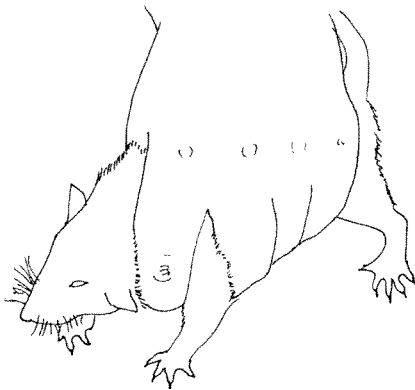


HANDLING

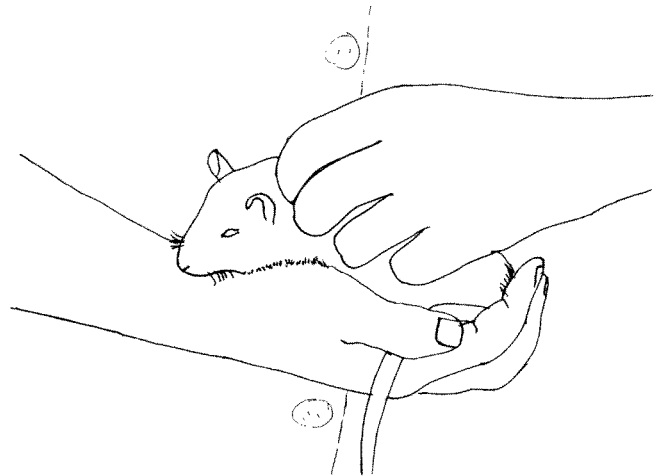
THE RAT (*Rattus norvegicus*)

Handling and restraint

- Rats are social, intelligent, curious animals that rarely bite
- Rats should NEVER be picked up by their tails
- They should be picked up by gently, but firmly, by grasping them around the thorax
- Nervous rats can be calmed by holding them close to your body, and stroking them gently



picking up rat



calming rat

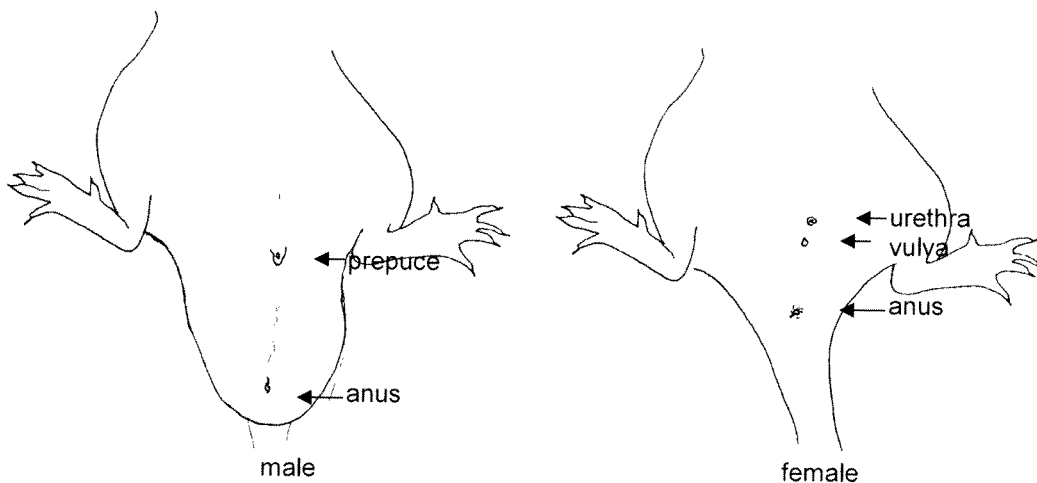
- Rats may be held upright, for examination of their ventral surface



examining ventrum

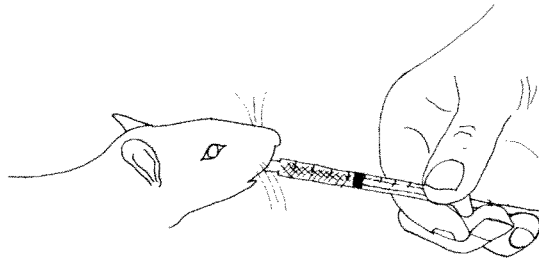
Physical examination and sexing

- Physical examination can be performed while gently restraining the rat with one hand
- Obtaining temperature, pulse rate and respiratory rate are straightforward
- Particular attention should be paid to the following: examination of the incisors for overgrowth, examination of the eyes and nose for discharge, palpation of the soft tissues under the ear and mandible for swellings (abscesses occur in these areas), gentle palpation of the abdomen, and palpation of the subcutaneous tissues of the ventrum for masses (mammary tumors are very common in this species).
- Stressed rats may overproduce a porphyrin-rich secretion from the Harderian gland behind the eye, resulting in a red ocular or nasal discharge, often mistaken for blood.
- Sexing rats is not difficult: Immature animals are sexed by examining the ano-genital distance, which is approximately twice as great in males as in females. Mature males have obvious scrotal swellings, and large testes. Keep in mind that males may withdraw the testes into the abdominal cavity through the large, open inguinal canals. Females have three external urogenital openings. The urethra, which opens from a small urinary papilla, the vulva, and the anus.



