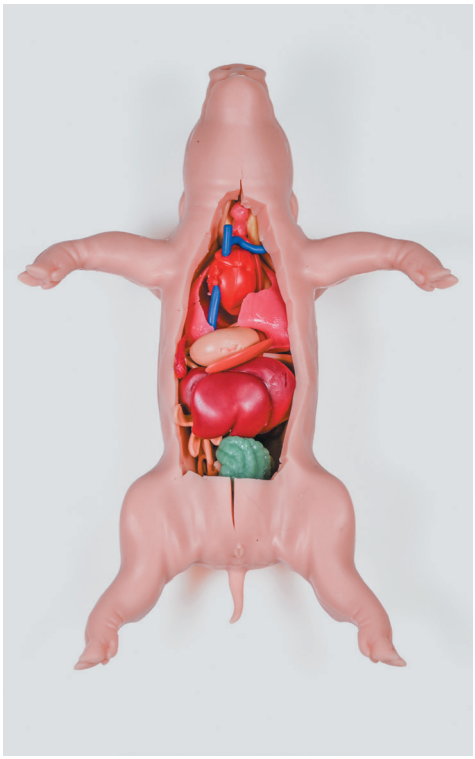
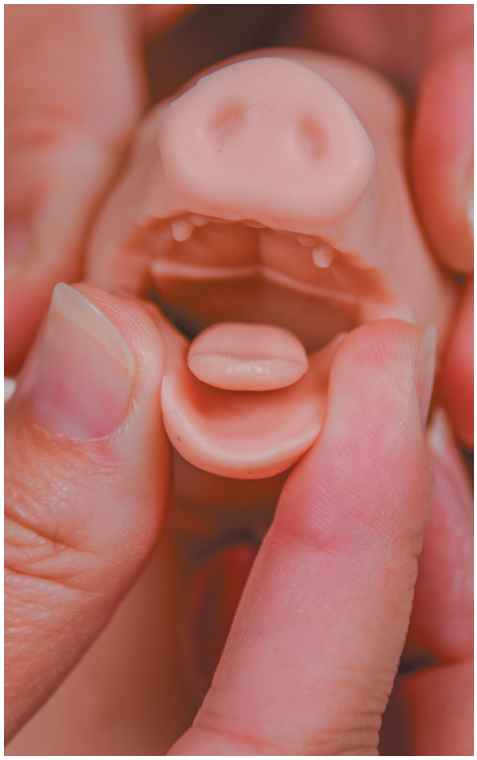
Teach Kind SCIENCE
PETA's Humane Science Education Division

Kind Piglet Dissection: Teacher's Guide





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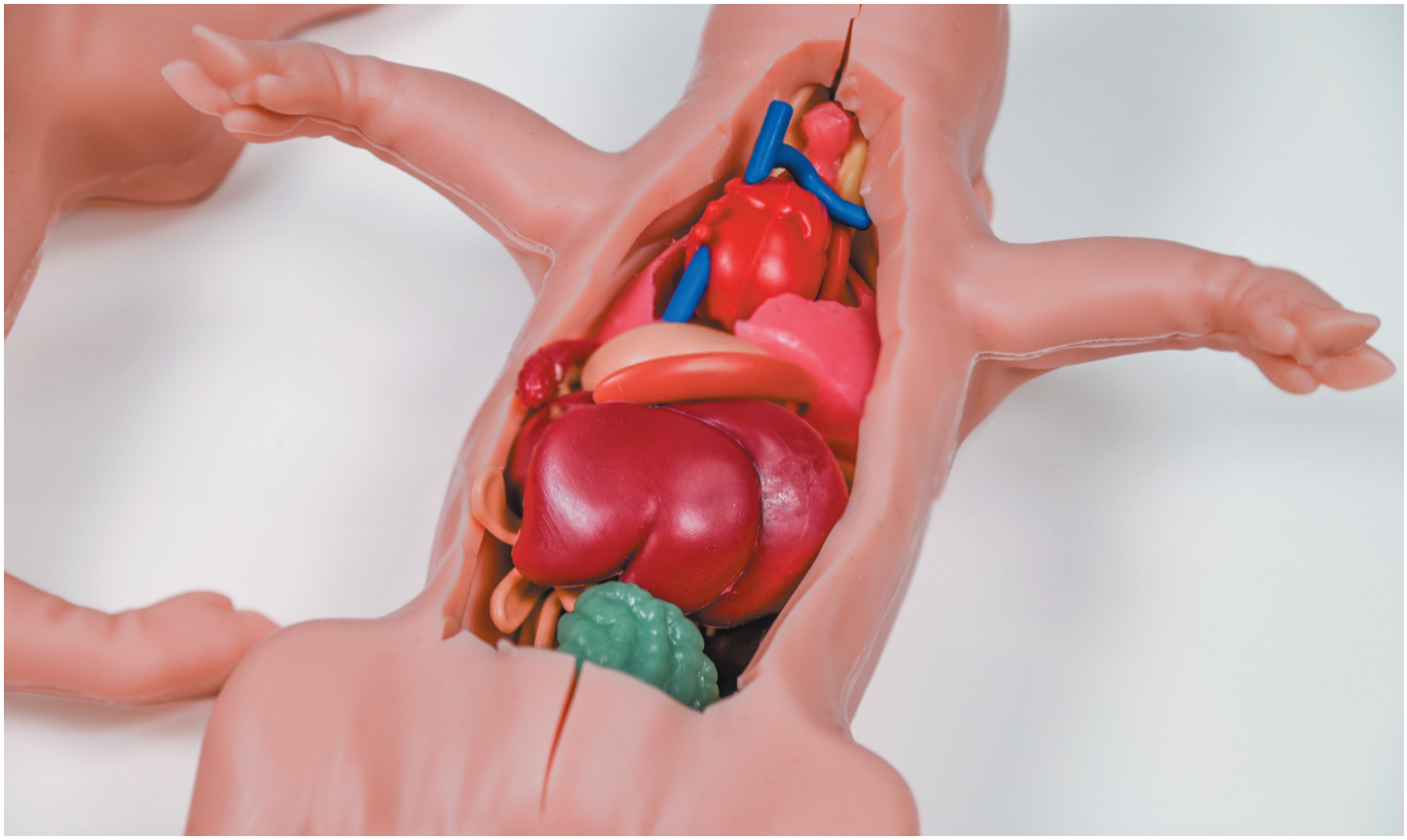
Product and Safety Guidelines

