

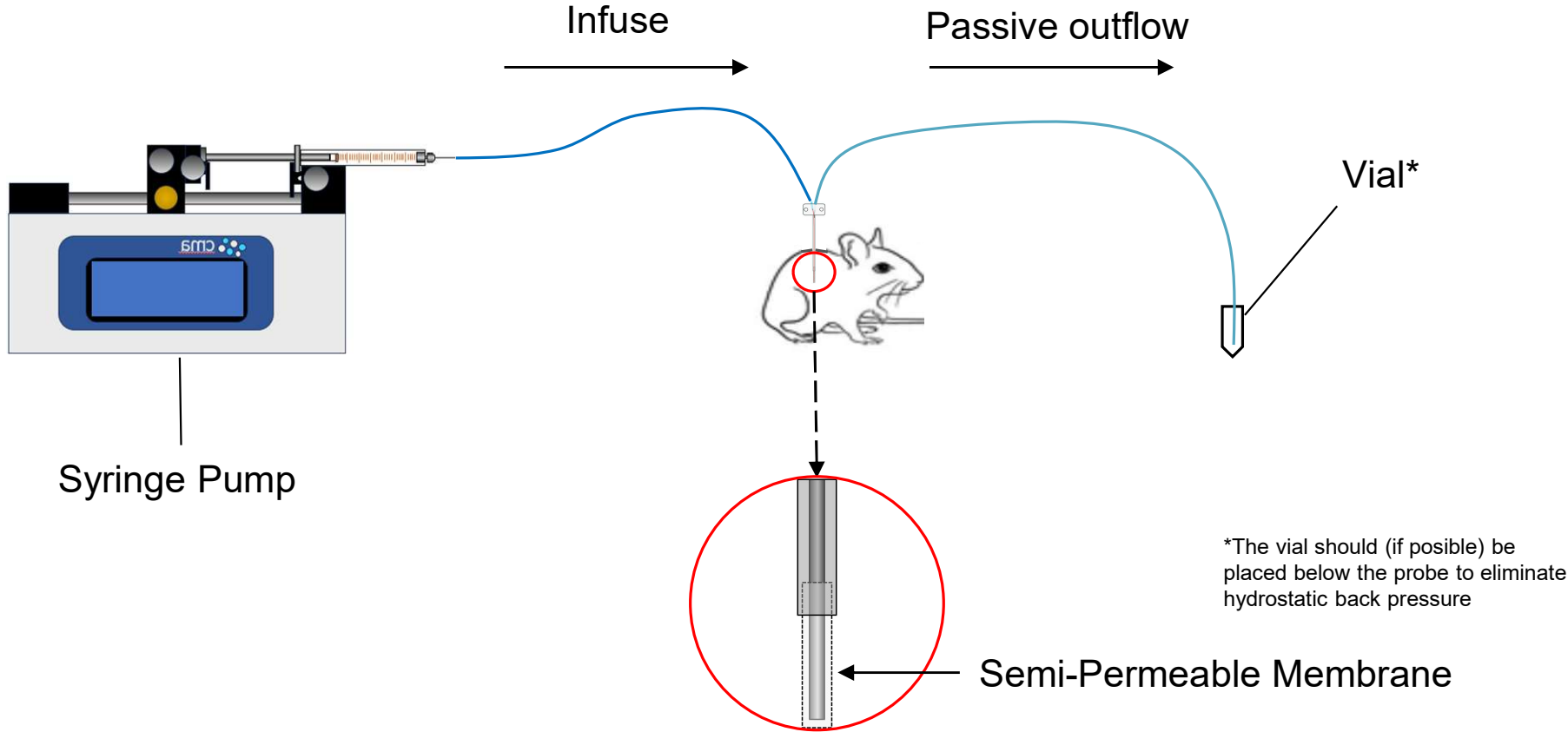


Microdialysis for Mice

Cage, probes, guides & instructions



Introduction

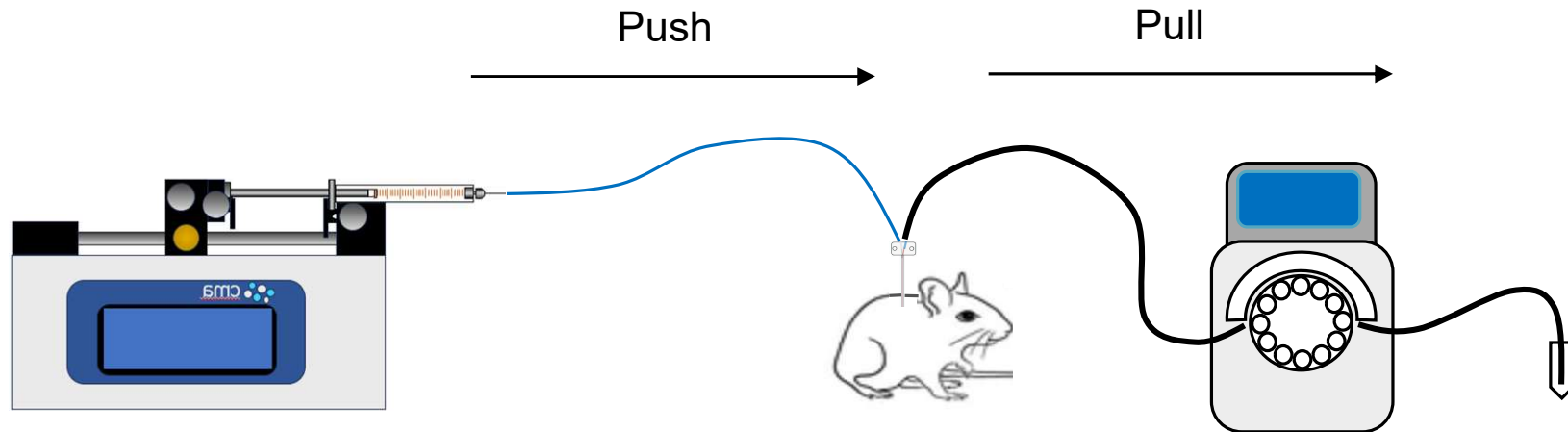


Push-Pull

When using Ultra High CO Probes:

- 500 kDa CO Membrane
- 2 MDa (2.000 kDa) CO Membrane

Push/Pull Setup must be used. A peristaltic pump is connected on the outlet tubing.



CMA 130 In-Vitro Stand for CMA 7 & CMA 8 Probes and Guides

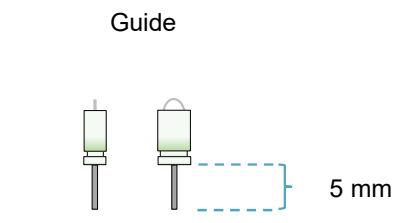
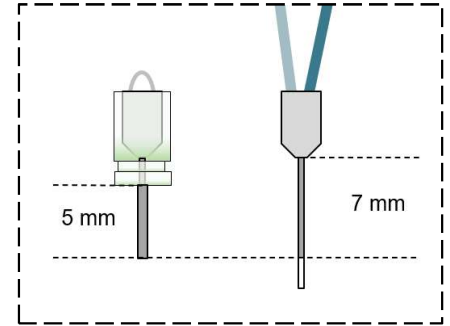
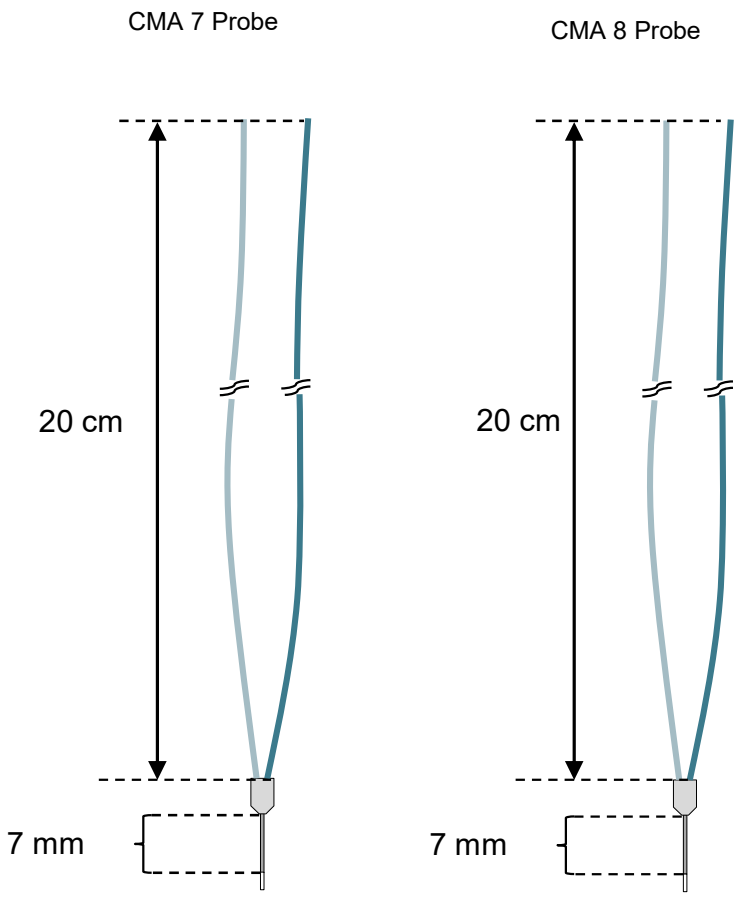
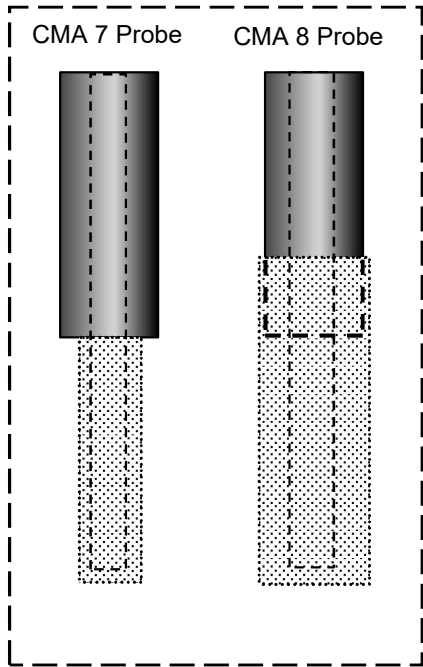


- Probe handling
- Probe preservation
- Probe Guide handling with stereotaxic instrument

8309104 CMA 130 In-Vitro Stand with CMA 7 + 8 Clips Includes:

- Stand
- 3 pcs CMA 7 + 8 Clips
- 3 pcs In-Vitro Holders
- 2 Stereotaxic Adapters
- Connecting Rod for Clip
- 25 pcs Eppendorf Tubes 1.5 mL

