

Injection Techniques for Mice and Rats

Restraint Physical/Chemical

Purpose:

- ▶ The purpose of this workshop is to inform and instruct personnel on the safe and the least stressful way to restrain and inject mice and rats. This workshop will illustrate proper restraint while administering injections to commonly used sites.

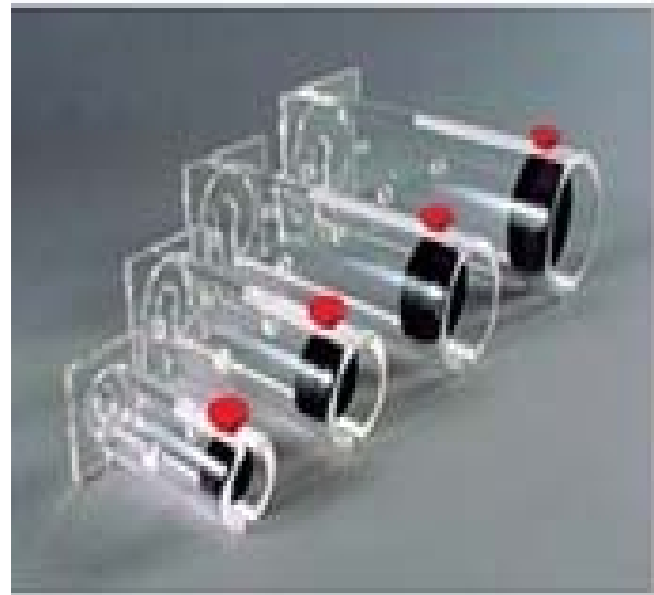


Restraint

- ▶ Proper restraint is one of the main factors in being able to give an injection properly while limiting the amount of stress and/or discomfort to the animal or the handler.

Types of restraint:

- ▶ When working with lab animals the two types of restraint that are utilized most often are physical and chemical.



Chemical Restraint

- ▶ Chemical restraint is recommended if there will be great distress or discomfort to the animal.
- ▶ This can be achieved by using a gas anesthesia such as isoflurane or by a type of injectable sedation such as Ketamine/Xylazine mix.



Physical Restraint

- ▶ Physical restraint can be achieved by many means. Holding the animal with gloved hands is very common. There is also the use of commercial type restrainers that can be purchased from laboratory equipment suppliers. Towels can be used, the wire bar lid can be utilized as well.



Injections

- ▶ The injection sites that I will be discussing can be used on both mice and rats. These will include Sub-Cutaneous (SQ), Intraperitoneal (IP), and Tail vein injections. I will also briefly touch on needle and syringe sizes, volumes that can be administered, and commonly used restraint.

SubCutaneous

- ▶ In both the mouse and the rat SQ injections are usually given in the scruff (access skin) of the neck or using the scruff back by the hind quarters by tenting the skin and making your injection.



Intraperitoneal

- When making an IP injection good restraint and good injection technique will help minimize any secondary problems that may occur with this type of injection.
- Restrain your animal using either the scruff and holding the tail with pinky or ring finger in mice. If using rats gently grabbing them over the shoulders causing the legs to cross over the chest to help prevent getting bit is common restraint.

- ▶ Once animal is restrained turn over so abdomen is exposed. Please monitor chest movements to make sure the animal is doing ok. On the mouse you want to make your IP injection in the lower right or left quadrant of abdomen trying to avoid hitting bladder, liver, or other internal organs.
- ▶ Supplies:
 - ▶ Tuberculin 1 cc syringe
 - ▶ 25g needle(s)
 - ▶ Max volume is 20ml/kg



- ▶ When performing the IP injection on the rat you should inject into the lower right quadrant of the abdomen to avoid hitting such organs as liver, bladder, and cecum.
- ▶ Supplies:
 - ▶ 1–3cc syringe
 - ▶ 21–25g needle(s)
 - ▶ Max amount 10ml/kg

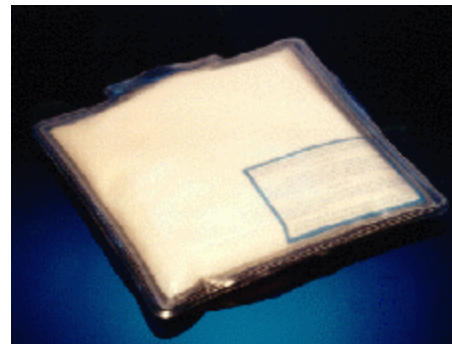


Intravenous (using tail vein)

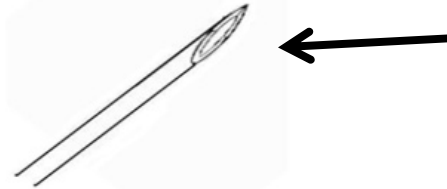
- ▶ When doing an IV injection using the tail vein it is very convenient to have one of the commercial restraint devices available. This could be the plastic restrainers or DecapiCones.



- ▶ Once the animal is restrained the tail vein is located laterally on both the right and left side of the tail. You always want to start your injection at the lower portion of the tail ~ 1 / 3 from the tip. This allows you to move up the tail if the injection was unsuccessful. The tail should be warmed to help dilate the veins. This can be done by using a small heating source or placing tail in warm water for a couple of minutes.



- ▶ You have your animal restrained and vessels dilated. The next step take your syringe with needle and substance to be injected. Hold needle parallel to the tail with bevel side up.



Gently insert needle into vein while pulling back on plunger. You will get a flash of blood into needle hub when in the vein. Begin injection if bubble or bleb appears under skin remove needle and inject closer to the base of the tail. Needle needs to be changed if this is done. When needle is removed apply light pressure to stop bleeding.

IV Injections

- ▶ Supplies for Mouse:
- ▶ 1cc Syringe
- ▶ 27–30g needle(s)
- ▶ Restraint Tube
- ▶ Heating Source
- ▶ Max Volume 0.2ml



IV Injections

- ▶ Supplies for rats:
- ▶ 1–3ml syringe
- ▶ 25g Needle
- ▶ Heat Source
- ▶ Max Volume 0.5ml

- ▶ This concludes the PowerPoint. If you have further questions please feel free to contact the personnel below to help you.
- ▶ Kathy Ishmael LVT 323-3093
kaboaz2@uky.edu
- ▶ JoeAnn Croxford Training Coordinator
323-3616 ejcrox2@uky.edu
- ▶ Dr. Jeff Smiley DVM 323-0289
jsmil2@uky.edu
- ▶ Dr. Jeanie Kincer DVM 323-5469
jfkinc2@uky.edu