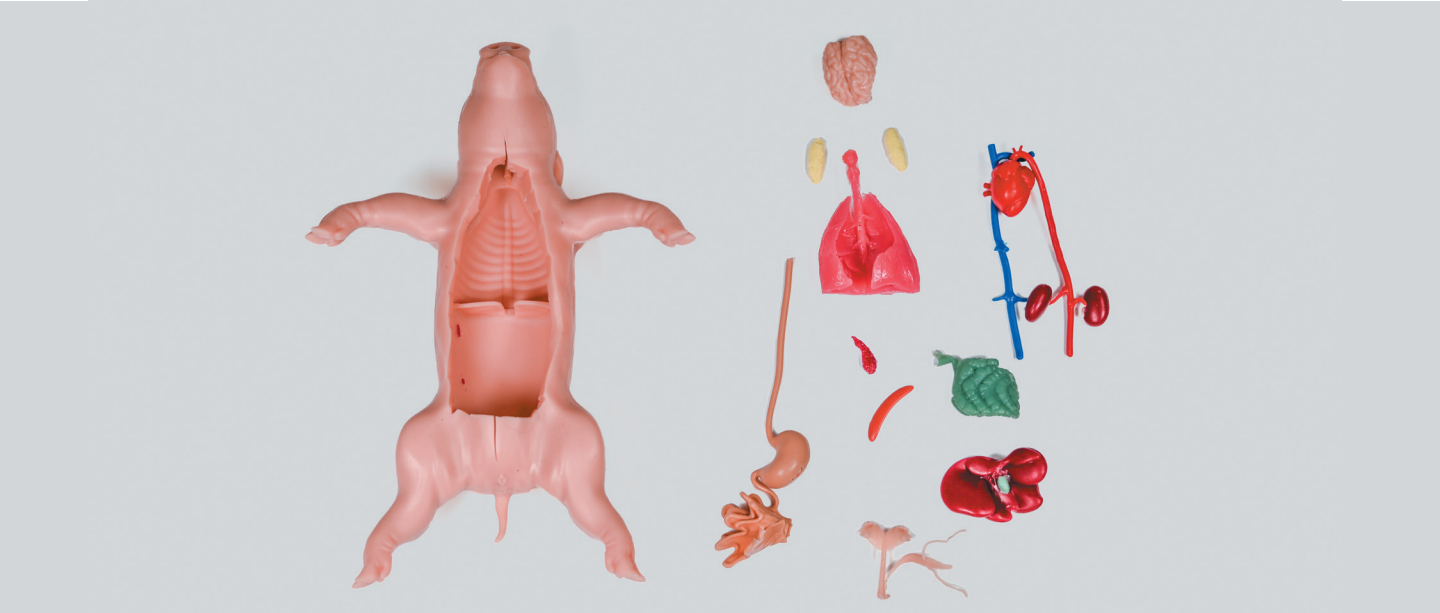


Kind Piglet is silicone-based and shelf-stable at temperatures up to 500°F. If not reused, silicone can be properly disposed of in the trash or at a silicone recycling facility. Reuse is recommended by suturing the model back together.

Safety Guidelines

Follow lab safety protocols during Kind Piglet dissections. Since you are dissecting a silicone model and not an animal preserved in formaldehyde, PPE is optional at the instructor's discretion. Lab safety protocols should still be followed when using sharp materials, such as scalpels, scissors, pins, or tweezers, in the lab.

Teacher's Guide



Overview

Students will observe and dissect Kind Piglet to understand pig anatomy and compare body structures and systems to better understand human anatomy. The Kind Piglet is a one-to-one replacement for fetal pig dissections and can also be used as a cruelty-free dissection replacement for cats and minks, allowing for comparison of mammalian anatomy with human anatomy.

By using Kind Piglet, students will learn to foster empathy for animals inside and outside the classroom, rather than seeing animals as educational tools. Students will explore and fully understand fetal pig anatomy through an engaging, humane dissection.

After your animal-free dissection is complete, students may also suture the model back together for reuse, or you can keep the models open and retest students on their knowledge of pig anatomy later in the semester.

Content Standards Alignment

Next Generation Science Standards

- NGSS MS-LS
- NGSS HS-LS

Anatomy and Physiology
And other leading anatomy curricula

✓ Structures and processes of living organisms
✓ Diversity and adaptation through biological evolution
✓ Behavior of organisms
✓ Organization of living systems

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Warm-Up Exercise

For a pre-lab exercise, introduce students to the ethical implications of using real animals in science education and let them know how using the Kind Piglet saves animals. This passage speaks to how animal-free methods provide superior learning and engagement opportunities for all. Print out a copy of the animal-free dissection lab warm-up reading for each student.

Animal-Free Dissection Lab Warm-Up Reading

Have students read the passage, discuss the text, and answer the questions (10–20 minutes). This can be done during the lab period or as homework the previous night.

