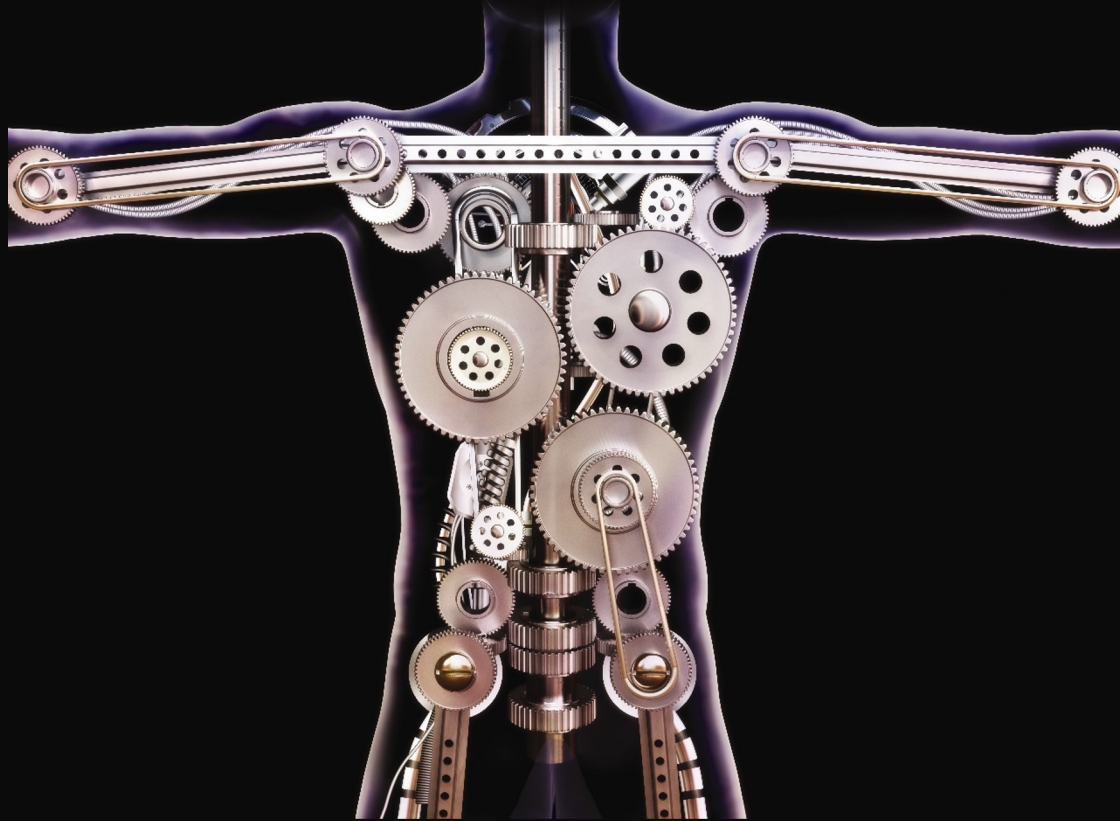


Carolina Biological Supply Company



Structure and FUNction!
Organ Dissection for Next Generation
Teachers

Wear Your Tee and Enter to Win a **FREE** Kit of **YOUR** Choice!



- To be eligible, you **MUST** wear your “Perfect” T-shirt to the Carolina booth.
- Turn in your completed entry form to a staff member from **PRESERVED MATERIALS**.
- One winner will be chosen after the show. (You need not be present to win.)

Objectives

- Introduce the general structure, physiology, and interdependence of major mammalian organs.
- Examine the **sheep pluck**.
- Dissect the **sheep heart**, **bull testicle**, and **cow eye**.
- Experience the quality of Carolina's Perfect Solution® specimens.



Building Toward 3-Dimensional Learning

Scientific and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Developing and using models</p> <ul style="list-style-type: none">• Develop and use a model based on evidence to illustrate the relationships between systems.	<p>LS 1: From molecules to organisms: Structures and processes</p> <ul style="list-style-type: none">• Multicellular organisms have a hierarchical structural organization.	<p>Structure and function</p> <ul style="list-style-type: none">• The shape and structure of objects determine their functions and properties.¹

Next Generation Dissections

1. NGSS Lead States, *Next Generation Science Standards: For States, By States* (Washington, DC: The National Academies Press, 2013), retrieved from www.nextgenscience.org or ngss.nsta.org.