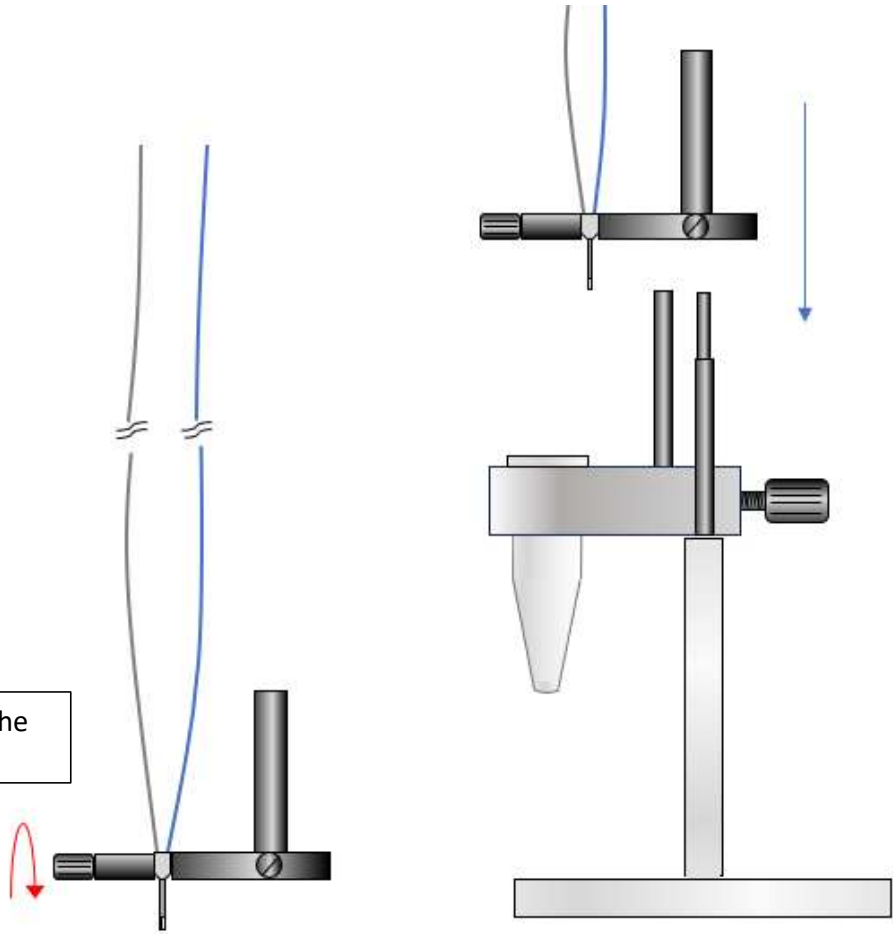
	CMA 7	CMA 8
Shaft Length	7 mm	7 mm
Shaft OD	0.4 mm	0.4 mm
Membrane Length	1 or 2 mm	1 or 2 mm
Membrane Diameter	0.24-0.28	0.5 mm
Membrane Cut-off	6 kDa	20 kDa
	55 kDa	100 kDa
	500 kDa	
	2 Mda	



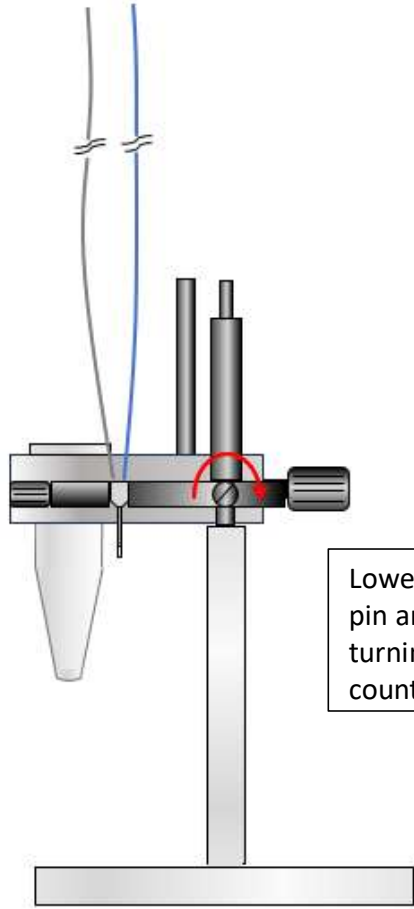
Designed to securely bond with dental cement
 CMA 7 Guide OD: 0.58 mm
 CMA 8 Guide OD: 0.63 mm

Priming the Probe with Perfusion Fluid

Place the probe in the probe clip



Lower the clip on the vertical pin and secure the clip by turning the lock screw counterclockwise



Microdialysis Perfusion Fluid for CNS

News!

- 7.5 mL
- New Bottles
- Re-Sealable Cap



CMAP000151 Perfusion Fluid CNS 7.5 mL x 10

Perfusion Fluid CNS is an isotonic sterile perfusion fluid especially developed for Microdialysis in CNS tissue. It is conveniently packed in glass bottles, 7.5 mL, ready to use. Perfusion Fluid CNS is cleared as a medical device according to the CE medical directive. NaCl 147 mmol/L, KCl 2.7mmol/L, CaCl₂ 1.2 mmol/L, MgCl₂ 0.85 mmol/L. This perfusion fluid is intentionally unbuffered. The dialysate will therefore take on the same pH as the surrounding tissue.



CMAP8050151 Perfusion Fluid CNS Dextran 7.5 mL x 2 Dextran MW 500 kDa 3%

Perfusion Fluid CNS is an isotonic sterile perfusion fluid especially developed for Microdialysis in CNS tissue. It is conveniently packed in glass bottles, 7.5 mL, ready to use. Perfusion Fluid CNS is cleared as a medical device according to the CE medical directive. NaCl 147 mmol/L, KCl 2.7mmol/L, CaCl₂ 1.2 mmol/L, MgCl₂ 0.85 mmol/L. This perfusion fluid is intentionally unbuffered. The dialysate will therefore take on the same pH as the surrounding tissue.

NOTE: not recommended to be used in combination with Swivels. Use Rotating Cage System. Please contact CMA for more information.

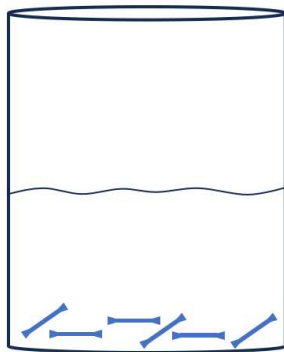
Microdialysis Perfusion Fluid for CNS



507316 Artificial CSF, 6 x 25 mL Vials

Artificial CSF Perfusion Fluid is an alternative to the above Perfusion Fluid CNS. There are small variations in composition and Artificial CSF is buffered solution with pH 7.2 +/- 0.1

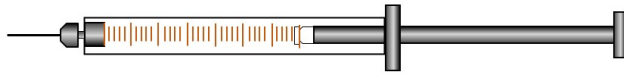
Artificial cerebrospinal fluid (aCSF) is commonly used when sampling from brain interstitial fluid. This solution closely matches the electrolyte concentrations of CSF. It is prepared from high purity water and analytical grade reagents. It is microfiltered and sterile. Final Ion Concentrations (in mM): Na 150; K 3.0; Ca 1.4; Mg 0.8; P 1.0; Cl 155. pH 7.2 +/-0.1.



70% Ethanol

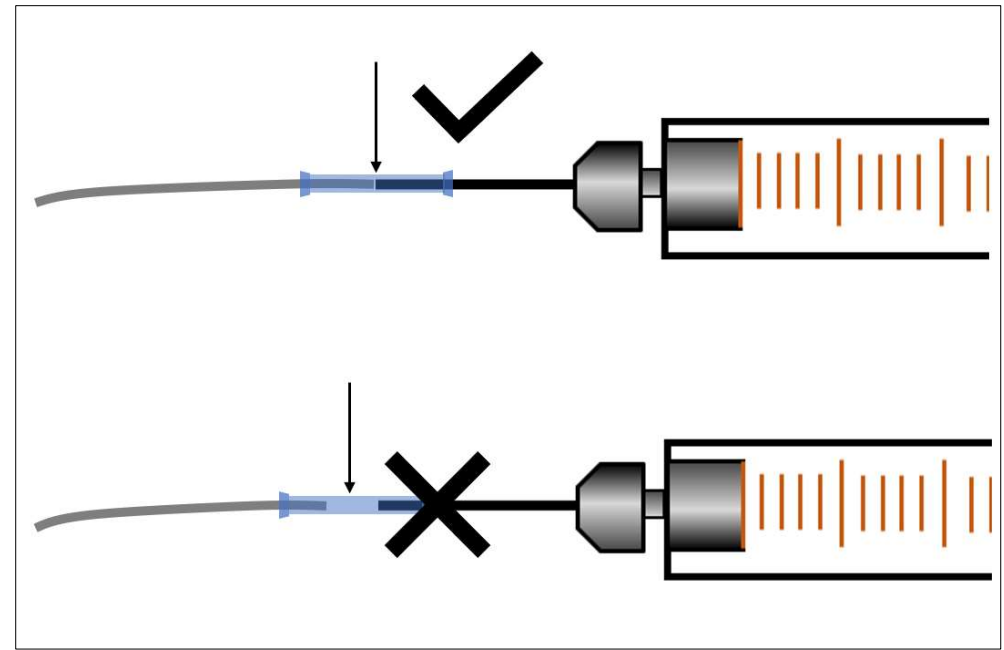
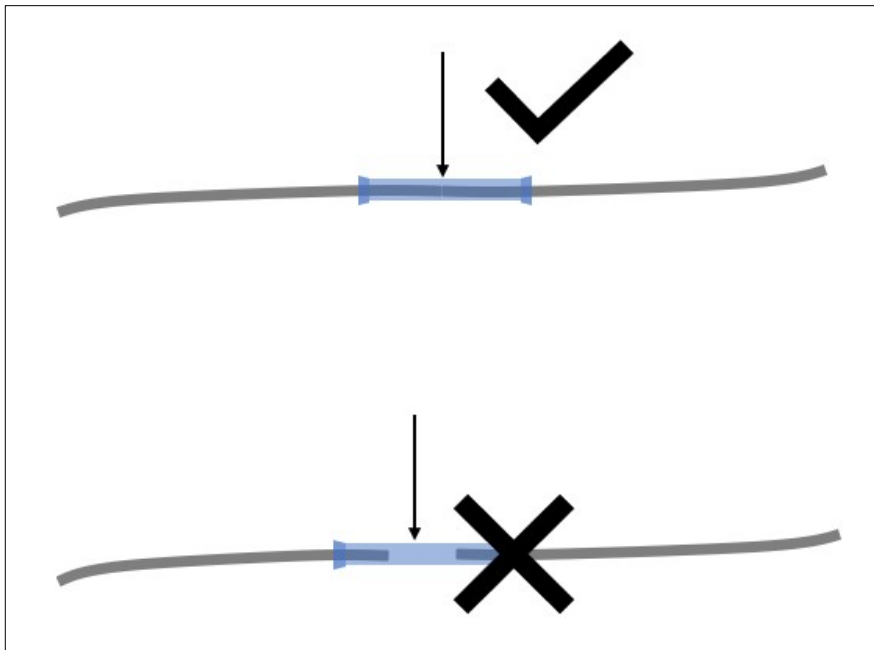
Tubing Adapters

Soak the Tubing Adapters into 70% Ethanol for 1 hour. The Tubing Adapters swell in 70% Ethanol and shrink back in air, ensure tight, zero internal volume connections between FEP Tubing and the probe, swivel liquid switch and syringes. Tubing adapters can be left in Ethanol for a long time (months), so you always have tubing adapters ready for use.