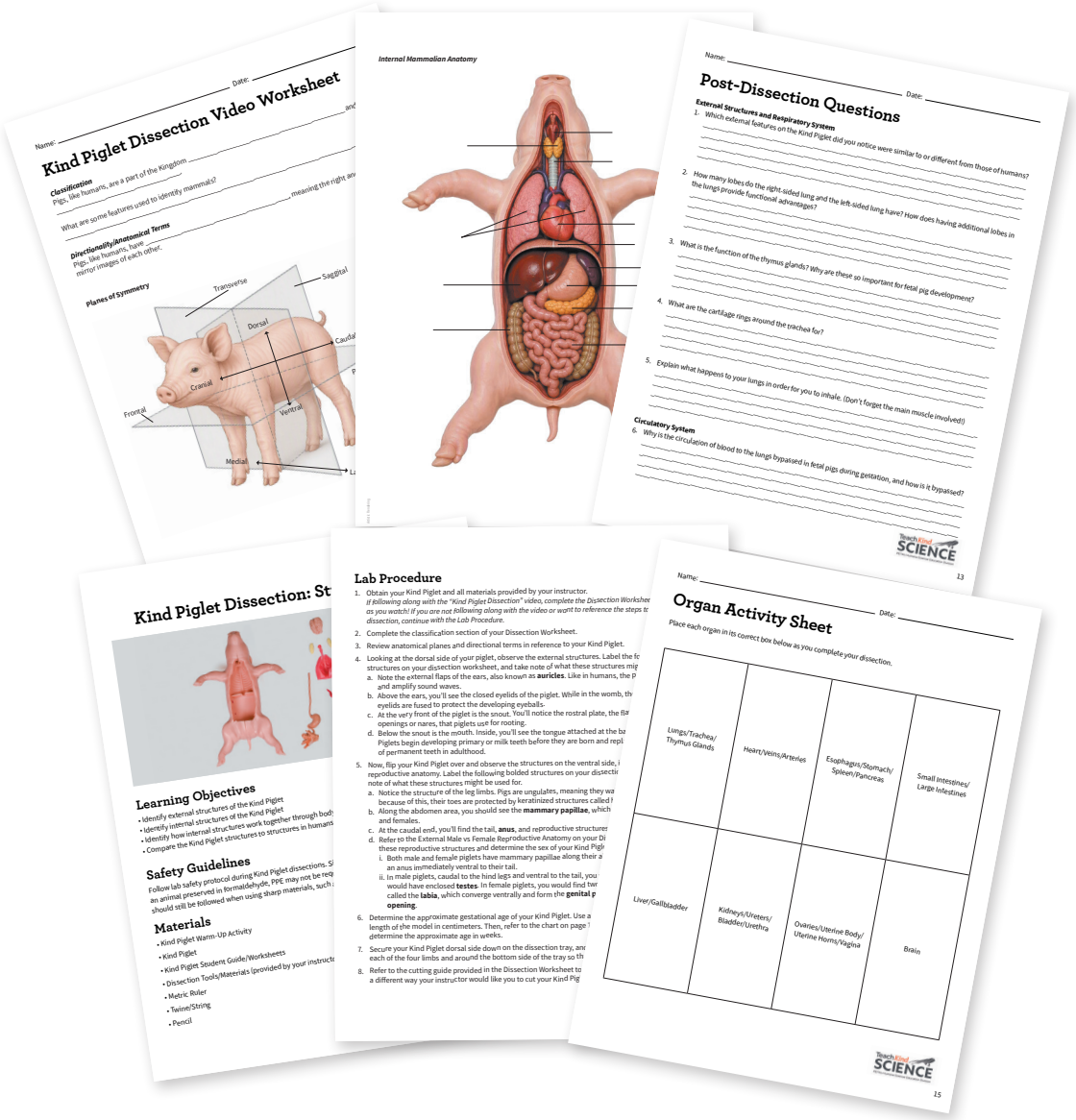
Materials

- Kind Piglet Warm-Up Activity
- Kind Piglet Student Guide
- Kind Piglet
- Scalpel and Blades
- Dissection Tray and/or Dissection Pads
- Dissection Pins (optional)
- Dissection Scissors (recommended)
- Tweezers
- Metric Ruler
- Twine/String
- Suturing Needle and Synthetic String (optional, required if suturing after the dissection)

Lab Procedure

1. Complete pre-lab warm-up reading as a class.
2. Print and hand out the Student Dissection Guide to each student.
3. Hand out all dissection tools/materials needed for the dissection.
4. Review vocabulary words, directional terms, and anatomical planes, if needed. (*Note*: This material is covered in the "Kind Piglet Dissection" video.)
5. Watch the "Kind Piglet Dissection" video, and have students follow along to complete their dissections.
6. Pause the video periodically to allow students time to dissect the Kind Piglet, fill out their Dissection Worksheet, and place the organs in their respective boxes on the Organ Activity Sheet.
    a. You may need to allow extra time after the video to make sure all students have completed their Dissection Worksheet, including labeling all structures.
7. Review the Student Dissection Worksheet answers by using the Teacher's Key.
8. Have students answer the Post-Lab Questions after the activity or later on as an assessment.
9. If students are suturing your Kind Piglets back together to prepare the models for reuse, do this now, using suturing needles and synthetic string.
10. Have students clean up their materials/lab stations.

Student Material



[Student Guide and Lab Worksheet]

