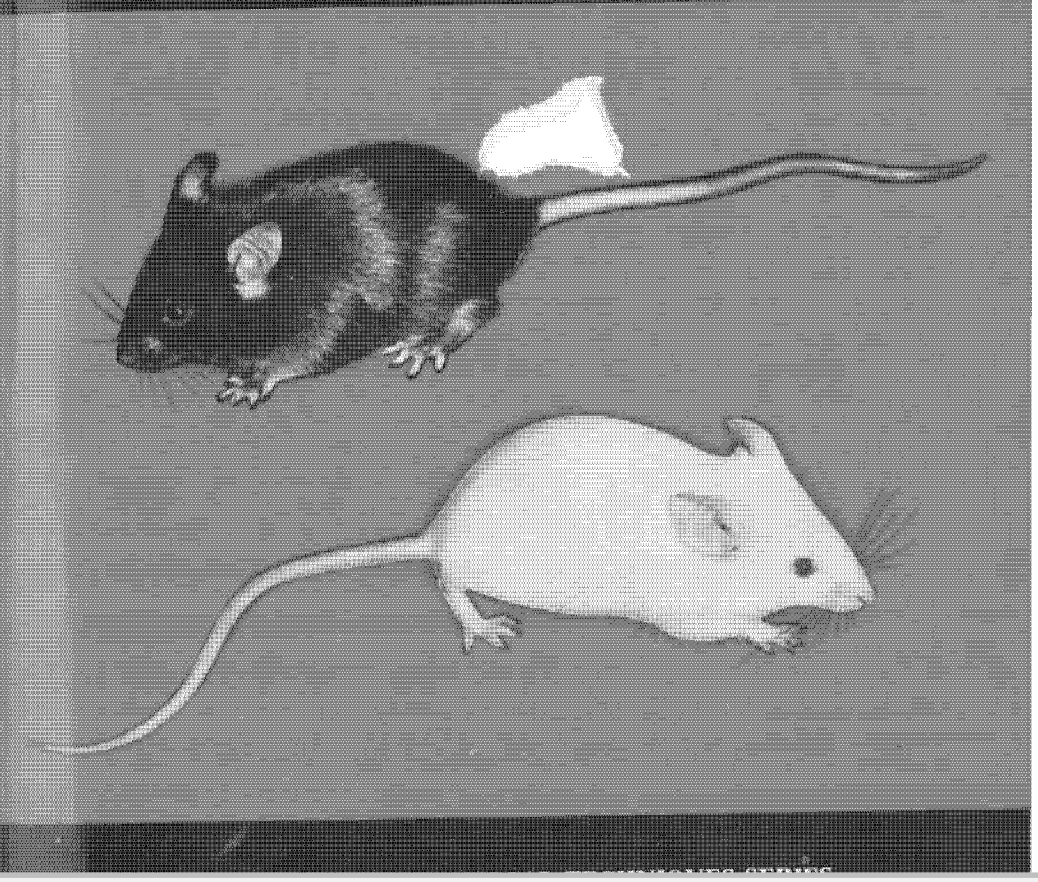
M. L. SIMMONS / J. O. BRICK

E LABORATORY MOUSE

Selection and Management



THE LABORATORY MOUSE

Selection and Management

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postoperative care is to make certain the mice are placed into cages with clean bedding and fresh food and water so their immediate environment will be conducive to quick healing and a minimum of infections. The mice should be observed regularly and carefully, particularly if clips, which can become very uncomfortable to the animal, are used. Clips causing apparent discomfort can be removed and new ones applied. In some cases, prophylactic therapy may be indicated owing to latent infections and other experimental reasons. Oxytetracycline or other broad spectrum antibiotics can be placed in the drinking water or even flushed into the incision site. We do not think that this procedure is ordinarily necessary or perhaps even desirable. A recent publication on murine splenectomy reporting use of an electrocautery device instead of ligation is of interest (ERSEK, 1968). Other surgical techniques, such as cryosurgery, may be used and are probably the methods of the future. The cryosurgical approach requires only minimal ligations.

FLUID ADMINISTRATION

Intraperitoneal

Intraperitoneal administration is used for many different purposes in the mouse. Anesthetics, tumor transplants, experimental drugs, and many others are routinely injected by the intraperitoneal route. The technique is simple once the basic method of picking up and holding the mouse is mastered. We recommend gently but firmly grasping the mouse by the skin at the back of the neck and carefully gathering the slack skin between the thumb and forefinger. Caution must be taken to avoid pulling the skin too tightly and strangling the mouse. With the skin held properly, the mouse can be lifted and the tail anchored between the small finger and palm of the hand. The mouse is now in a position to be easily injected by a number of routes. To inject intraperitoneally, a ½-inch 22- to 26-gauge needle is adequate. The size of the needle depends more on the viscosity of the material being injected than on any other consideration. The needle should be introduced on a plane forming approximately a 10° angle with the abdominal surface and slightly to the right or left of the midline. The angle is important because it is easy to insert the needle into the urinary bladder or into the intestine if the angle is too great. With some practice, this technique is easily mastered.

Intramuscular

Intramuscular injections in mice are fairly difficult because of the lack of a large muscle mass. The usual site for intramuscular injections is in the

posterior thigh muscle group. A ½-inch 24-gauge needle is adequate. The same general restraining technique can be used if only one person is doing the work. Other methods of restraint for intramuscular injections include plastic tubes with holes cut in them large enough to allow the leg and thigh to be gently pulled through and injected. Caution must be used in intramuscular injections that the needle is not pushed to deep or too hard, for it may pass completely through the muscle mass. The needle should be directed perpendicular to the sagittal plane, or pointed in a very slightly posterior direction.

Subcutaneous

Subcutaneous injections in mice are probably the easiest of all to give. The mouse can be injected subcutaneously on either the dorsal or the ventral side, and a ½-inch 22-gauge needle is adequate for most preparations. If the quantity of injected material is fairly large and does not interfere with experimental protocol, multiple injection sites are advisable. The rate of absorption is probably reduced considerably from the intraperitoneal or intramuscular injections. As with other methods, the restraint of the animal is of great importance.

Intrathoracic

Intrathoracic injections can be made in mice with a slightly bent or curved ½-inch 22-gauge needle. It should be inserted between the ribs at approximately the midpoint of the rib cage. Caution must be taken to insert it at an angle, thus preventing injection directly into lung tissue. Intrathoracic methods are not used routinely, and, unless there is a specific experimental reason to use the method, the intraperitoneal route is easier and the speed of absorption is similar.

Intravenous

The usual site of intravenous injection in mice is the lateral tail vein. The mice can be restrained in a number of different ways. The simplest is to pass the tail through a ½-inch slot in a small plastic shield. If the animals have been warmed under light bulbs for approximately 10 min, the veins will have expanded and intravenous injections can be accomplished using a ½-inch 24-gauge needle. It is a technique that requires practice, but can be done routinely once the skill is developed. As with all material injected intravenously, it should not contain extraneous material that may act as an embolism and kill the animal.