

Rat Dissection

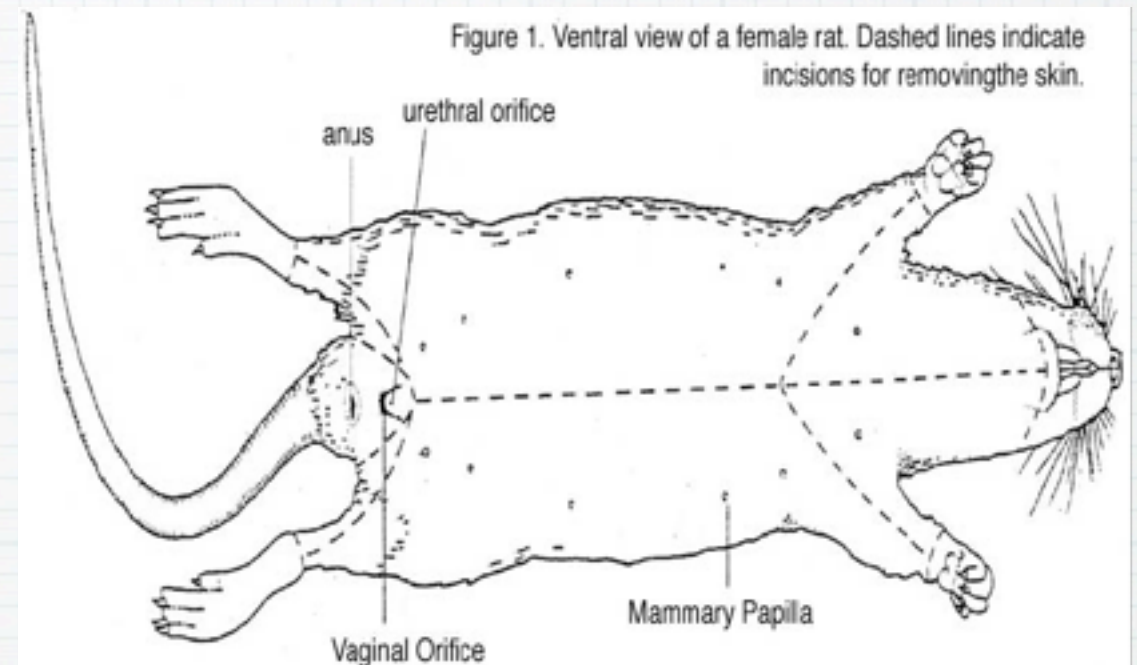
SBI 3C Lab Practical

Rat External Anatomy

- * Note the hairy coat that covers the rat and the sensory hairs (whiskers) located on the rat's face, called vibrissae.
- * The mouth has a large cleft in the upper lip, which exposes large front incisors (two middle teeth). Rats are gnawing mammals, and these incisors will continue to grow for as long as the rat lives.
- * Note the eyes with the large pupil and the nictitating membrane found at the inside corner of the eye. This membrane can be drawn across the eye for protection. The eyelids are similar to those found in humans.
- * Locate the teats on the ventral surface of the rat. Check a rat of another sex and determine whether both sexes have teats.
- * Examine the tail, the tails of rats do not have hair, though some rodents, like gerbils, have hair on their tails.
- * On female rats, just posterior to the last pair of teats, you will find two openings- 1) the urinary opening and behind that 2) the vaginal orifice, which is in a small depression called the vulva.
- * On males, you will find a large pair of scrotal sacs, which contain testes. Just anterior to the scrotal sacs is the prepuce, which is a bulge of skin surrounding the penis. The end of the penis has a urogenital orifice, where both urine and sperm exit.