Name: _____ Date: _____

Teacher's Key: Kind Piglet Dissection Video Worksheet

Classification

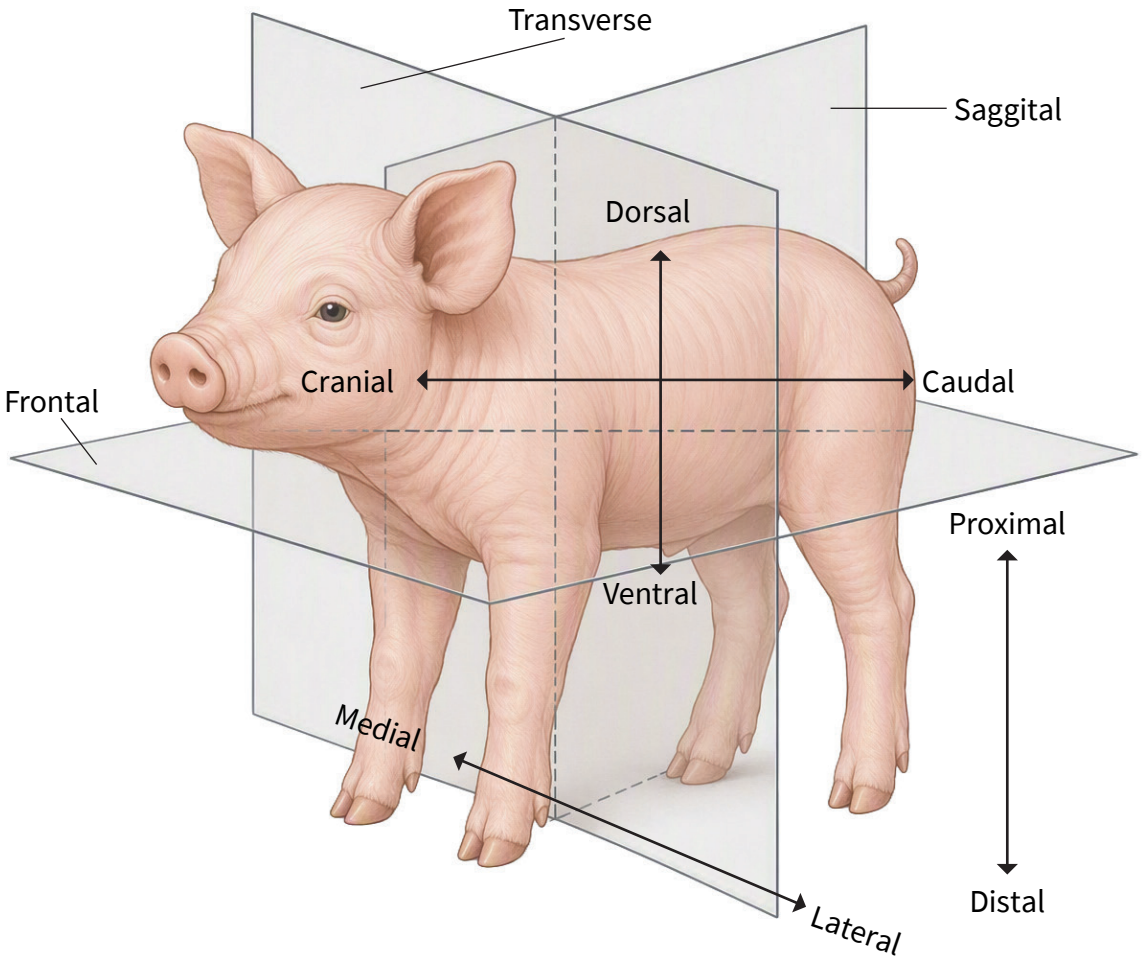
Pigs, like humans, are a part of the Kingdom Animalia and in Class Mammalia.

What are some features used to identify mammals?
Vertebrates who have mammary glands, hair, or fur; give birth to live young; and are endothermic or warm-blooded

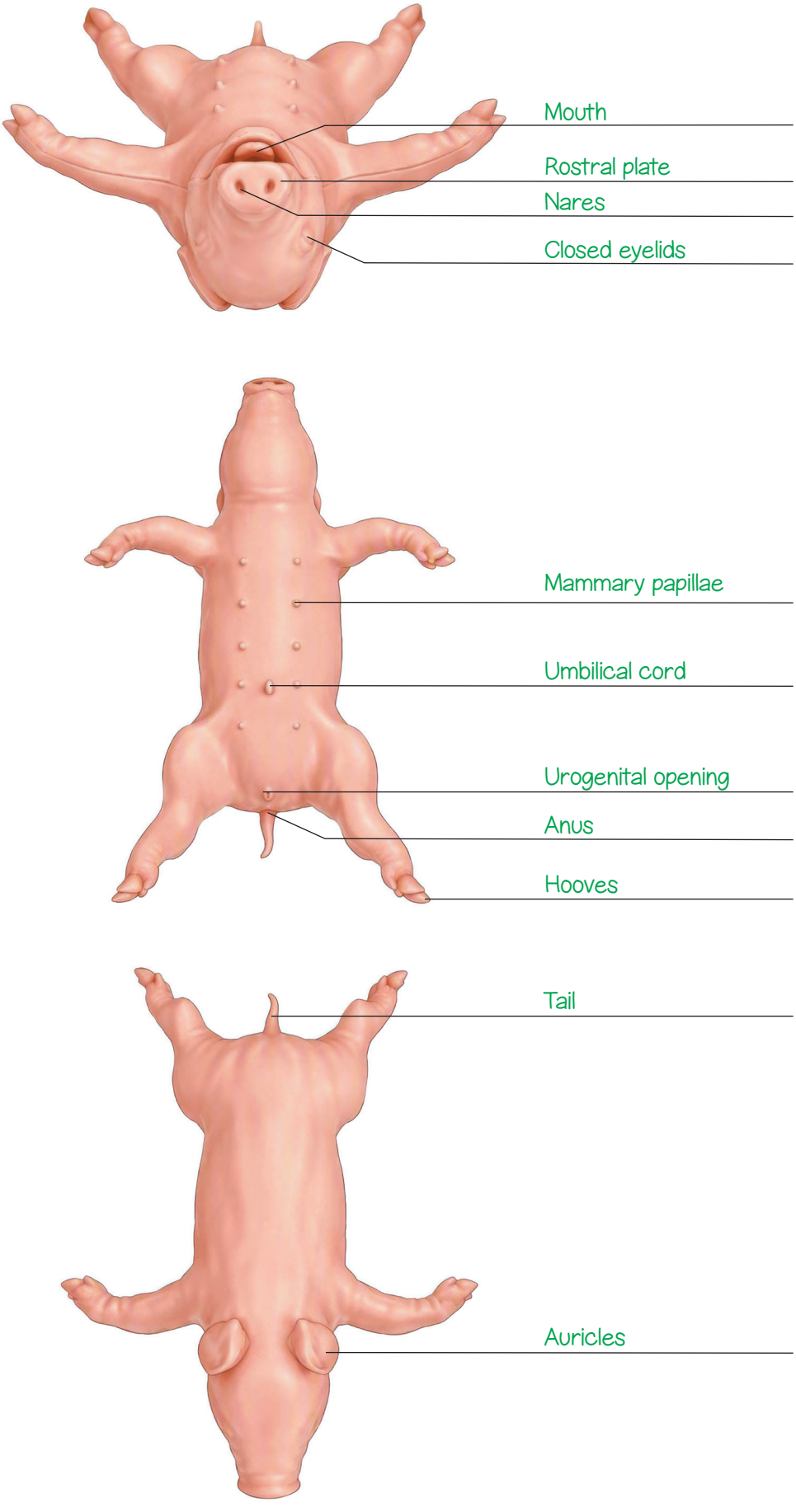
Directionality/Anatomical Terms

Pigs, like humans, have bilateral symmetry, meaning the right and left halves are mirror images of each other.

