

A Method to Study the Correlation Between Local Collagen Structure and Mechanical Properties of Atherosclerotic Plaque Fibrous Tissue

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jove.com/video/64334

Materials

Name	Company	Catalog Number	Comments
10 mm extension ring	Thorlabs Inc.	CML10	
15 mL tube	VWR	525-0150	
20x APO water immersion objective	Leica	507701	
3D Slicer software	N/A	Version 4.11	
50 mL tubes	VWR	525-0156	
Airbrush pistol AB 430- nozzle diameter 0.3 mm	Conrad	4.01614E+12	
Blackout, Nylon Fabric with Polyurethane Coating	Thorlabs		
Black tissue dye	Polysciences inc	24113-2	
Camera lens, focal length 50 mm	Thorlabs Inc.	MVL50M1	
Camera stand	VWR	241-0093, 241-7311	
Chameleon Ultra multiphoton laser	Coherent		
Compressor + air hose	JUN-AIR, Conrad	B07GB9HC62, 4016138577198	
Excel	Microsoft	Version 2208	
Foam tape double-sided, 1.9 x 150 cm	Pattex		
Heating bath	N/A		Custom made
High-speed camera + imaging software	Pixelink-Navitar Inc.	PL-D725	
Human carotid atherosclerotic plaques (from carotid endarterectomy surgery)	N/A		
Image J	National Institute of Health	N/A	

LAS-AF	Leica	Version 2.3	Imaging software multiphoton microscope
LEICA TCS SP5 II	Leica		Microscope used for SHG imaging
Lighting system	AMZ instruments	LED-60TB	Used to obtain clear images with the high-speed camera
MATLAB	MathWorks	Version R2021A	
MATLAB-based FibLab software	Eindhoven University of Technology	N/A	
MATLAB-based FOA (Fibre Orientation Analysis) tool	Eindhoven University of Technology	N/A	
MATLAB-based Ncorr software	Georgia Institute of Technology	Version 1.2	
Needles	Emerald	BDAM302986	
Petri dish (10 cm diameter)	VWR	BRND452000	
Parafilm	VWR	291-1214	
Pasteur Pipettes	VWR	ELKA127-P511-000	
Quantum GX2 Micro computed tomography (μ CT) scanner + X-ray filter of Cu 0.06 mm + Al 0.5 mm	PerkinElmer	CLS149276	
Ruler	Fine Science Tools	1800030	
Sandpaper (P180)	Conrad	4.00932E+12	
Side cutter	Conrad	4.25084E+12	
Silicon elastomer base and curing agent (Sylgard 184)	VWR	634165S	
Tensile tester + software + clamps	N/A		Made in-house using a cylindrical linear actuator (EACM2E10AZAK, Oriental Motor Ltd.), and a 10 N load cell (LCMFD-10N, Omega Engineering Inc.)
Torque screwdriver	Garant, Hoffman group	659906	