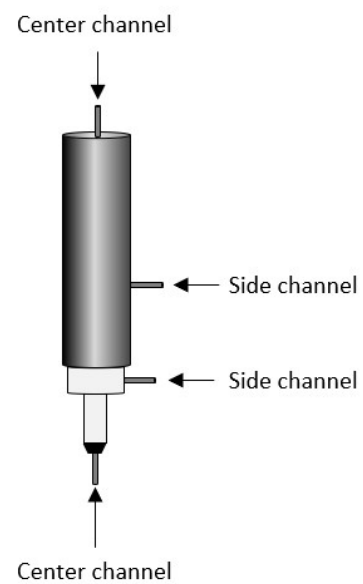
Fill a Microsyringe with Perfusion Fluid. The Perfusion Fluid should be at room temperature or slightly higher. This makes it easier to remove air bubbles and prevents air bubbles being formed during the experiment. Make sure that even the smallest air bubbles are gone.

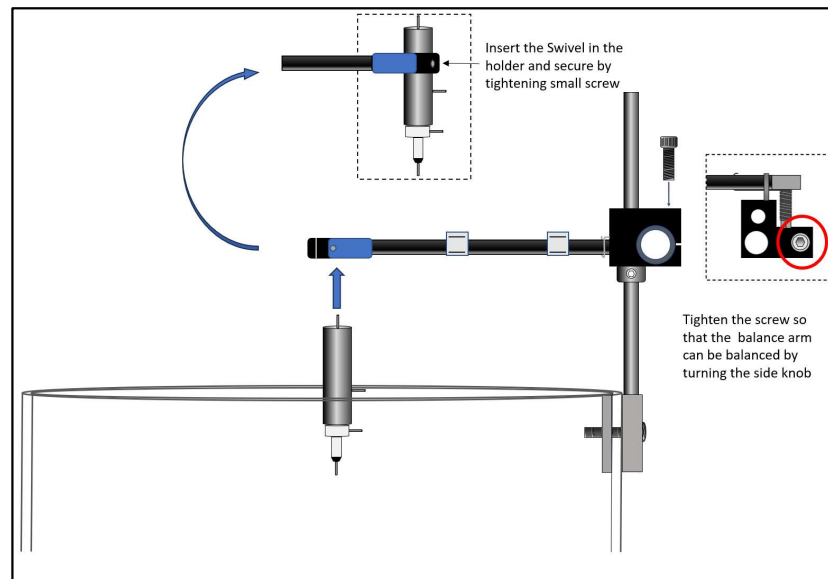
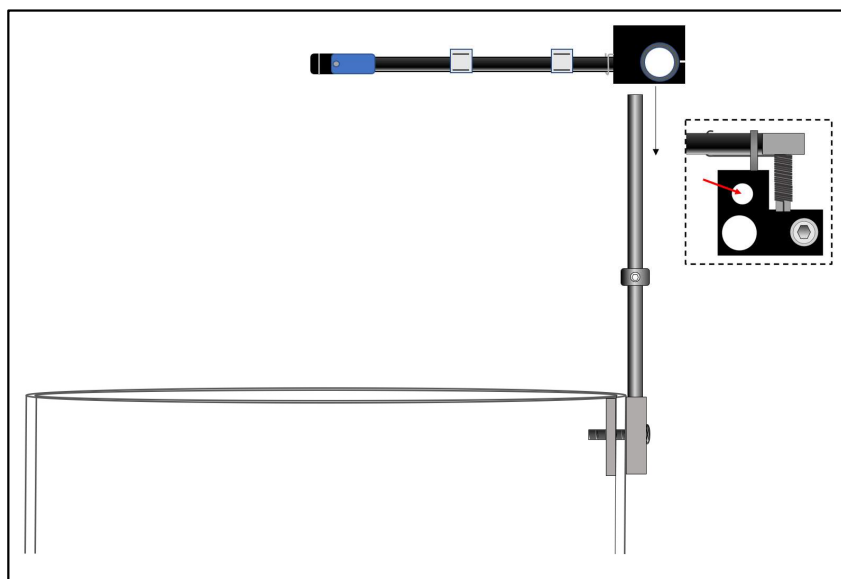
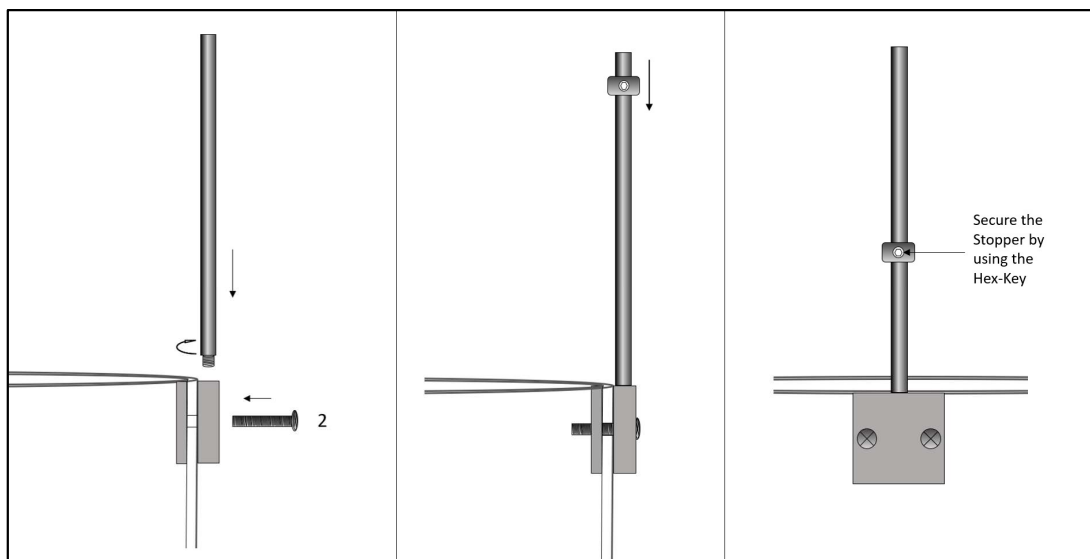
Make sure the ends meet for zero dead volume and that the tubing adapter is not exposed to the perfusion fluid. Once the Tubing Adapters are dry, they make sure of a tight, leak free, connection.



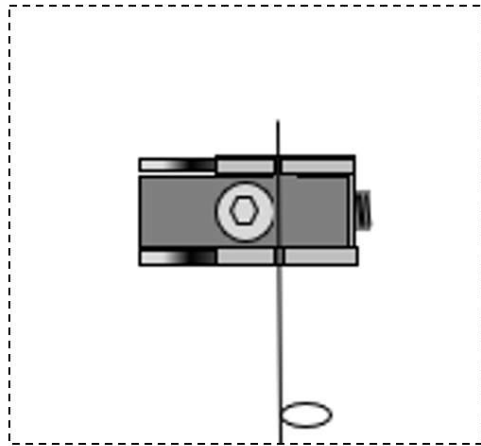
Inlet and outlet tube gauge	22
ID - center channel	0.006in (0.15mm)
Dead volume - center channel	1.8 μ l
ID - side channel	0.006in (0.15mm)
Dead volume - side channel	3 μ l
Autoclavable	No
Dimensions (dia. x len.)	0.375x2.38in (9.53x60mm)
Weight	15g