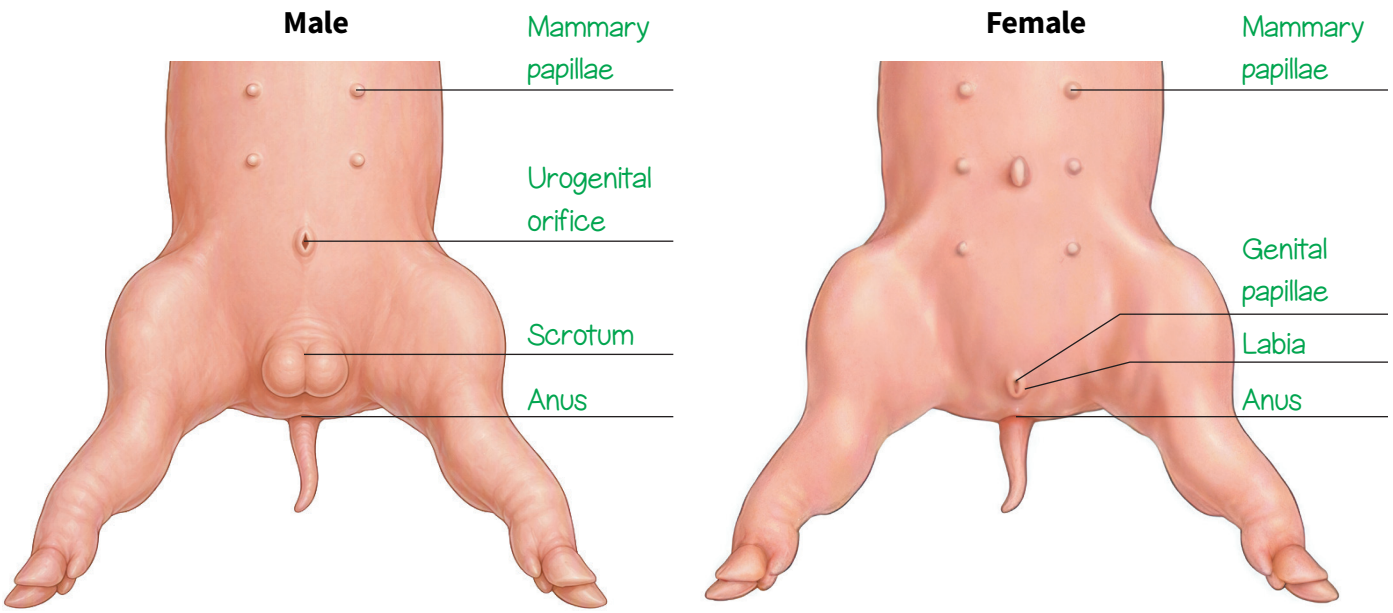
Planes of Symmetry



External Structures



External Structures: Male vs Female Reproductive Anatomy



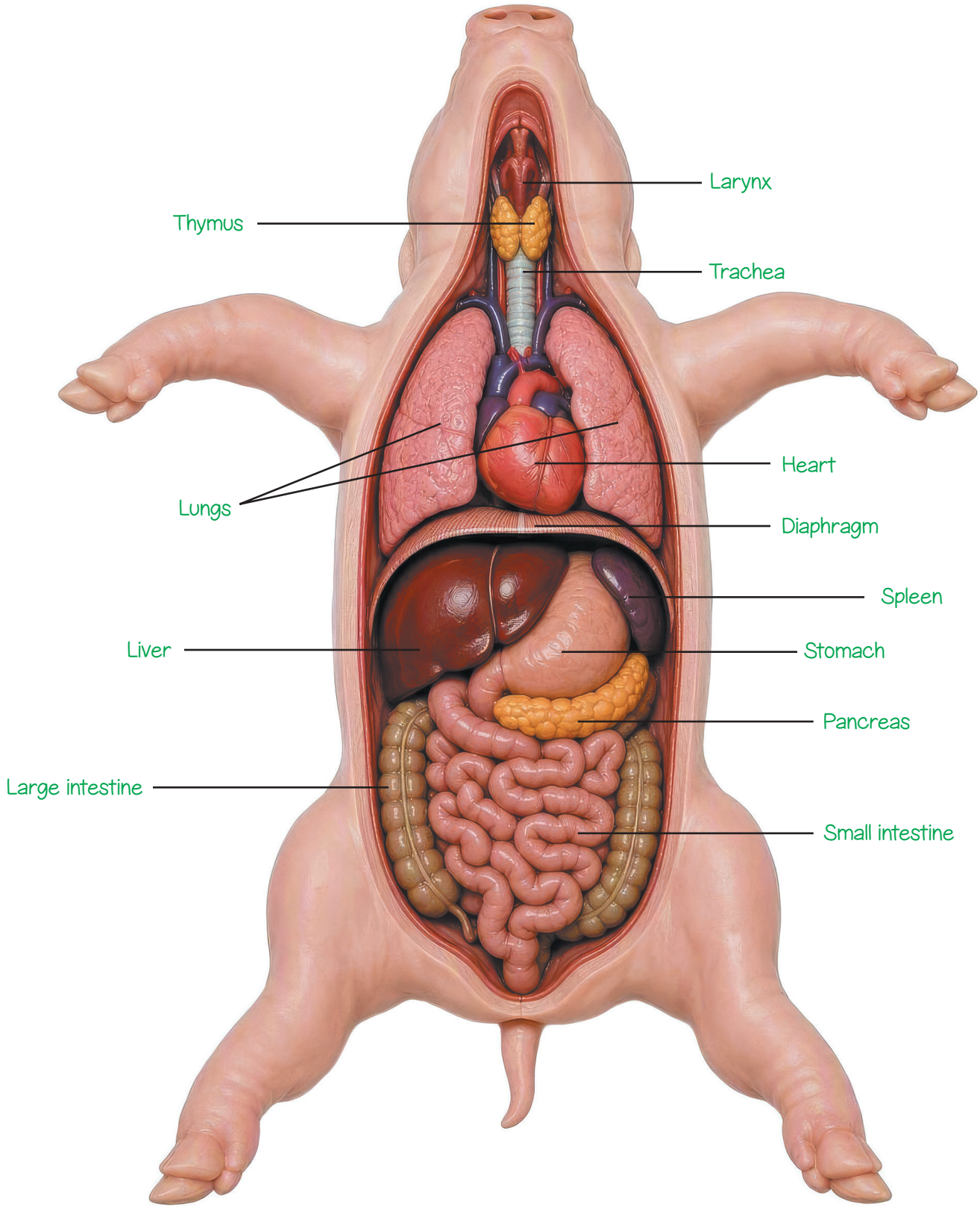
***Determine the sex*:**
What is the sex of your Kind Piglet? Female