Administration of Medications

- Oral: Liquid medications or food supplements can be given via syringe, directed into the mouth. Rats have a sweet tooth and will often willingly accept sweet liquids.



taking sweet liquid willingly

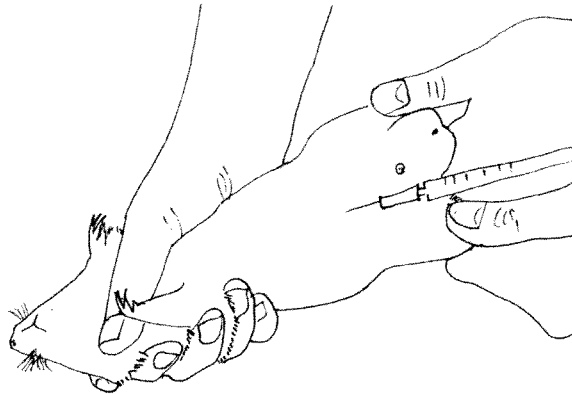
- Subcutaneous injection is given under the loose skin over the scapulae.



giving subcutaneous injection to rat

- Intramuscular injections are **not recommended** in rats, since they have a very small muscle mass.

- Intraperitoneal injections are relatively easy to perform. One person grasps the rat around the thorax with one hand, while grasping the tail and one hind leg with the other hand, and tilts the rat's head downward. The injector grasps the free hind leg and administers the injection mid-abdomen. Care must be taken not to restrict breathing.



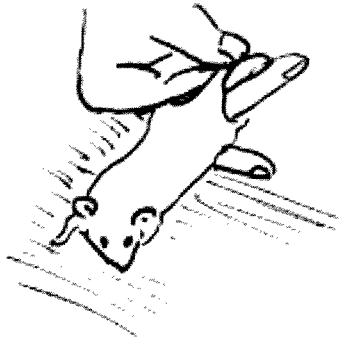
restraint for intraperitoneal injection

- Intravenous injections can be given through the lateral tail vein. Good restraint is necessary. Application of a topical anesthetic, such as EMLA cream or 2% xylocaine gel may help de-sensitize the skin over the vessel, and reduce discomfort to the animal.

THE MOUSE (*Mus musculus*)

Handling and restraint

- Mice will tend to hide in the back of the cage.
- Mice should be picked up by the base of the tail (never the tip!!) and immediately transferred to a secure surface – maintain a grip on the tail or the mouse may fall onto the floor.
- Use the base of the tail to gently extend the mouse's body, grasp the loose skin on the nape and dorsum and scruff the mouse firmly
- Trap the tail under your pinky finger to keep the mouse from flailing.
- Mice must be firmly restrained or they will bite



gripping mouse at the base of the tail



grasping loose skin on the nape and dorsum



scruffing the mouse and trapping the tail under the pinky finger

Physical examination and sexing

- Physical examination can be performed while scruffing the mouse
- Obtaining temperature, pulse rate and respiratory rate is difficult in mice due to their small size and very rapid rates
- Particular attention should be paid to the following: examination of the incisors for overgrowth, examination of the eyes and nose for discharge, examination of the fur for evidence of mites
- Sexing mice is similar to rats.

Administration of Medications

- Oral: Liquid medications or food supplements can be given via syringe, directed into the mouth, drop by drop
- Subcutaneous injection is given under the loose skin over the scapulae.
- Do not give intramuscular injections to mice as they have a very small muscle mass.
- Intraperitoneal injections are relatively easy to perform. The mouse is scruffed with the non-dominant hand (ie the left hand for most people), and held up-side-down. The dominant hand is used to administer the injection mid-abdomen.

THE GUINEA PIG (*Cavia porcellus*)

Handling and restraint

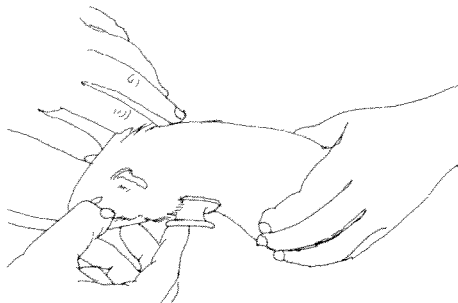
- Guinea pigs are easily stressed, and require gentle, quiet handling
- Gently, but firmly, grasp the thorax at the level of the pectoral limbs and support the hindquarters with the other hand – DO NOT IMPEDE BREATHING
- Hold the guinea pig close to your body to minimize stress and fear of falling
- A towel on the examination table provides more secure footing
- While on the examination table, one hand must always be kept on the animal to keep it from bolting away and falling on the floor
- Guinea pigs become very stressed when restrained in dorsal or lateral recumbency
- As an alternative, the guinea pig can be held as shown below, and supported against the handler's body, to access the toe nails, bladder, and other ventrally located structures.