CMA720000, Dual Channel Swivel for Mouse

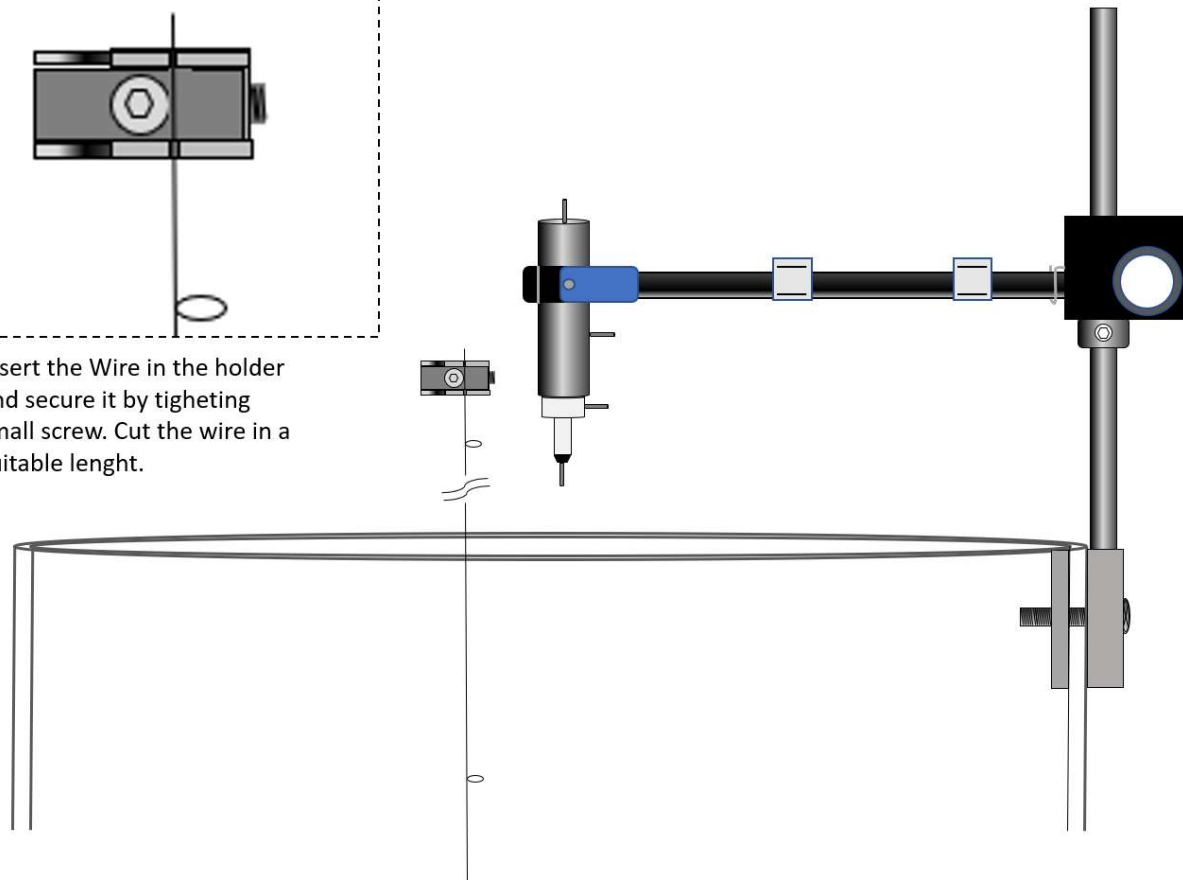


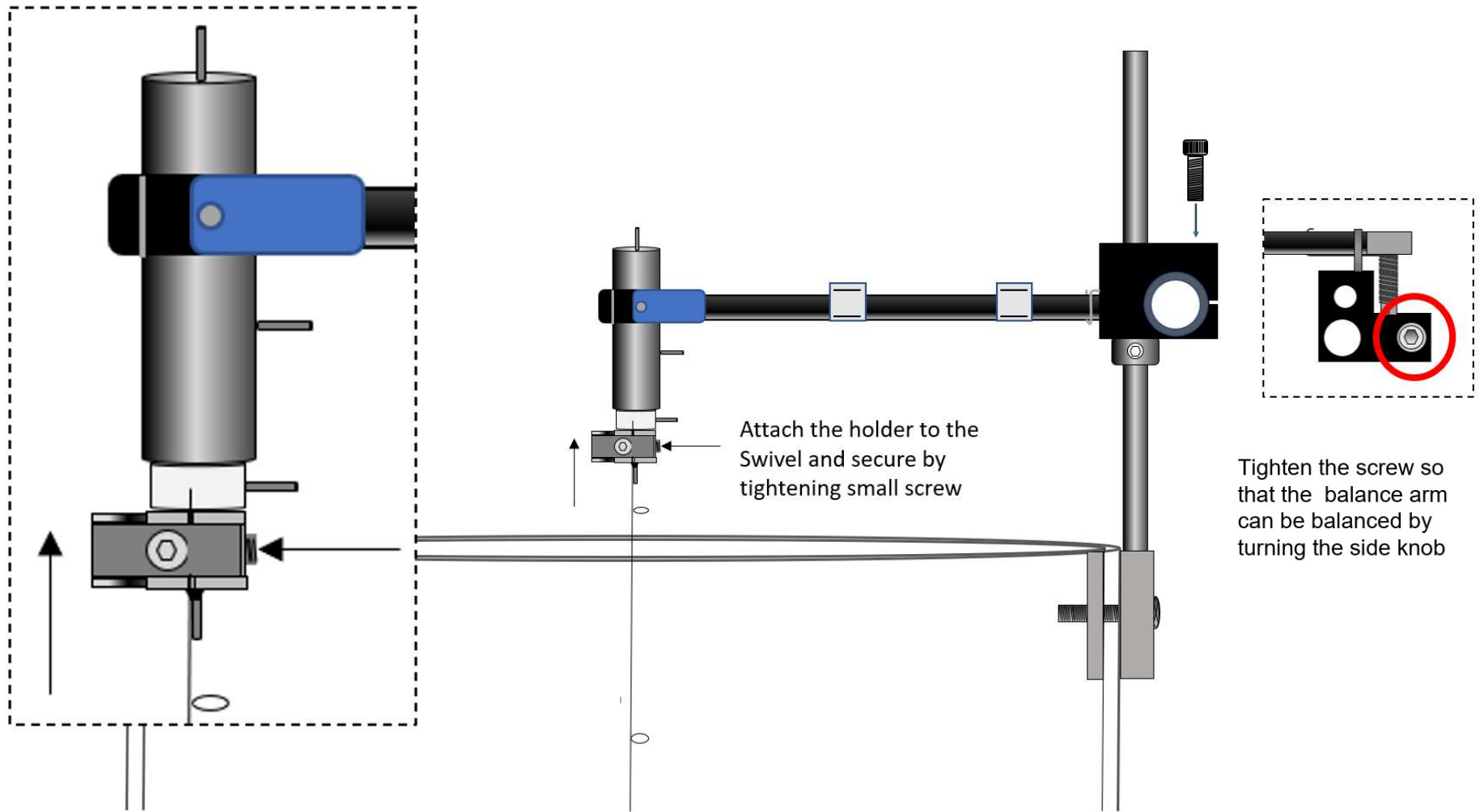


Connect the Mice Tether to the Swivel

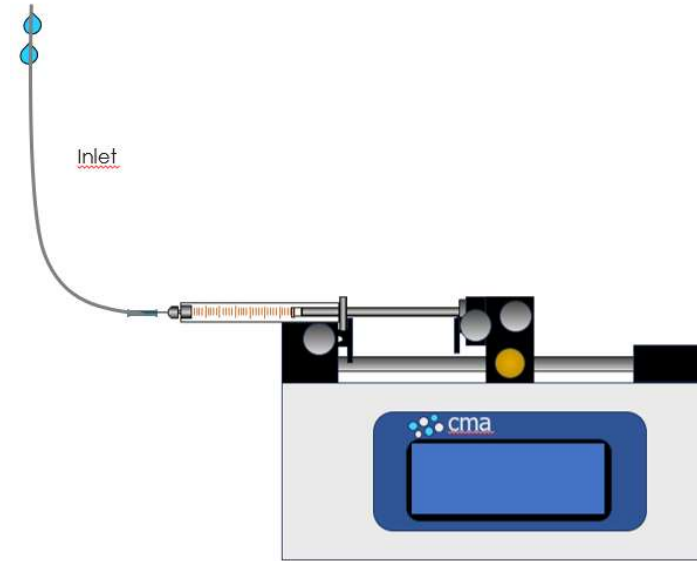


Insert the Wire in the holder and secure it by tightening small screw. Cut the wire in a suitable length.

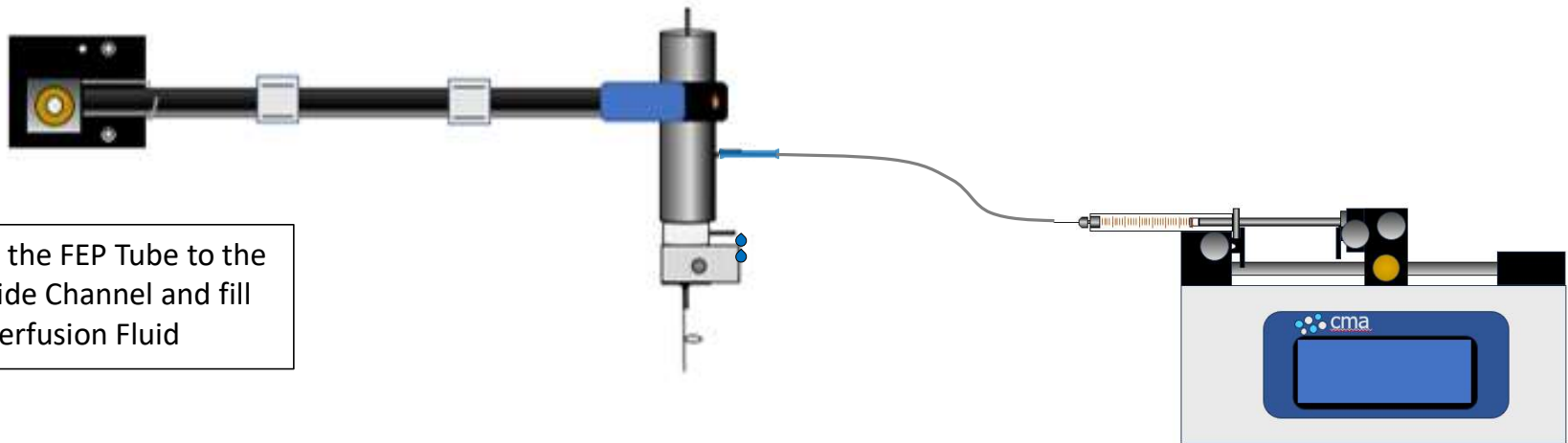




Fill a syringe with Perfusion Fluid.
Connect a FEP tubing to the Syringe
Tip by using a Tubing Adapter. Fill the
FEP Tubing with Perfusion Fluid