***Determine the gestational age*:**
Measure your Kind Piglet from snout to the base of the tail, or the anus. Determine the approximate gestational age of your Kind Piglet by using the chart below:

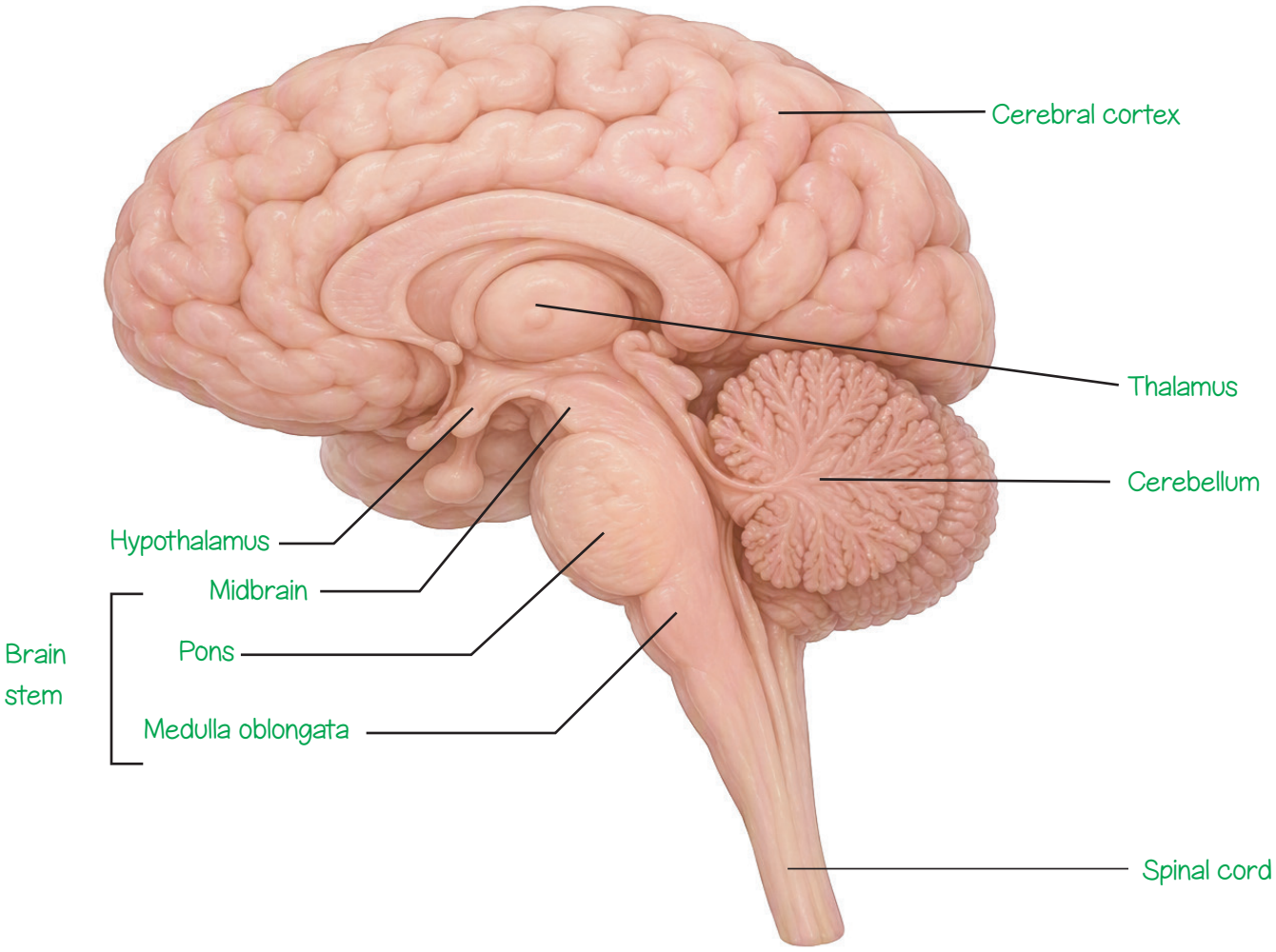
Length in cm	**Approx. age in weeks**
4 cm	~8 weeks
19–20 cm	~10 weeks
22–23 cm	~14 weeks
24–27 cm	~15 weeks
28–30+ cm	~16–17 weeks (full term)

What is the length of your Kind Piglet? 19 cm
What is the approximate gestational age of your Kind Piglet? 10 weeks