Carolina's Perfect Solution® Specimens

Quality

**Superior
preservation**

**Superior
tissue color
and texture**

Safety

**No
dangerous
off-gassing**

**No formalin
odor**

Dissection Preparation Tips

- **Organize your dissection area:**

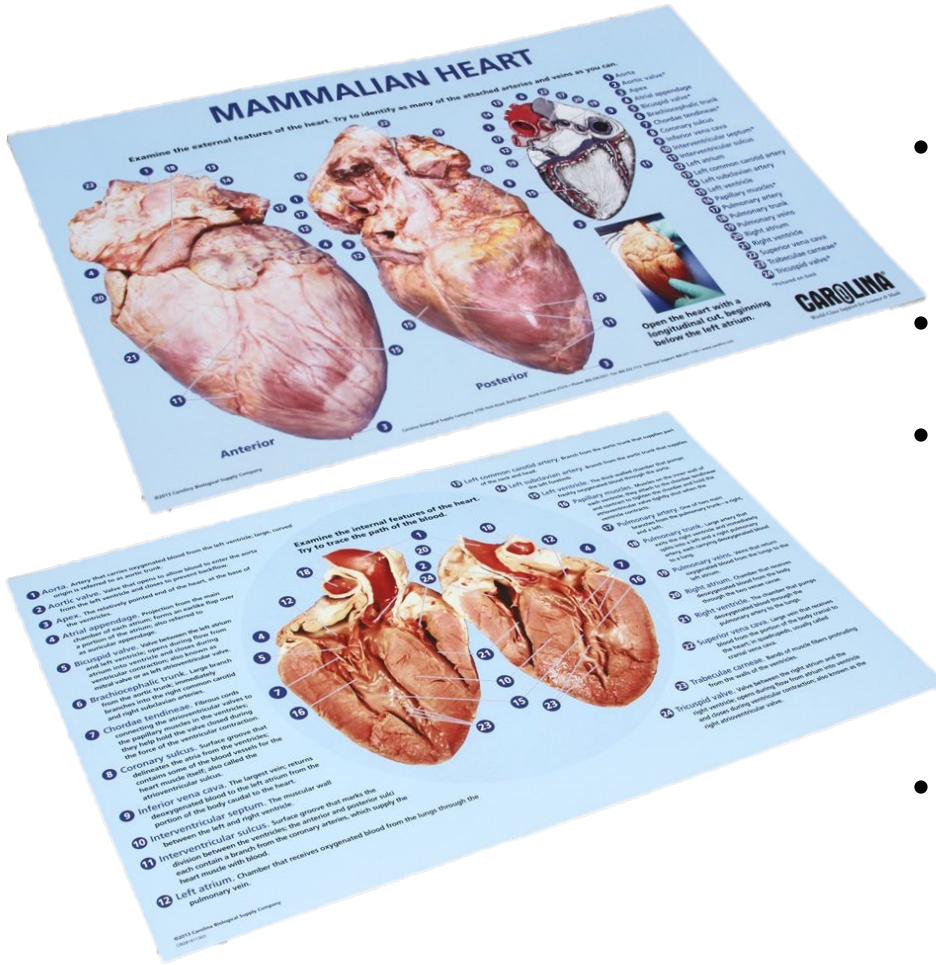
- Take out your dissection trays
- Put blue absorbent pad under the dissection tray
- Lay out your instruments
 - Scalpel
 - Scissors



- **Use appropriate personal protective equipment:**

Apron, gloves, goggles

Carolina® Dissection Mats



- **Clear, concise dissection instructions**
- **Detailed, color photographs**
- **Labeled internal and external structures with definitions**
- **Cost-effective**
- **Reusable—wipe clean**

PLEASE DO NOT TAKE!

We need these for the other workshops.

