

Carolina's Perfect Solution[®] Pregnant Rat Dissection

Carolina's Perfect Solution[®] pregnant rat dissection allows students to develop their dissection and observation skills, identify major external and internal features of the pregnant rat, understand form and function, and gain a better understanding of the pregnant mammal anatomy and fetus growth and development. This activity supports 3-dimensional learning and builds toward the following:

- NGSS Scientific and Engineering Practices: Developing and Using Models, Constructing Explanations
- NGSS Core Idea: Life Science 1: From Molecules to Organisms: Structures and Processes

Materials Required

Carolina's Perfect Solution[®] Pregnant Rat, Plain (228307)
Carolina[®] Rat Dissection Mat (229970)
Carolina[®] Adjustable Safety Glasses (646705)
Laboratory Apron (706245)
Nitrile Disposable Gloves (706335, 706336, 706337)
Dissecting Scissors (622230)
Foam Tray

Activity Procedure

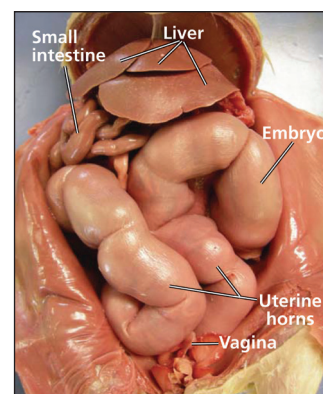
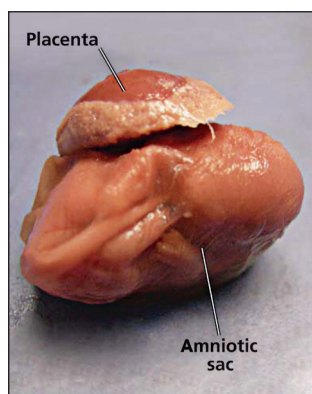
1. Obtain a Carolina's Perfect Solution[®] Pregnant Rat, and lay it on the foam tray.
2. Identify the following external features of the rat:
 - a. External nares
 - b. Manus
 - c. Pes
 - d. Nictitating membrane
 - e. Vibrissae
 - f. Teats
 - g. Urethral orifice
 - h. Vaginal orifice
 - i. Anus
3. Position the rat with the ventral surface up.
4. Make an incision anterior to the urethral orifice, cutting through the skin and the thin muscle wall along the abdominal midline toward the chest. Continue to cut through the sternum, midway between the forelimbs. At each end of the midline cut, make short lateral cuts toward the base of each limb. Refer to the incision diagram on the Carolina[®] Rat Dissection Mat.
5. Identify the following organs:
 - a. Uterine horns
 - b. Ovary
 - c. Urinary bladder
 - d. Kidney
 - e. Large intestine
 - f. Small intestine
 - g. Spleen
 - h. Pancreas
 - i. Liver
6. Open the uterine horn, and remove and examine the embryo attached to the placenta.

Additional Information

View more information, content links, and products related to this activity at www.carolina.com/takeaways.

Safety

Have students wear safety glasses or goggles, gloves, and a lab apron when dissecting.



Results/Summary

Help students gain a better understanding of reproductive anatomy. With the exception of marsupials and monotremes, all mammals develop internally and are nourished by the **placenta**, a structure of tissue layers and blood vessels that develops during gestation. The placenta facilitates the exchange of nutrients and waste between the mother and the fetus. Oxygen from the mother's inhalation and nutrients from the digestion of food pass through the capillaries of the placenta and into the abdomen of the fetus through the **umbilical cord**. This cord connects the placenta to the fetus and 1 vein (carrying blood into the fetus). The vein carries waste products from the developing fetus through the placenta and into the mother's bloodstream, from which the waste can be filtered by the mother's kidneys and excreted. The placenta also functions to help protect the baby by preventing the spread of bacteria from the mother's body. Use the scissors to cut carefully through the thin membrane covering the uterine horn, and remove 1 of the embryos. It is curled inside a thin membrane, the **amniotic sac**, which protects the embryo during its development. Carefully remove the sac to examine features of the embryo and see how the placenta connects via the umbilical cord.