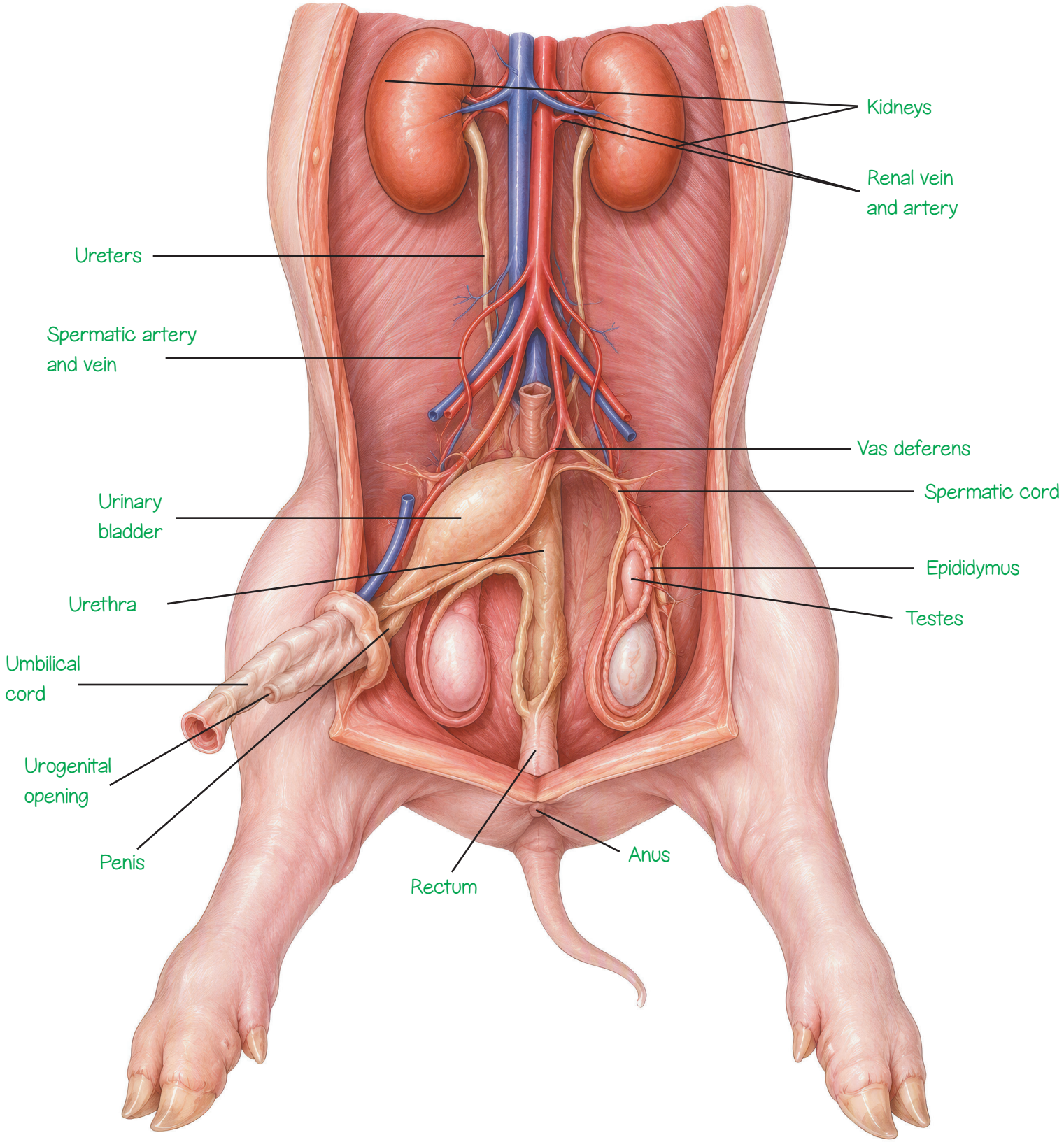
Internal Mammalian Anatomy: Teacher's Key