Rat Internal Anatomy

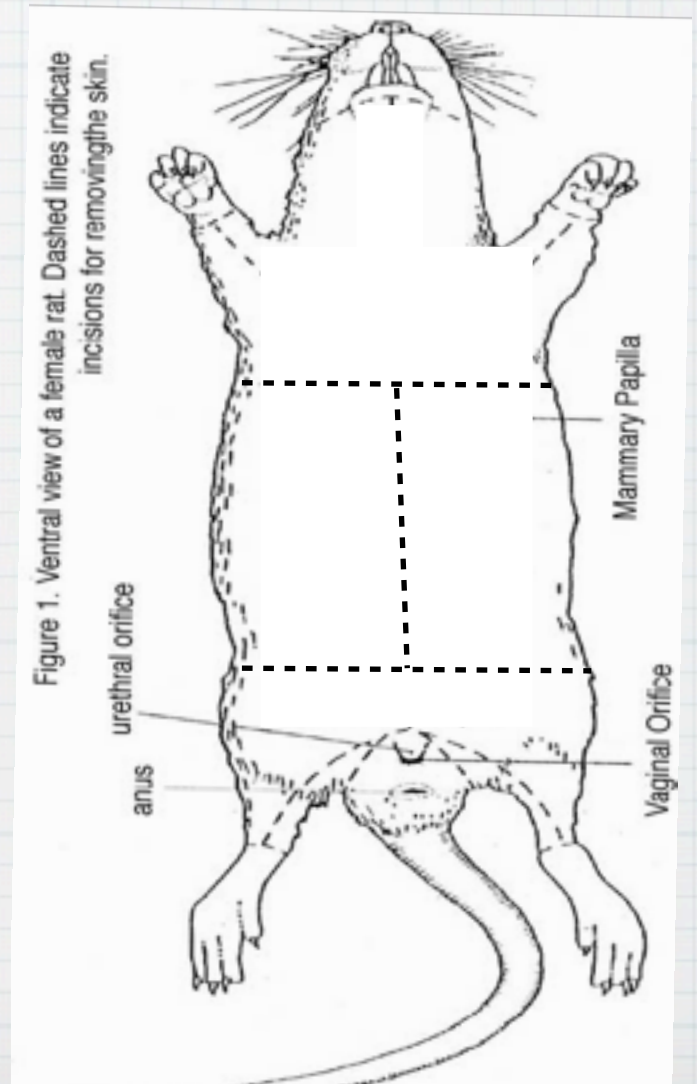
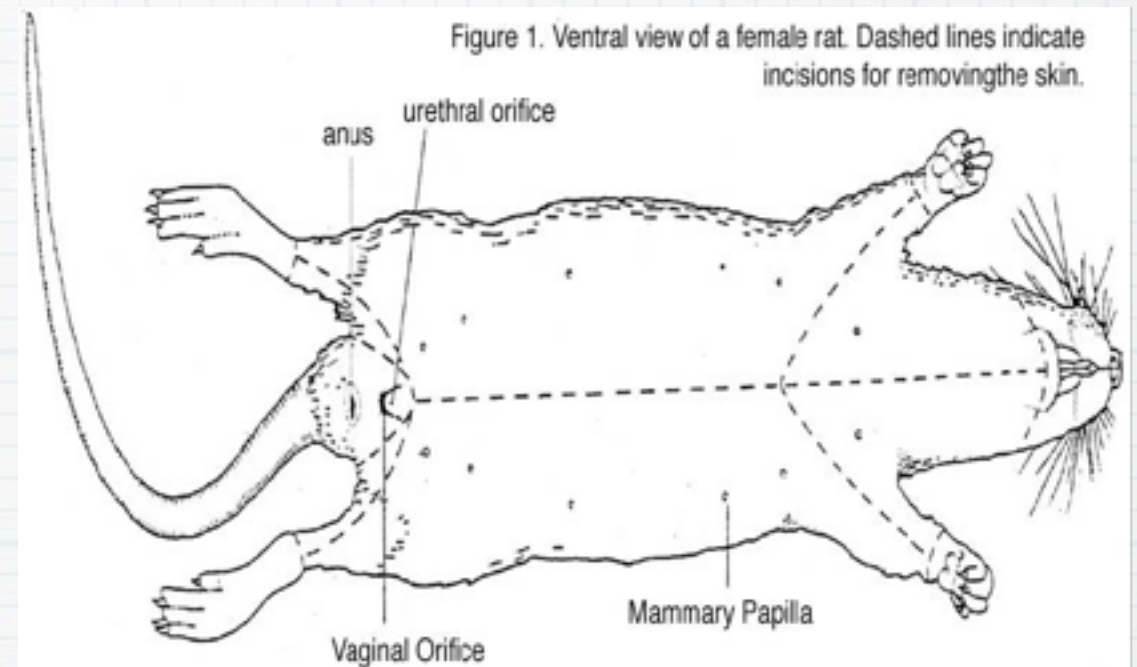
- * Pin the rat down by placing the rat ventral side up.
- * Lift the abdominal skin with a forceps, make a small incision with the scissors. Once this skin-freeing procedure has been completed, cut the rat along the body midline, from the pubic region to the lower jaw using a scalpel.