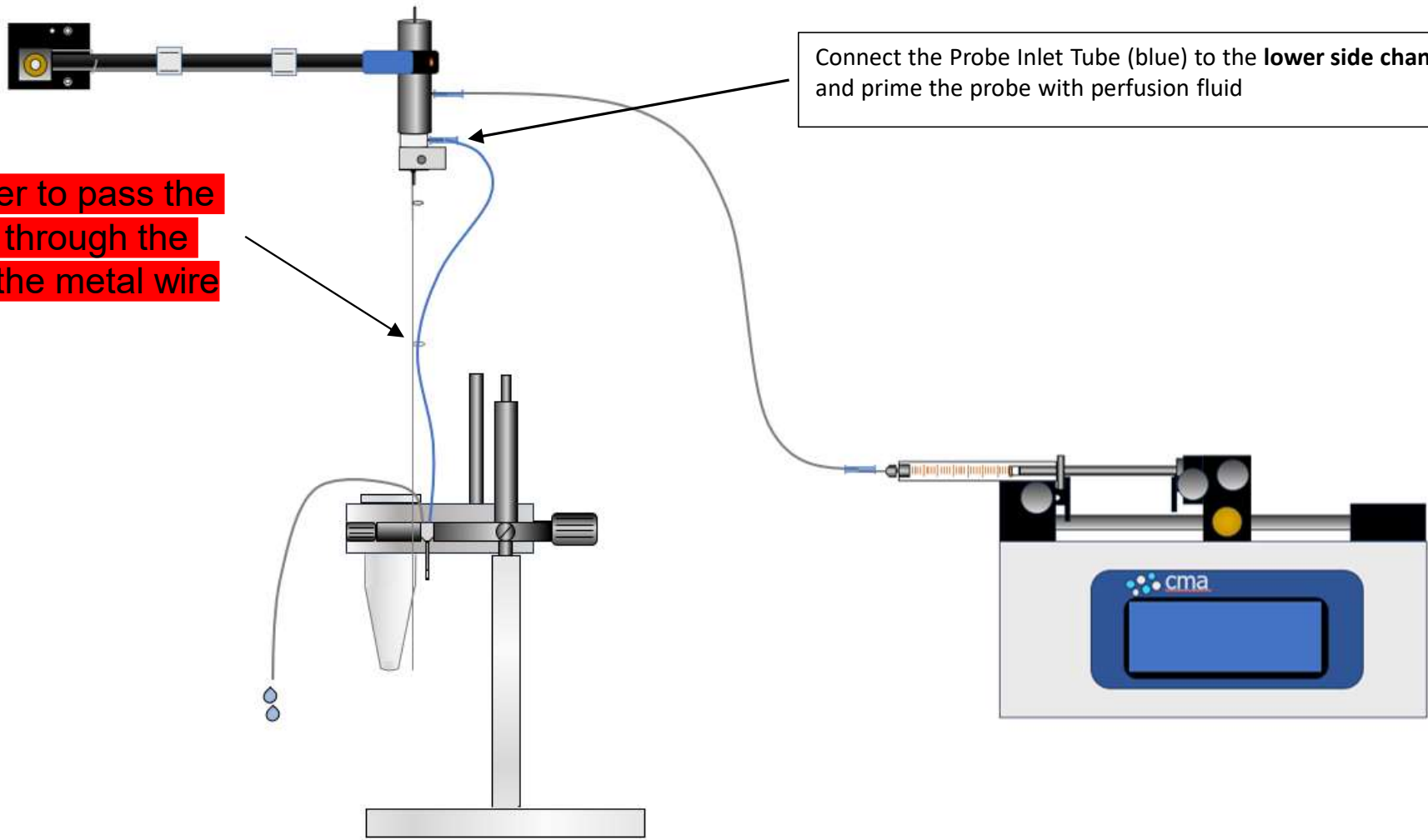


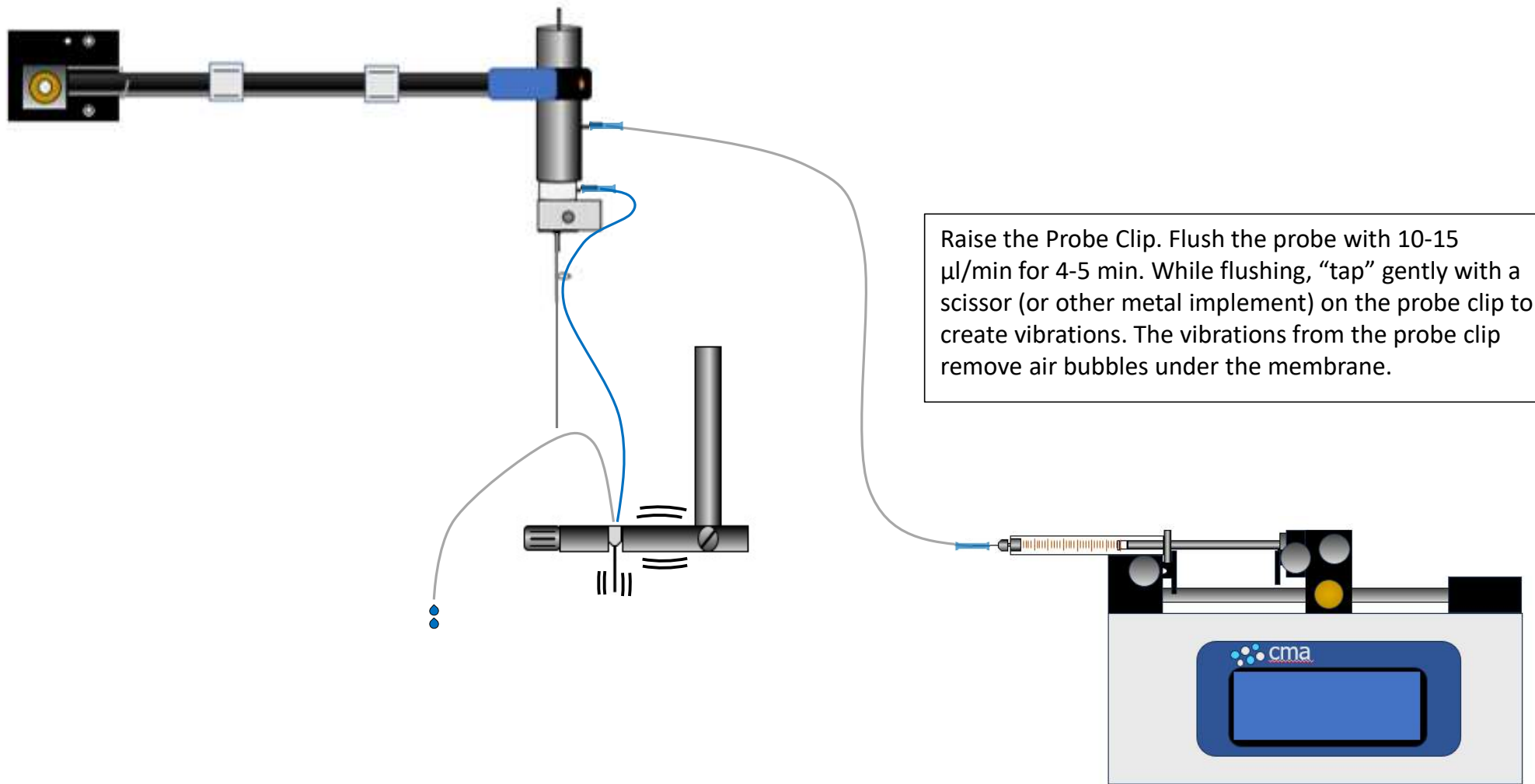
Connect the FEP Tube to the
Swivel Side Channel and fill
it with Perfusion Fluid

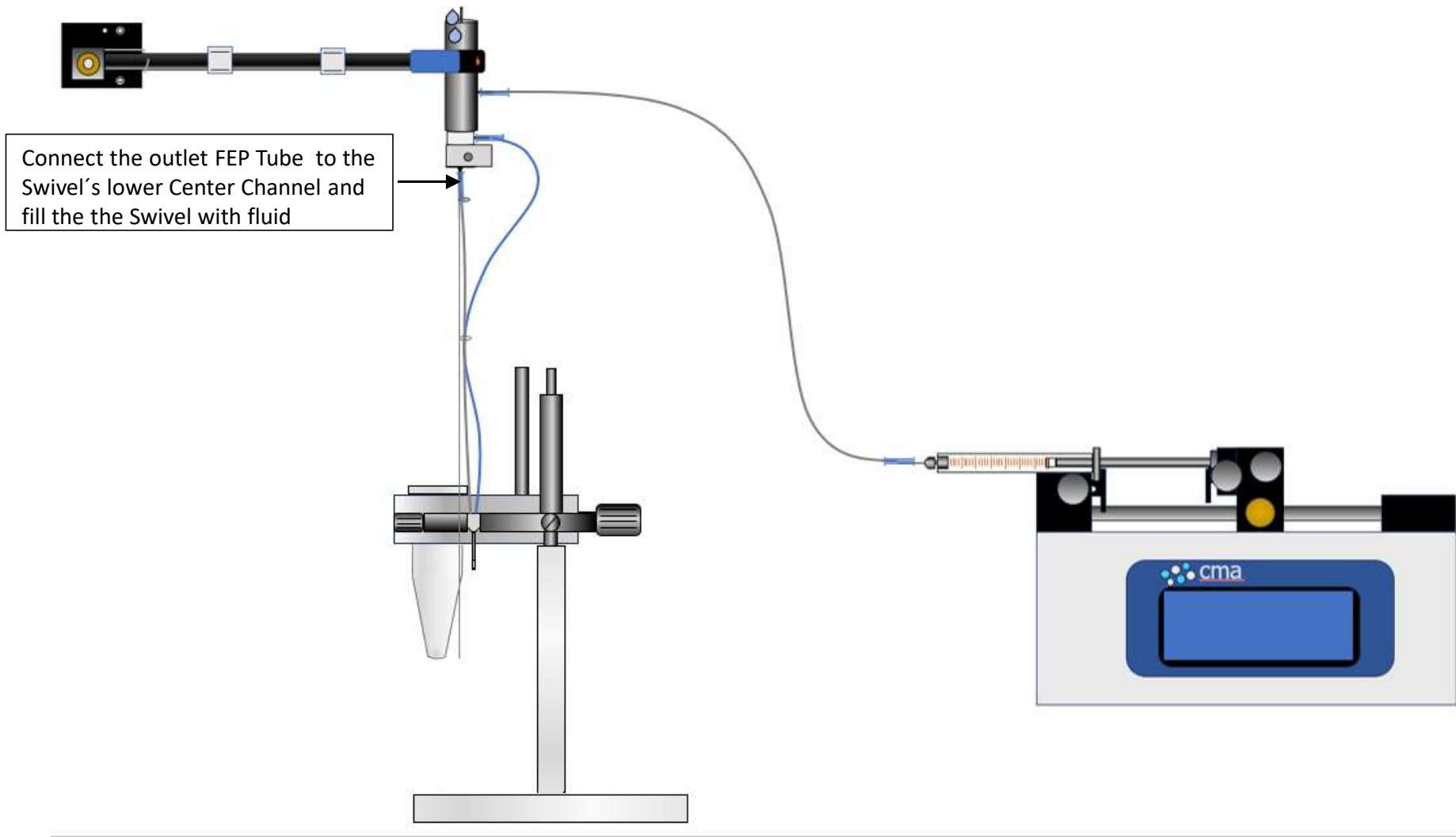


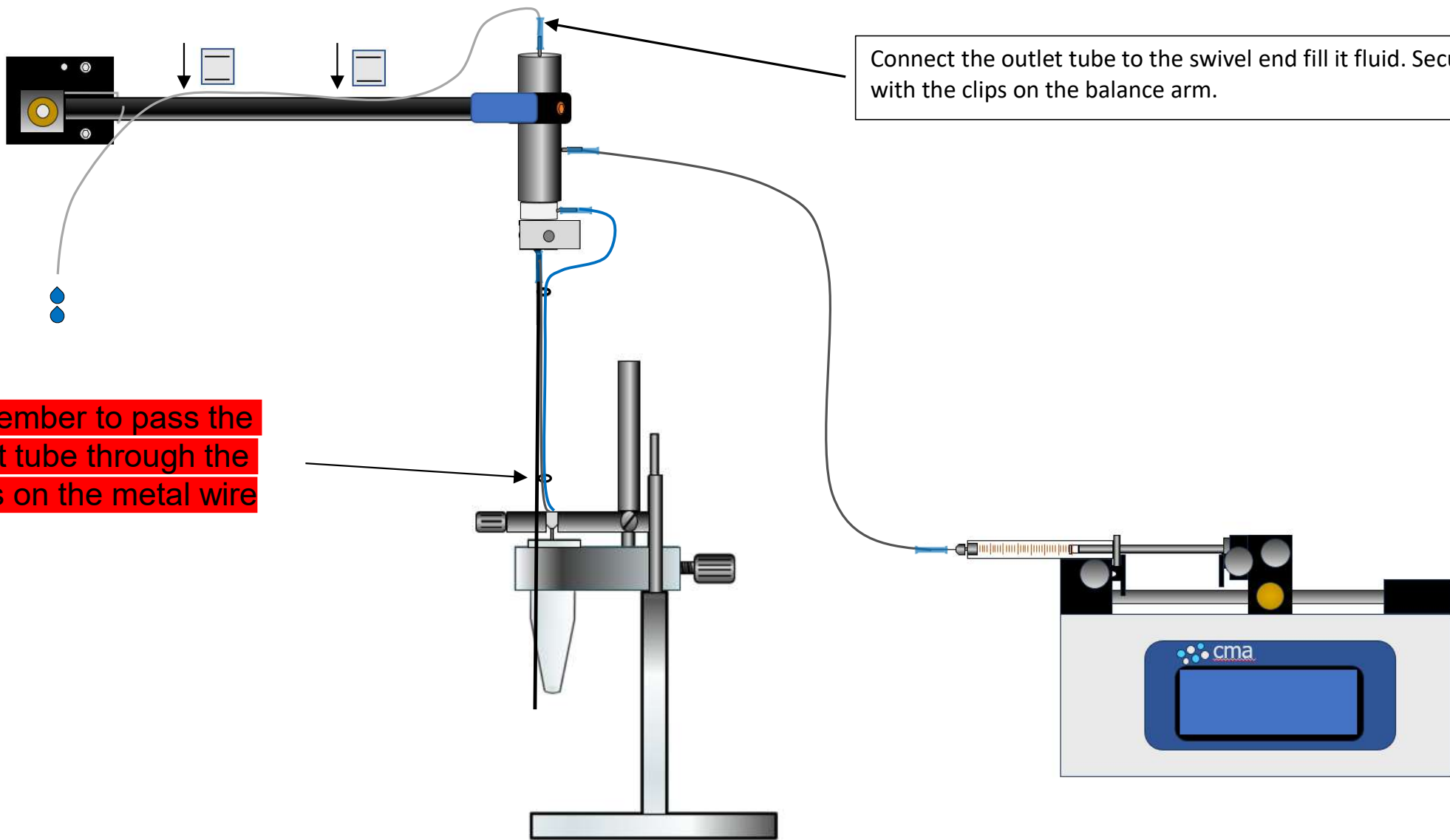
Remember to pass the inlet tube through the loops on the metal wire

