

 University of Michigan Comprehensive Cancer Center	SOP-BCR-6.4	Directions for Constructing a Mouse Tail Vein Injection Apparatus	Author: S. Clouthier Approved: M. Wicha	Rev: 0	Issued: 09/16/01 Revised: 07/17/09
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1.0 Purpose

The purpose of SOP 6.4 is to provide details on how to construct a tail vein injection apparatus.

2.0 Scope

SOP 6.4 is intended to cover all resources, personnel and equipment in the BCR laboratory.

3.0 Materials

See below in text

4.0 Procedure

- 4.1 Purchase Rotating Tail Injector (model RTI) and restraint tube with ventilation holdes (model (RTI-I) from Braintree scientific (Braintree, MA) This injector is made out of acrylic and can be easily UV-sterilized and can be purchased for around \$200.
- 4.2 Use a rotating cutting implement such as a Dremel tool with a plastic cutting burr to remove the back panel of the plexiglass. Do not use a conventional drill or jigsaw to make this cut as this will likely crack the plexiglass.
- 4.3 Use the Dremel tool to drill 20-30 evenly spaced $\frac{1}{4}$ " holes into both sides of the RTI. The holes should be spread over the first two inches of the front of the RTI to provide adequate ventilation to cool the bulb and prevent the mouse from overheating.
- 4.4 Cover the entire front face and two inches of the top of the RTI with opaque tape (black electrical tape works best) leaving just the tail groove unobstructed. Grey duct tape does not work as well for shielding light and will require multiple layers to function effectively. The tape serves to focus the light transmission onto the tail and allow the eye to more readily visualize the tail vein. The tape also provides a surface which can be easily disinfected between mouse injections with an alcohol prep swipe without marring or cracking the plexiglass surface over time.
- 4.5 Mount a four watt "night light" with bulb attached to a six foot extension cord into a Venetian blind wall bracket that has been securely attached with double-sided tape to the inside front bottom panel of the RTI. All of the supplies needed for this step can be purchased at a local hardware store.
- 4.6 Rest the front edge of the RTI on a 3-4" fixed stage in order to achieve the best angle possible for your height and sitting position. If others routinely share your RTI it may be advisable to get an adjustable stage as each user will require a slightly different RTI orientation in order to inject.
- 4.7 Attach a $\frac{1}{4}$ " Tygon supply hose to an air port and insert the other end into the RTI in one of the centrally located holes created in step 3. You may wish to use a 1mL pipet tip to direct the airflow onto the surface of the bulb to facilitate cooling.
- 4.8 Plug the extension cord into a power supply, turn on the airflow and insert a mouse into the restrainer tube. You may wish to hold the tail in the groove 30-60 seconds before injecting to allow the vein to dilate.
 - Place your thumb on the tip of the tail and your index finger on the base of the tail and apply a light pressure to further facilitate vein dilation. If you need to rotate the mouse to visualize the vein better be very careful not to break the mouse's neck or limbs during the turn. Once you are familiar and comfortable with this setup you should be able to routinely inject several mice per minute.

5.0 Applicable References

6.0 Change Description

Revision	Date	Reference	Description of Change