

Materials List for:

Use of the Ramsay Assay to Measure Fluid Secretion and Ion Flux Rates in the *Drosophila melanogaster* Malpighian Tubule

Jeffrey N. Schellinger¹, Aylin R. Rodan¹

¹Department of Internal Medicine, University of Texas Southwestern Medical Center

Correspondence to: Aylin R. Rodan at Aylin.Rodan@utsouthwestern.edu

URL: <https://www.jove.com/video/53144>

DOI: [doi:10.3791/53144](https://doi.org/10.3791/53144)

Materials

Name	Company	Catalog Number	Comments
Sylgard 184 Silicone Elastomer Kit	Ellsworth Adhesives	http://www.ellsworth.com/dow-corning-sylgard-184-silicone-encapsulant-0-5kg-kit-clear/	May be purchased from multiple distributors
Petri dish, polystyrene, 100 mm x 15 mm	Fisher	FB0875712	Specific brand is not important
Petri dish, polystyrene, 35 mm x 10 mm	Corning Life Sciences	Fisher 08-757-100A	Specific brand is not important
Scalpel Handle #3	Fine Science Tools	10003-12	Specific brand is not important
Scalpel Blades #1	Fine Science Tools	10011-00	Specific brand is not important; use appropriate sharps precautions
Needle, 30 G x 1/2	Becton Dickinson	305106	Use appropriate sharps precautions
Minutien pins, black anodized, 0.15 mm	Fine Science Tools	26002-15	
Stereomicroscope with ocular micrometer	Nikon	SMZ800	Specific brand is not important; this is given as an example
Sheet of black stained glass, 3 mm (1/8 inch) thick	Hobby shop		Example includes Spectrum Black Opal by Spectrum Glass (http://www.delphiglass.com/spectrum-glass/opalescent/spectrum-black-opal)
Glass cutting tools (glass cutter, glass cutting pliers)	Hobby shop		Examples include the Studio Pro Lightweight Running Pliers by Diamond Tech (http://www.delphiglass.com/glass-cutters-tools/pliers-nippers/studio-pro-lightweight-running-pliers) and the Studio Pro Brass Glass Cutter by Diamond Tech (http://www.delphiglass.com/glass-cutters-tools/glass-cutters/studio-pro-brass-glass-cutter). Use appropriate safety precautions when cutting glass
Borosilicate glass capillary tube, unfilamented, GC120-10, OD 1.2 mm, ID 0.69 mm, length 10 cm	Warner Instruments	30-0042	
Borosilicate glass capillary tube, filamented, GC120F-10, OD 1.2 mm, ID 0.69 mm, length 10 cm	Warner Instruments	30-0044	
Nitric acid, 70%	Sigma	438073	CAUTION: see Material Data Safety Sheet for appropriate storage and handling guidelines. Specific brand is not important

Cimarec 7 in x 7 in hotplate	Fisher	11675911Q	Specific brand is not important; caution when heated
Selectophore dichlorodimethylsilane	Sigma	40136-1ML	CAUTION: see Material Data Safety Sheet for appropriate storage and handling guidelines
Two-step vertical pipet puller	Narishige	PC-10	Other pipet pullers can be used; this is given as an example
Glass petri dish, 150 mm diameter x 15 mm height	Fisher	08-748E	Specific brand is not important; only one dish needed
World Precision Instruments E210 1 mm micropipette storage jar	Fisher	50-821-852	May be available from other distributors. Useful to have two jars. Note that although this jar is specified for 1 mm pipets, and the pipets used here are 1.2 mm, in our experience the 1 mm jar works best for the 1.2 mm pipets.
Silica Gel, Tel-Tale Desiccant, indicating, 10-18 mesh	Fisher	S161-500	Indicating silica useful for determining whether silica gel retains desiccating ability
World Precision Instruments MicroFil, 34G	Fisher	50-821-914	May be available from other distributors.
1 ml syringe with luer lock	Becton Dickinson	309659	May be available from other distributors.
3 ml syringe with luer lock	Becton Dickinson	309657	May be available from other distributors.
D300 3-way stopcock with female luer lock inlet port, male luer outlet port with rotating collar and guard	Cole-Parmer	UX-30600-02	Specific brand is not important
Female Luer Locking Connector	4 Medical Solutions	ADC 9873-10	Specific brand is not important; barbed end is ~4 mm at narrowest point and ~7 mm at widest point.
Silicone Tubing I.D. x O.D. x Wall: 1/16 x 1/8 x 1/32 in. (1.59 x 3.18 x 0.79 mm)	Fisher	14-179-110	Specific brand is not important
E-3603 tubing, I.D. x O.D.: 1/32 x 3/32 in	Fisher	14171208	Specific brand is not important
Modeling clay			Specific brand is not important
Selectophore potassium ionophore I, cocktail B	Sigma	99373	CAUTION: see Material Data Safety Sheet for appropriate storage and handling guidelines
Selectophore sodium ionophore X	Sigma	71747	Sodium ionophore X = 4-tert-butylcalix[4]arene-tetraacetic acid tetraethylester
Selectophore 2-nitrophenyl octyl ether	Sigma	73732	
Selectophore sodium tetraphenylborate	Sigma	72018	CAUTION: see Material Data Safety Sheet for appropriate storage and handling guidelines
Schneider's Drosophila medium	Life Technologies	21720024	
High impedance electrometer	World Precision Instruments	FD223a	
Microelectrode holder 1 mm with 45° body, vented, with handle	Warner Instruments	64-1051	
Microelectrode holder 1 mm with straight body, vented	Warner Instruments	64-1007	
Silver wire	Warner Instruments	64-1318	
Micromanipulators, pair	Leitz		Various brands/models will work; this is an example

Faraday cage	Technical Manufacturing Corporation	81-334-03	This is an example; any Faraday cage will work
Single gooseneck fiberoptic light	Nikon		Specific brand is not important
mineral oil	Fisher	BP-2629	Specific brand is not important
forceps, Dumont #5 with Biologie tip	Fine Science Tool	11295-10	May be available from other distributors.