Number	Comments
Biotin labeled oligo, 5'-AGGTCGCCGCC(A) ₂₀ -biotin-3'	IDT	Custom oligo synthesis	Standard desalting purification is sufficient
λ-DNA	New England Biolabs Inc.	N3011S	Make aliquots and minimize freeze-thaw cycle number
T4 DNA ligase and ligation reaction buffer	New England Biolabs Inc.	M0202S	
Amicon centrifugal filter tubes with NMWL of 100k Dalton	EMD Millipore	UFC510008	
No. 1 glass coverslips	VWR	48393-106	
Pure ethanol	VWR	89125-186	
Potassium hydroxide pellets	Fisher Scientific	P250-500	
Plasma cleaner, model No. PDC-32G	Harrick Plasma		
Silane-peg-biotin	Nanocs	PG2-BNSL-5k	Store at -20°C in dry nitrogen gas
A CAD software	Autodesk	AutoCAD	
Double-adhesive tape	Adhesive Applications	8512-2-DP/DL	
Tape cutter, model No. CE5000-40-CRP	Graphtec America		
PDMS and crosslink reagent kit	R.S. Hughes	RTV615 CLEAR 010	
Degassing chamber, model No. F42010-0000	BEL-ART Products		
Mixer, model No. ARV-310	Thinky		
Hole puncher, Harris Uni-Cores, Size 0.5 mm	Harris Uni-Cores		This can be substituted with a manual biopsy punch with a similar needle size
Tygon tubing	Cole Parmer	EW-06420-02	0.020" ID, 0.060"OD
Peek tubing	Western Analytical	PK007-031-Y	0.007" ID, 0.031"OD
Streptavidin	New England Biolabs Inc.	N7021S	
Bovine serum albumin (BSA)	New England Biolabs Inc.	B9000S	
Sytox orange nucleic acid stain	Invitrogen	S11368	
Ti-E Microscope	Nikon		Microscope, camera, objective, dichroic mirror and bandpass filter can be substituted for similar equipment
100x Objective, NA/1.49, CFI Apo TIRF	Nikon		
CMOS camera	Hamamatsu	Orca Flash 4.0	

Dichroic mirror	Semrock	FF560/659-Di01-25x36	
Bandpass filter	Semrock	FF01-577/690-25	
532 nm laser	Rayscience Innovation Limited, Shanghai	OEMLL-FN-532nm-C	Select wavelength to correspond to stain of choice
Syringe pump	Chemxy	Fusion 200	
TMR-KRRR, >=85% purity	MIT Biopolymer lab		
pVlc-Cy3B, HPLC purified	A gift from Dr. Walter Mangel at Brookhaven National lab		
Script programming software	MathWorks	Matlab	
* see parts list for solenoid valves, computer interface, and assembly instructions at: https://sites.google.com/site/rafaelsmicrofluidicspage/valve-controllers			