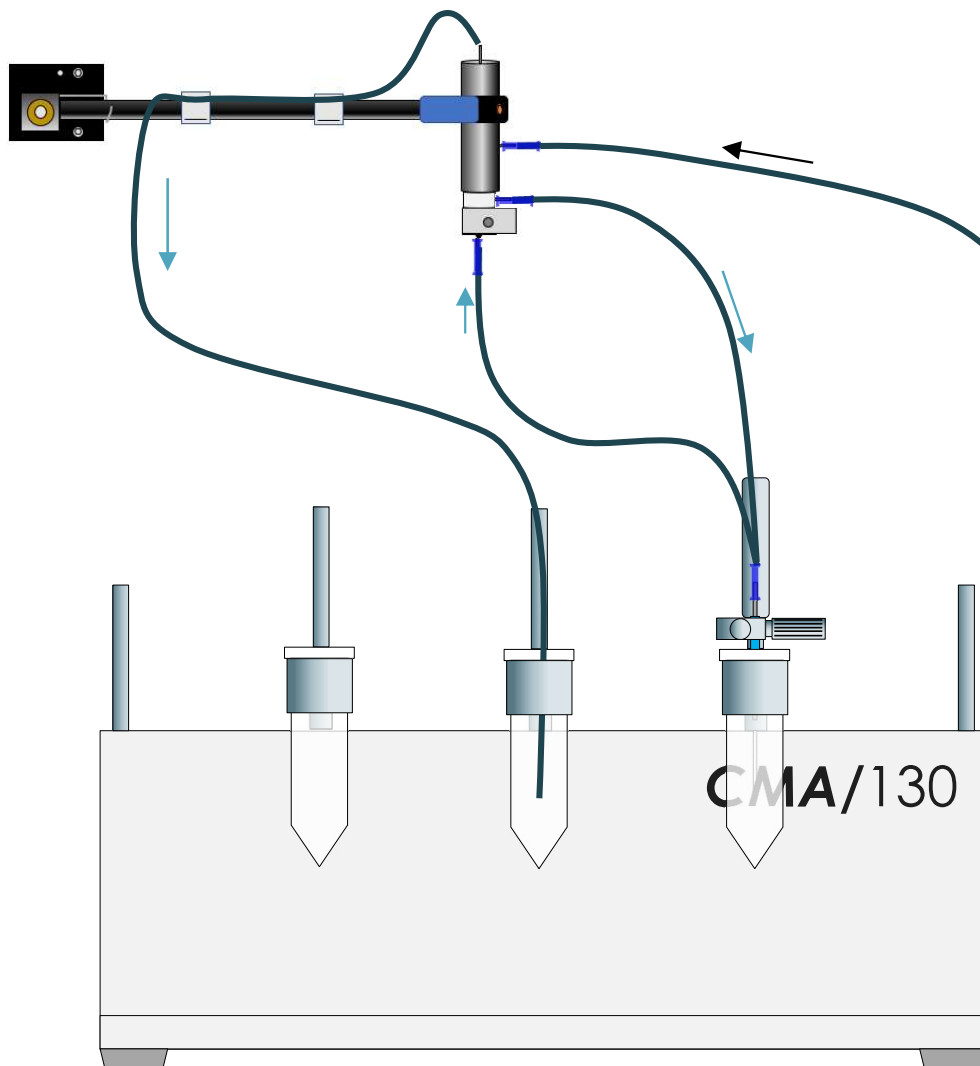
Connect the Probe Inlet Tube (blue) to the lower side channel and prime the probe with perfusion fluid



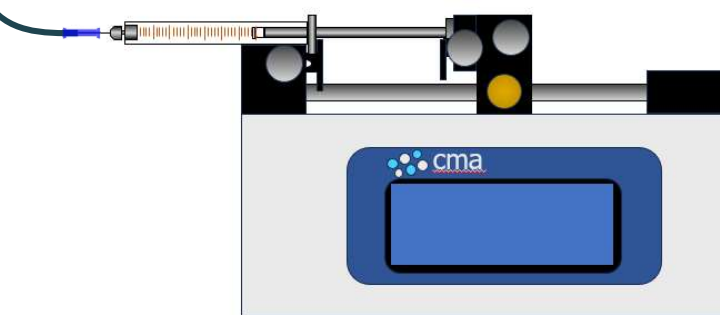








Fill up an Eppendorf Vial with perfusion fluid. Move the probe clip with the probe and attach it to the vial holder and make sure the membrane is covered with fluid. **Do not stop the pump.** Continue the flow with approx 0.5 $\mu\text{l}/\text{min}$ to avoid salt formations inside probe/swivel



CMA8012650 CMA Mouse Cage CNS Bundle

Contains of:

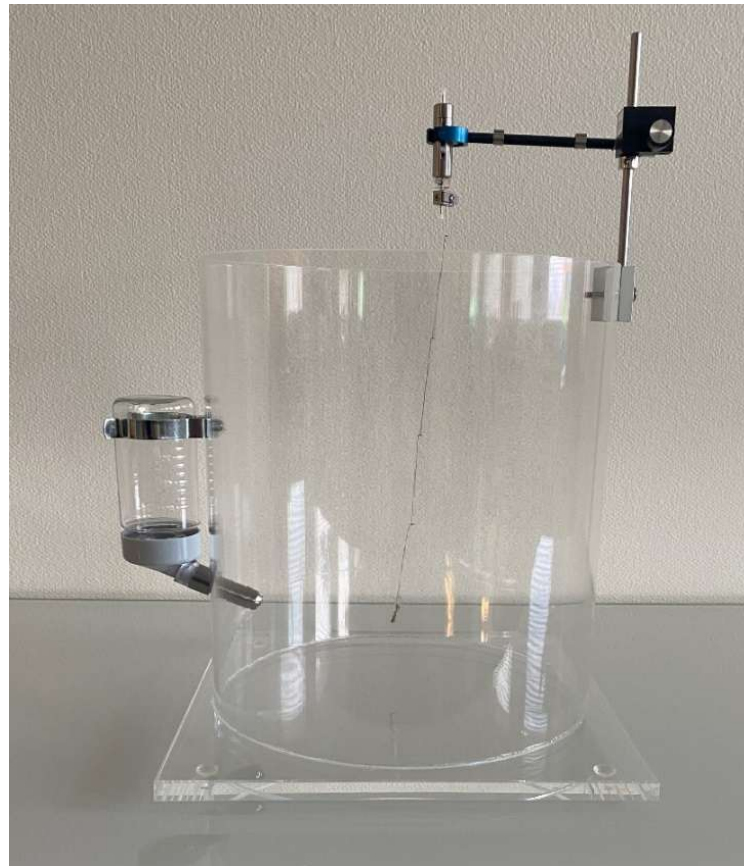
8012600 CMA Mouse Cage w Water Bottle
720000 Swivel, Dual Channel, MD mouse
610024 Counter-Balanced Arm 3.5 in
610037 Head Block Tether for Mice
8409501 FEP Tubing 1 m 10/pkg
3409500 Tubing Adapter 10/pkg

Material: Perspex Acrylic

Hand wash only

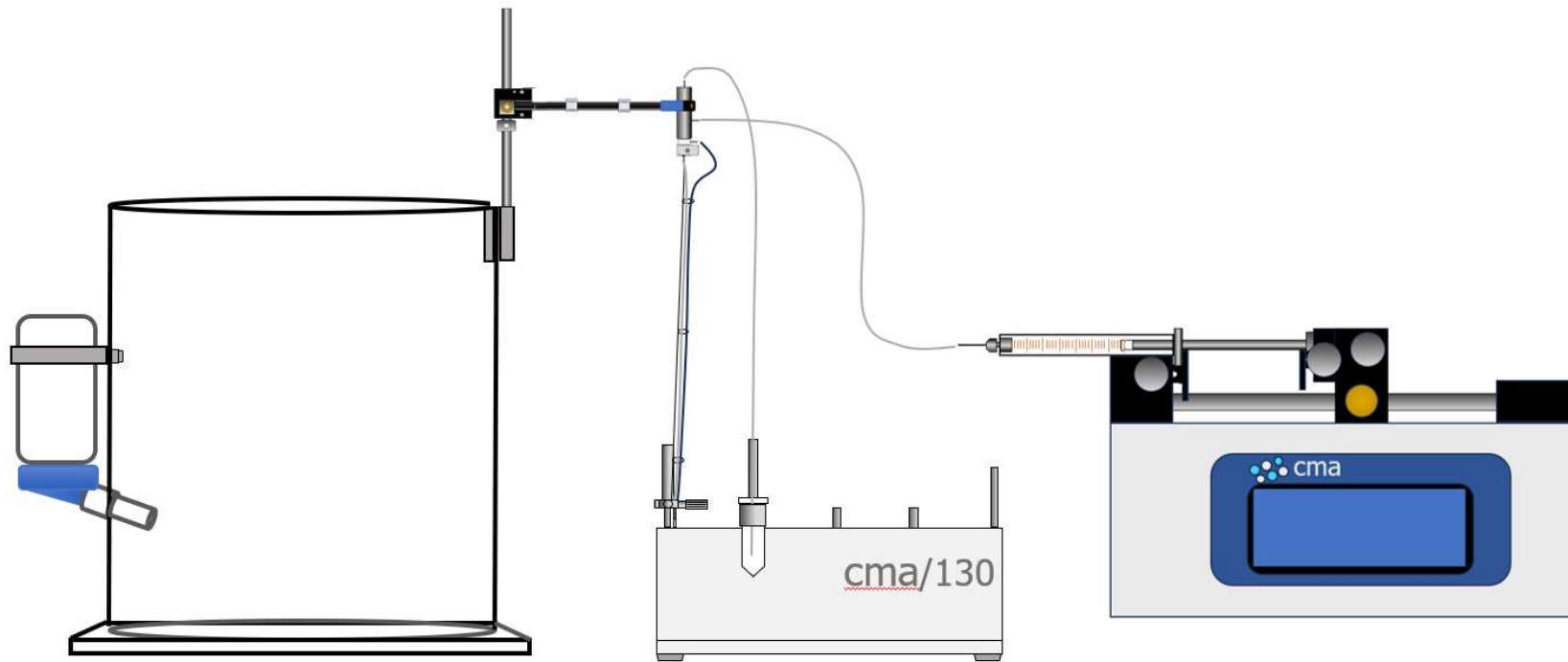
For disinfection use: CidexOPA, Mucosal
or Hydrogenperoxide (H₂O₂).