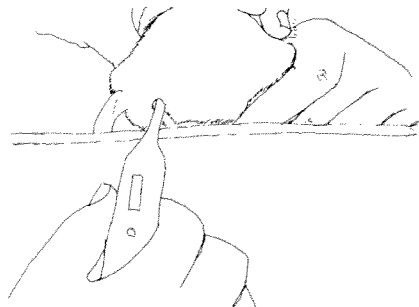
trimming nails

Physical examination and sexing

- Physical examination can be performed with the guinea pig resting on a towel on the examination table (remember to always have a hand on the animal to prevent bolting)
- Obtaining rectal temperature can be challenging due to angle with which the thermometer must be inserted into the rectum; the hand must be below the edge of the table
- Particular attention should be paid to the following: examination of the incisors and premolars for overgrowth, palpation of the mandibles for asymmetry (which might indicate tooth root abscesses), close scrutiny of the hair shafts for nits (especially around the ears and face), examination of the plantar aspect of all 4 feet for pododermatitis, gentle abdominal palpation, and examination of fecal material for any evidence of soft stool

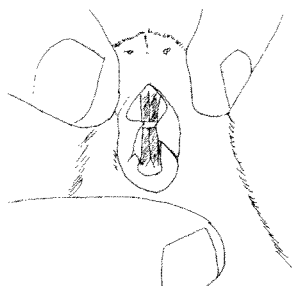


auscultation of chest

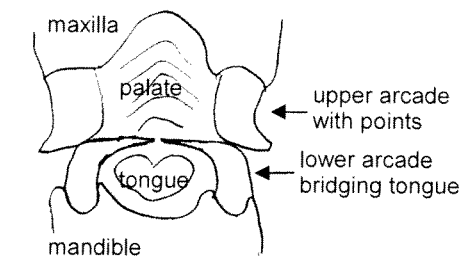


taking rectal temperature

- Overgrowth or malocclusion of incisors is easily detected, but thorough examination of premolars and molars is very difficult without anesthesia.
- Sharp points on the lower rostral-most premolars, and tongue entrapment can sometimes be detected by insertion of a pinky finger into the diastema (space between the incisors and premolars), and palpation of the lower arcade; external palpation of the cheeks can sometimes reveal pain due to laterally directed points on the upper arcade.

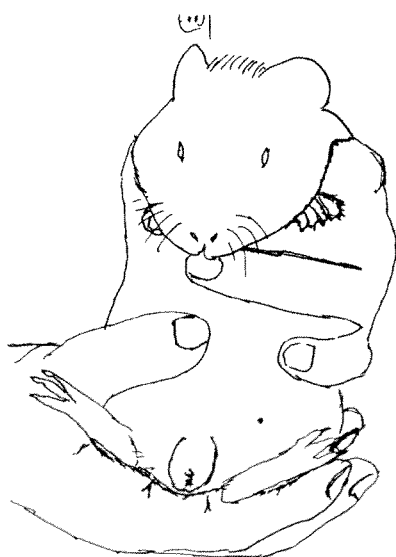


examining incisors

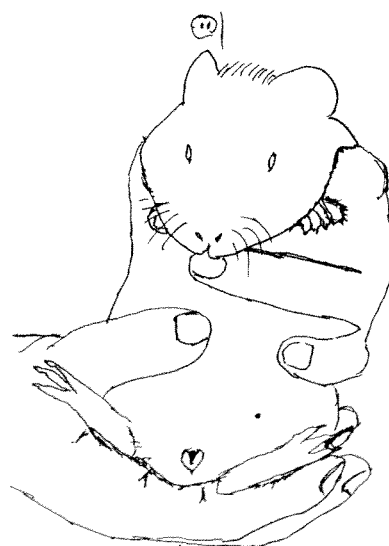


severely overgrown premolars

- Sexing guinea pigs is not difficult: Males (boars) have obvious scrotal swellings, and large testes and the penis can be protruded by pressing gently at its base. Keep in mind that males may withdraw the testes into the abdominal cavity through the large, open inguinal canals. Females (sows) have a Y-shaped depression in the perineal tissues, with the top branches of the Y pointing cranially and surrounding the urethral opening



male guinea pig



female guinea pig

Administration of Medications

- Oral: Liquid medications or food supplements can be given via syringe, directed into the diastema. Pills, such as vitamin C tablets, must be pushed back behind the fleshy cheek invaginations, after which they will usually be chewed and swallowed.
- Subcutaneous injection is the easiest and most frequently used injection route in guinea pigs. The method is the same as that for other species, and the preferred site is under the loose skin over the scapulae. Volumes of up to 35 ml can be given in one site. Guinea pigs have very tough skin in this area and a 25 gauge needle is usually needed.
- Intramuscular injections are **not recommended** in guinea pigs, as they are frequently followed by self-mutilation. If an intramuscular injection is essential, it should be given into the quadriceps muscle and should not exceed a volume of 0.3 ml per site.
- Intraperitoneal injections are relatively easy to perform, but care should be taken not to perforate the delicate intra-abdominal organs. With the guinea pig restrained upright, the needle is inserted at a 45-degree angle slightly to the right of the midline approximately 2.5 cm in front of the pubis. Up to 20 ml can be given at one time by this route.