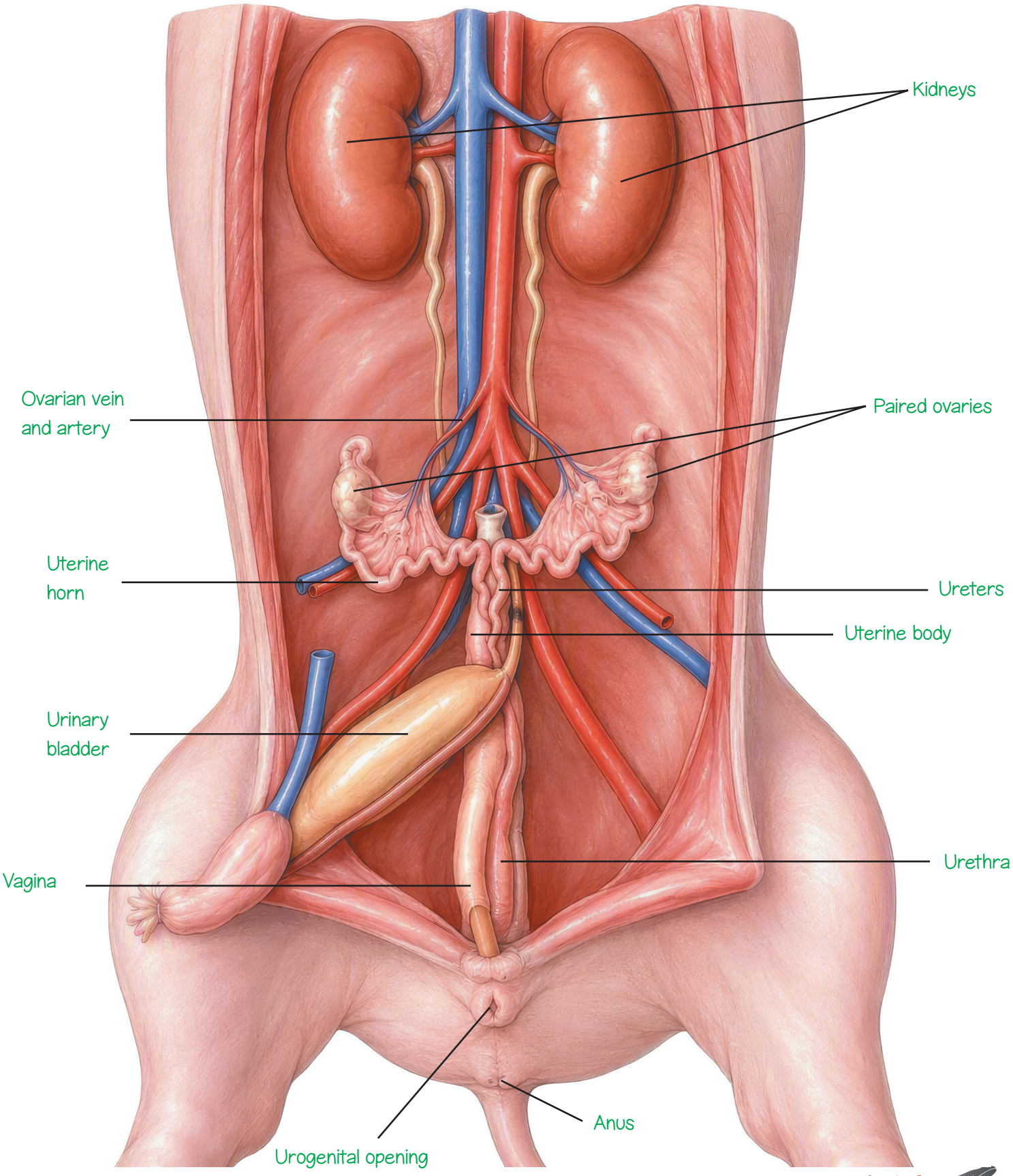
Mammalian Brain Anatomy: Teacher's Key



Mammalian Male Reproductive Anatomy: Teacher's Key



Mammalian Female Reproductive Anatomy: Teacher's Key



Teacher's Key: Post-Dissection Questions

External Structures and Respiratory System

1. Which external features on the Kind Piglet did you notice were similar to or different from those of humans?

   The Kind Piglet has **auricles**, which are the external flaps of the ears. Humans also have auricles to allow the ears to collect and amplify sound waves. The Kind Piglet has a **tongue** that is attached to the back of the mouth, like in humans. The Kind Piglet has two holes to breathe out of (**nares**) like humans, but piglets have a **rostral plate** at the front of their face to help with rooting, unlike humans. The Kind Piglet has **hooves** to protect their toes, unlike humans.

2. How many lobes do the right-sided lung and the left-sided lung have? How does having additional lobes in the lungs provide functional advantages?

   The right-sided lung has **four lobes** (apical/cranial, cardiac/middle, diaphragmatic/caudal, and intermediate/accessory), while the left-side lung has **three lobes** (apical/cranial, cardiac/middle, and diaphragmatic/caudal). Having additional lobes in the lungs provides more efficient oxygen and carbon dioxide gas exchange.

3. What is the function of the thymus glands? Why are these so important for fetal pig development?

   The thymus glands are the site of T-lymphocyte maturation and are large in piglets because newborns need to establish a healthy immune system with newly established cell-mediated immunity.

4. What are the cartilage rings around the trachea for?

   They provide structural support and help maintain an open airway.

5. Explain what happens to your lungs in order for you to inhale. (Don't forget the main muscle involved!)

   The main muscle involved in breathing, the **diaphragm**, contracts and moves downward to expand the chest cavity, allowing air to be taken in through the trachea.

Circulatory System

6. Why is the circulation of blood to the lungs bypassed in fetal pigs during gestation, and how is it bypassed?

   In both fetal pigs and humans, the heart contains the **foramen ovale**, a small opening that allows oxygen-rich blood from the placenta (in humans) or from other maternal blood to bypass the nonfunctioning lungs and enter the heart directly. The foramen ovale closes at birth, allowing postnatal circulation to begin.

Digestive System

7. List all organs involved in digestion and what their functions are.

The digestive system starts at the **mouth** and passes through the **esophagus**, the long tube that carries masticated food to the **stomach** for mechanical and chemical digestion. The **pancreas** produces digestive enzymes and creates insulin to regulate blood sugar. The **spleen** creates new white blood cells and filters and cleans the blood. The food that enters the **stomach** is broken down into chyme and then passes through the **small intestines** for further chemical digestion. After all nutrients have been absorbed through the **large intestines**, waste leaves the body through the **anus**. Attached to the underside of the **liver** is the very small **gallbladder**, which stores bile in the piglet. The **liver** is the site of bile production and blood filtration.

8. How many liver lobes does the Kind Piglet have? Is this the same number of liver lobes that humans have?

The Kind Piglet has **five liver lobes**: right and left medial lobes, right and left lateral lobes, and the caudate lobe. This differs in humans, as we only have four liver lobes: right and left lobes, the caudate lobe, and the quadrate lobe.

9. Explain how the circulatory system is involved with digestion. (*Hint:* How does blood get to the liver?)

The **hepatic portal vein** attaches to the liver, directly delivering blood from the digestive organs to the liver as part of the **hepatic portal system**.

Urogenital System

10. List all organs involved in the excretory system, in order, as urine is produced and leaves the body.

The paired **kidneys**, where **urine** is formed, are connected by thin tubes, the **ureters**, leading to the urinary **bladder**, which stores urine. Urine then exits the body via the **urethra**. The **renal arteries and veins** connect the kidneys to the heart, enabling blood filtration and regulating fluid balance.

11. What is unique about a female pig's reproductive system that is not present in humans, and what advantage does this serve?

Female piglets have **uterine horns**, which converge to form the small uterine body. Uterine horns are common structures in mammals like pigs, who typically have around 10 to 12 piglets per pregnancy, allowing for multiple embryos to be carried at a time.