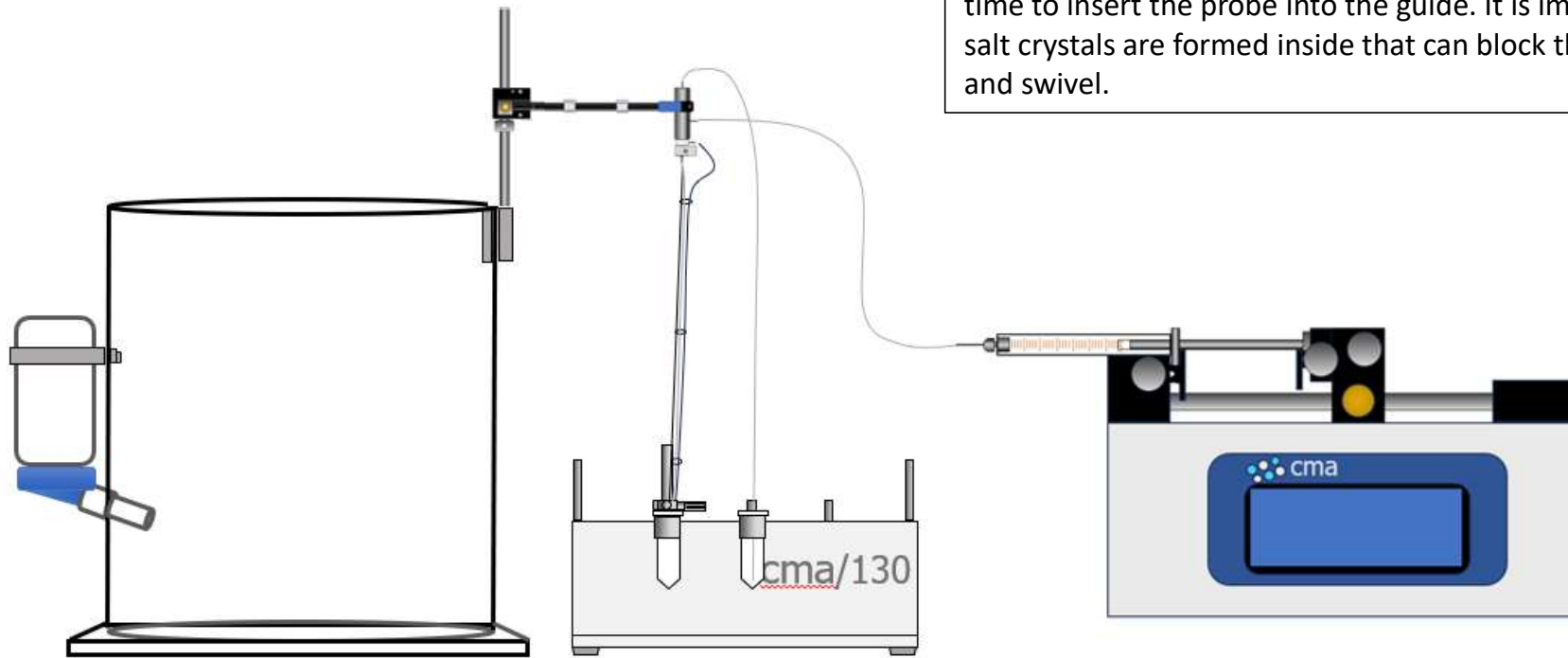
Do not autoclave or use alcohol/ethanol
for cleaning



**Balance arm, Swivel and
Tether are included in
CMA8012650**

Connection overview for priming the probe, tubing and swivel for awake mouse experiment

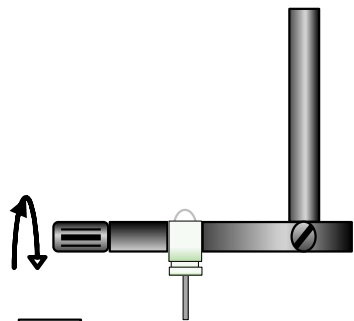




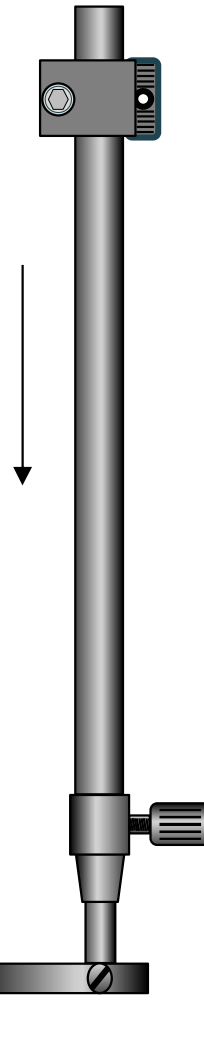
After flushing is complete place the probe back into the perfusion fluid in the In-Vitro stand. **Don't stop the flow!** Continuously perfuse the probe with 0.3-0.5 $\mu\text{l}/\text{min}$ until it is time to insert the probe into the guide. It is important that no salt crystals are formed inside that can block the probe, tubing and swivel.

Guide Implantation

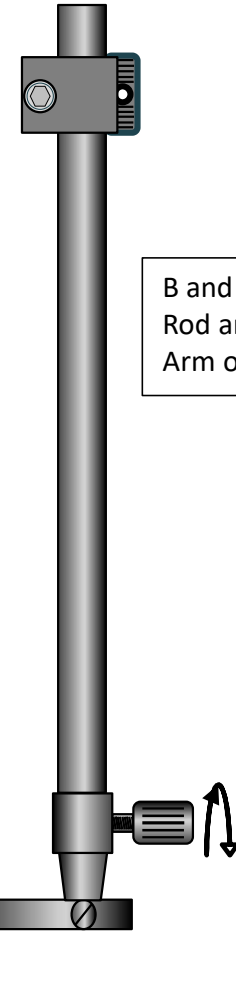
A: Mount the Guide Cannula in the CMA 7/8 Clip.



A



B



C

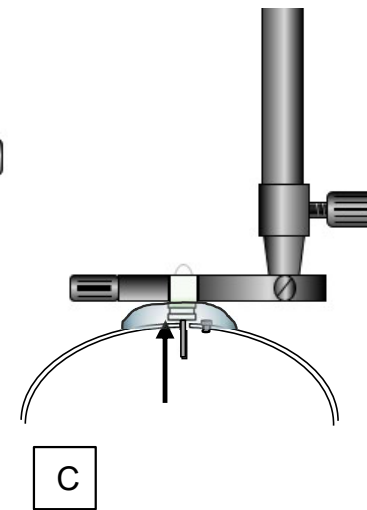
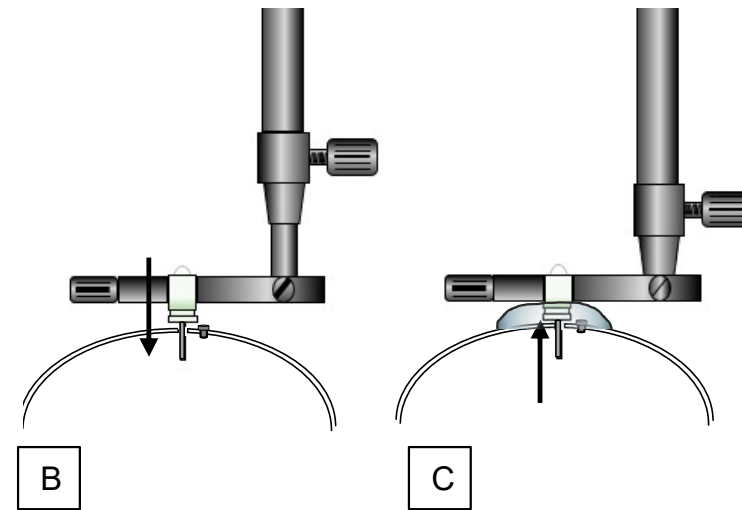
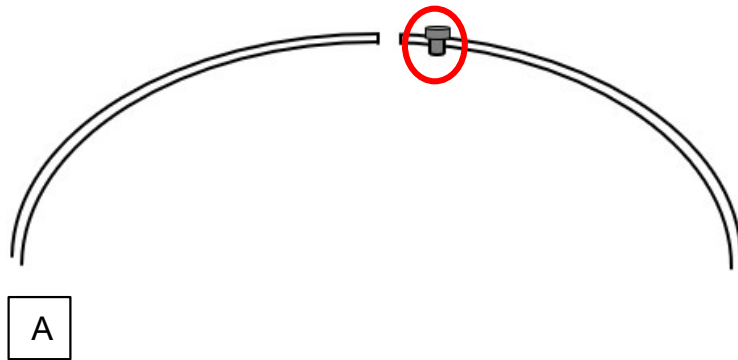
B and C: Fix the Clip to the Connecting Rod and connect it to the Manipulator Arm on the Stereotaxic instrument.

Guide Implantation

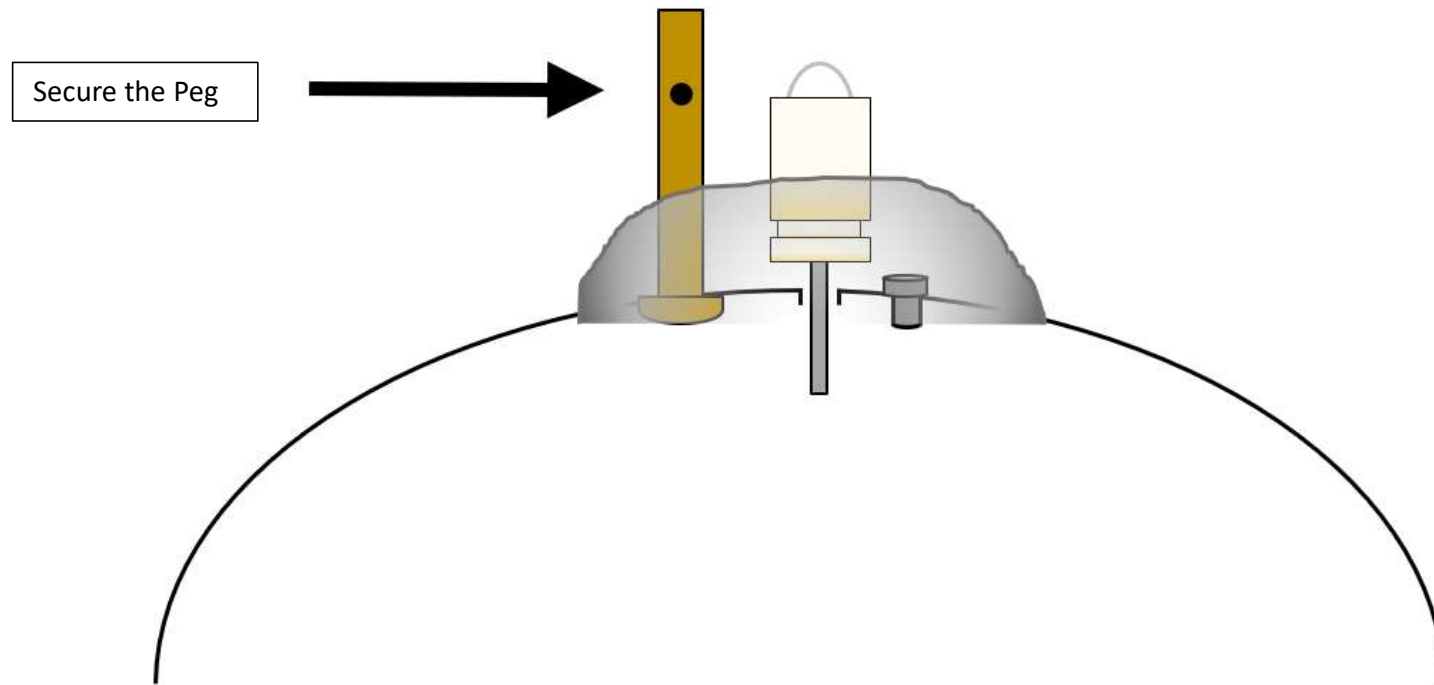
A: Make a burr hole in the skull using a 0.6 \varnothing Drill Bit (62-0020). Be careful to not drill too far. Drill holes for the Anchor Screws by using a 0.9 \varnothing Anchor Screw Drill Bit. Several Anchor Screws may be needed.