- * Make a lateral cut about halfway down the ventral surface of each limb. Pin the flaps to the tray.
- * Notice that the muscles are packaged in sheets of pearly white connective tissue called fascia, which protect the muscles and bind them together.
- * Carefully cut through the muscles of the abdominal wall in the pubic region, avoiding the underlying organs. To do this, hold and lift the muscle layer with a forceps and cut through the muscle layer from the pubic region to the bottom of the rib cage, in a similar way you did with the skin.
- * When you see the Checkpoint sign, check with your instructor to verify that you've done

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The Abdominal Organs

- * Locate the liver, which is a dark colored organ suspended just under the diaphragm. Rats do not have a gall bladder, which is used for storing bile in other animals.
- * The esophagus pierces the diaphragm and moves food from the mouth to the stomach. It is distinguished from the trachea by its lack of cartilage rings.
- * Locate the stomach on the left side just under the diaphragm. Slit the stomach lengthwise and notice the ridges. These help in mechanical digestion. The attachment between the stomach and the intestine is called the pyloric sphincter.
- * The spleen is about the same color as the liver and is attached to the stomach.
- * The pancreas is a brownish, flattened gland found in the tissue between the stomach and small intestine. Find the pancreas by looking for a thin, almost membrane looking structure that has the consistency of cottage cheese. The pancreas produces digestive enzymes and also secretes insulin
- * The small intestine is a slender coiled tube that receives partially digested food from the stomach (via the pyloric sphincter).
- * Use your scissors to cut the mesentery (the thin, connective tissue) of the small intestine, but do not remove it from its attachment to the stomach and rectum.
- * Locate the large intestine (also known as the colon), which is the large greenish tube that extends from the small intestine and leads to the anus.

The Thoracic Organs

- * Make two lateral cuts through the rib cage. A thin muscle attached to the posterior boundary of the rib cage should be obvious: this is the diaphragm, which separates the thoracic and abdominal cavities and is responsible for inhalation/exhalation. Cut the diaphragm away to loosen the rib cage. You can now lift the ribs to view the contents of the thoracic cavity.
- * Locate the thymus gland, which lies directly over the upper part of the heart. The thymus functions in the development of the immune system and is much larger in young rats than it is in older rats.
- * Observe the heart and the lungs. With a probe, push the thymus to the side to view the heart. The heart is centrally located in the thoracic cavity. The two dark colored chambers at the top are the atria (single: atrium), and the bottom chambers are the ventricles. The heart is covered by a thin membrane called the pericardium which helps to hold it in place.
- * Observe the throat region to identify the trachea- a small, white, ridged tube that runs down the neck. The bronchial tubes branch from the trachea and enter the lungs on either side. The lungs are large spongy tissue that take up a large amount of the thoracic cavity. Bronchial tubes may be difficult to locate because they are embedded in the lungs.
- * To expose the esophagus, push the trachea to one side using a probe. Follow the esophagus through the diaphragm to its junction with the stomach.