B: Lower the Guide through the hole and meninges. There is no need to open the meninges before inserting the Guide. Insert the Guide to the point where the guide tip reaches start of your target area.

C: Secure the Guide with Dental Cement.

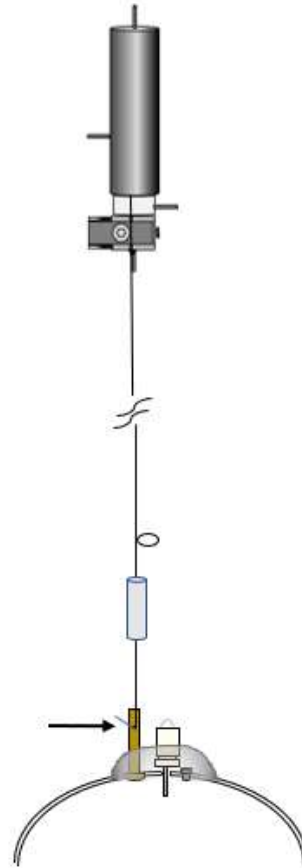
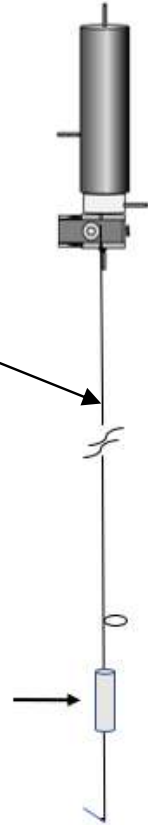


Secure the peg

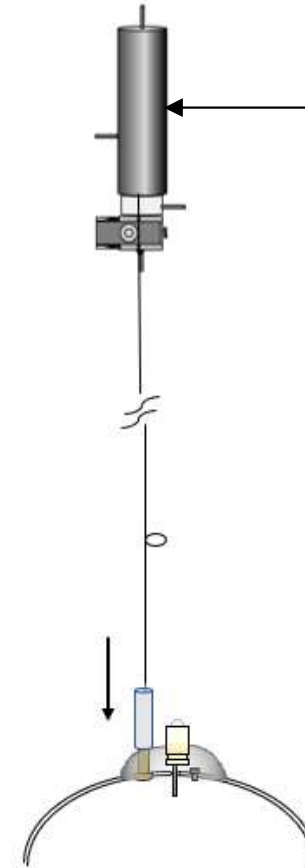


Start the Experiment

610037, Head Block Tether for Mice
Incl:
1 Wire
1 Silicone tube
5 Pegs



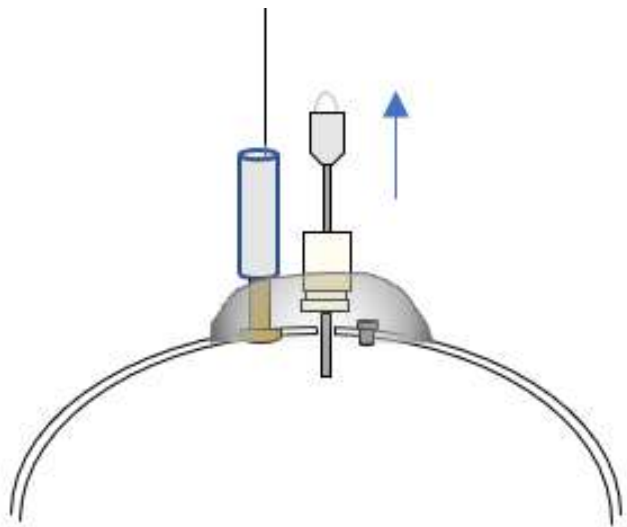
Connect the wire to
the peg



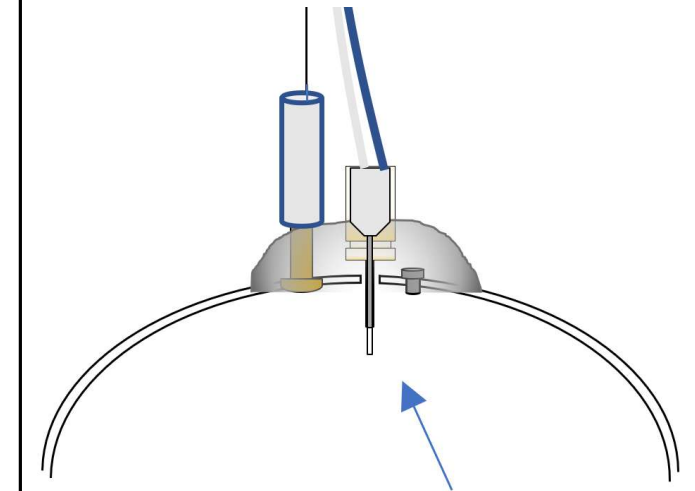
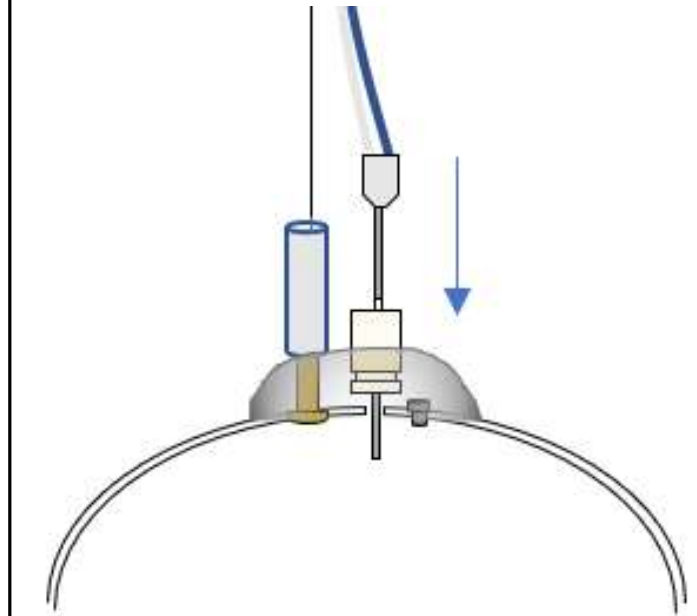
Slide down the
silicone tube

720000, Swivel for Mice

Insertion of the Probe



Remove the Dummy Guide

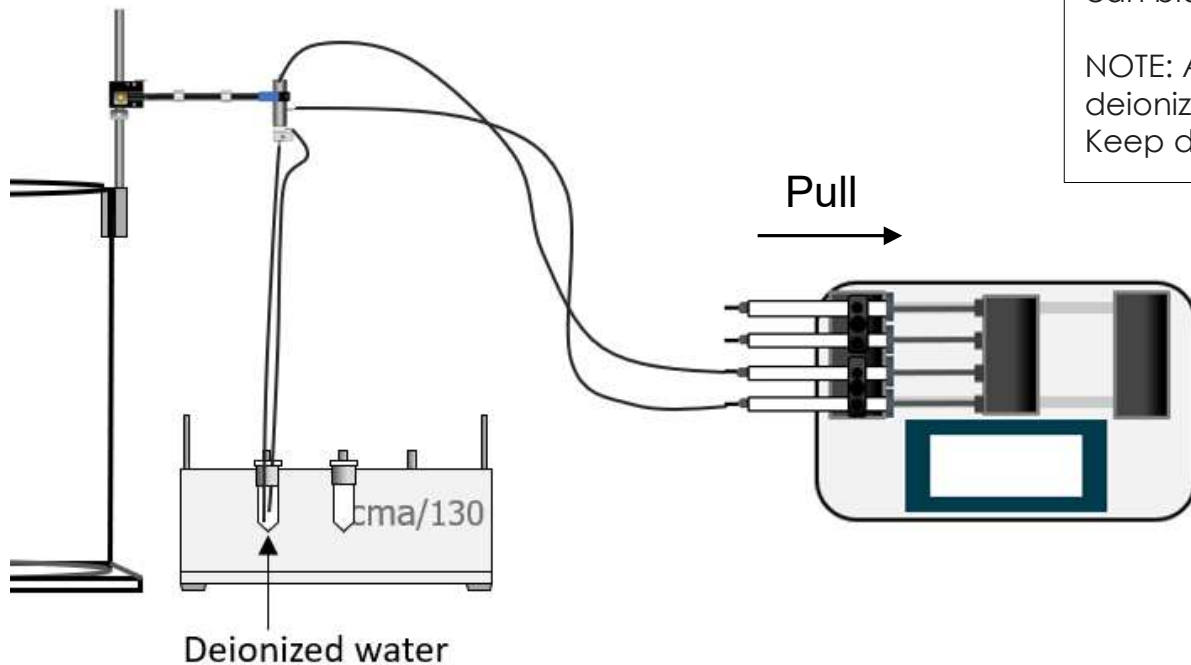


Fully insert the Probe into the Guide so the membrane is exposed in the tissue. Set the flow to your selected flow rate and the experiment starts. Make sure you have calculated the dead volume in the outlet tubing and swivel.

Cleaning the Dual Channel Swivel

It is essential that the channels of the swivel are cleaned after use. If this is not done, salt crystals from the perfusion fluid may form, which can block and seriously damage the channels.

NOTE: Always clean the channels of the swivel after use by pulling deionized water through the swivel. Pull air through the channels. Keep dry.



After the experiment, remove the probe from the FEP tubings. Put the FEP tubing distal ends into a vial filled with deionized water. Load the pump with 2 empty syringes and attach FEP tubings to the Swivel center channel and side channel. Pull (aspirate) with 10 $\mu\text{l}/\text{min}$ for 30-60 minutes. Please note that cleaning must be done immediately after the experiment stops.

Re-using the probe

If re-using the probe. It is important to thoroughly clean the probes to prevent formation of salt deposits when attempting to reuse post-experiment. To prepare for storage, fill a syringe with deionized water and submerge the membrane in deionized water using the In Vitro Stand. Flush the probe at a flow rate of 10 $\mu\text{l}/\text{min}$ for 30-60 minutes. The probe can be stored wetted in deionized water using the In Vitro Stand. Alternatively, the probe can be stored dry in the In Vitro Stand by using a syringe in withdrawal mode to flush air through the swivel channel, tubing, and the probe.

Please note that probes are consumable and guaranteed by CMA for single use. Repeated use of the probes may decrease functionality. An In Vitro calibration test with standards can be implemented to assess performance prior to reuse.

Do not use alcohol for cleaning the probe!