Safety Issues

- **Personal protective equipment**

Gloves, goggles, and lab aprons

- **Dissection tools**

Be diligent with sharp tools



- **Safety tip**

If you are not using an instrument, set it down

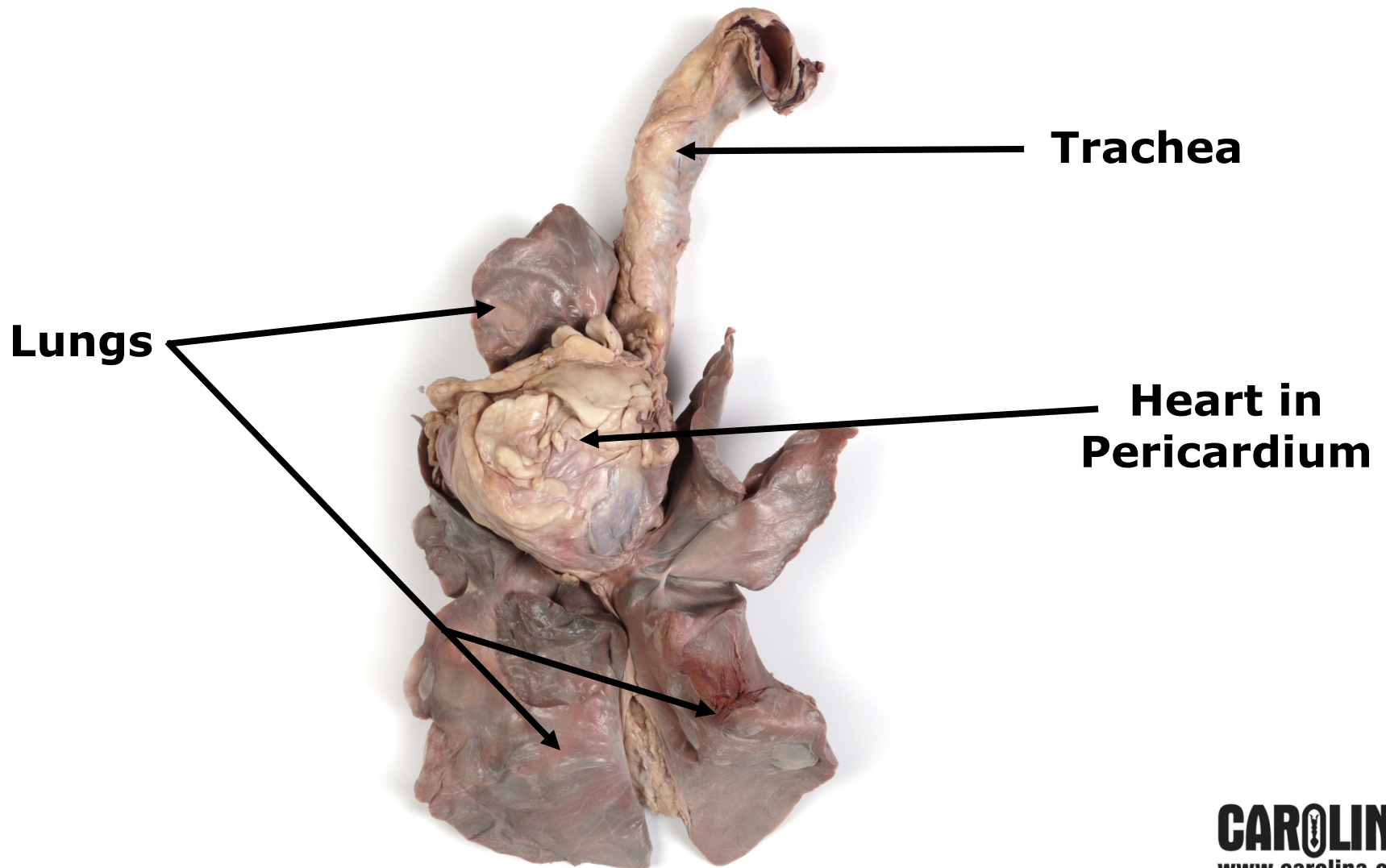
Workshop “Organ”ization

Procedure:

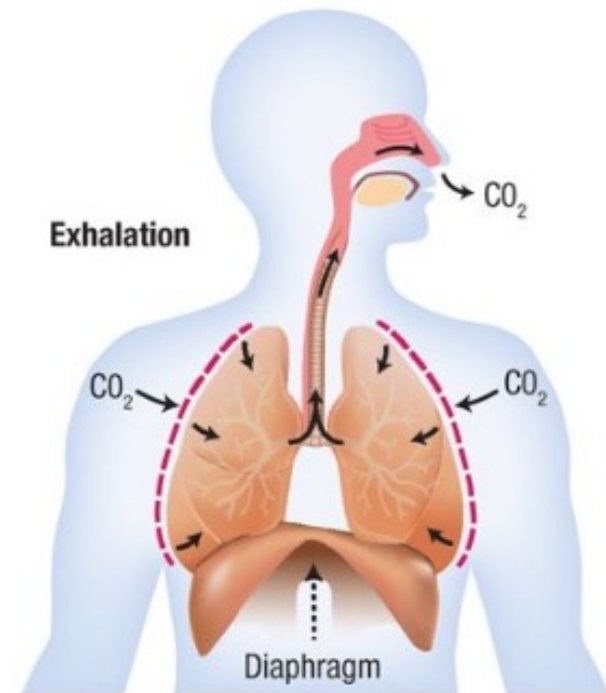
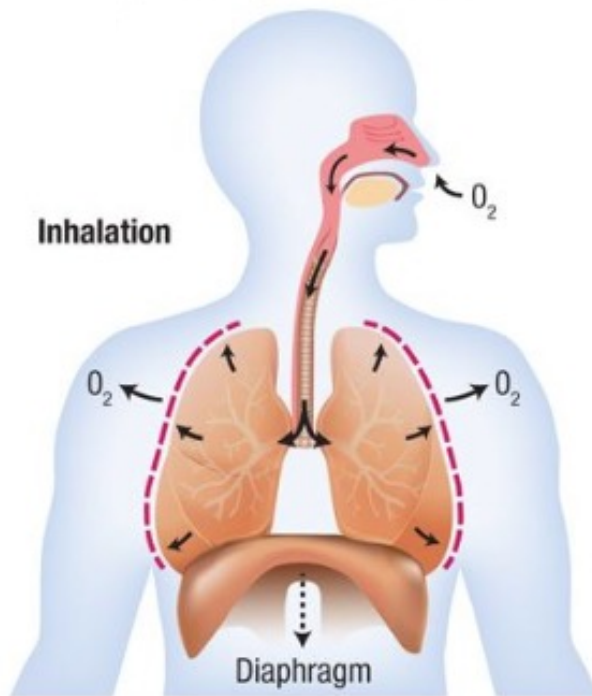
- 1. Sheep pluck demonstration**
- 2. Dissect the sheep heart**
- 3. Dissect the bull testicle**
- 4. Time permitting, dissect the cow eye**



Sheep Pluck Anatomy



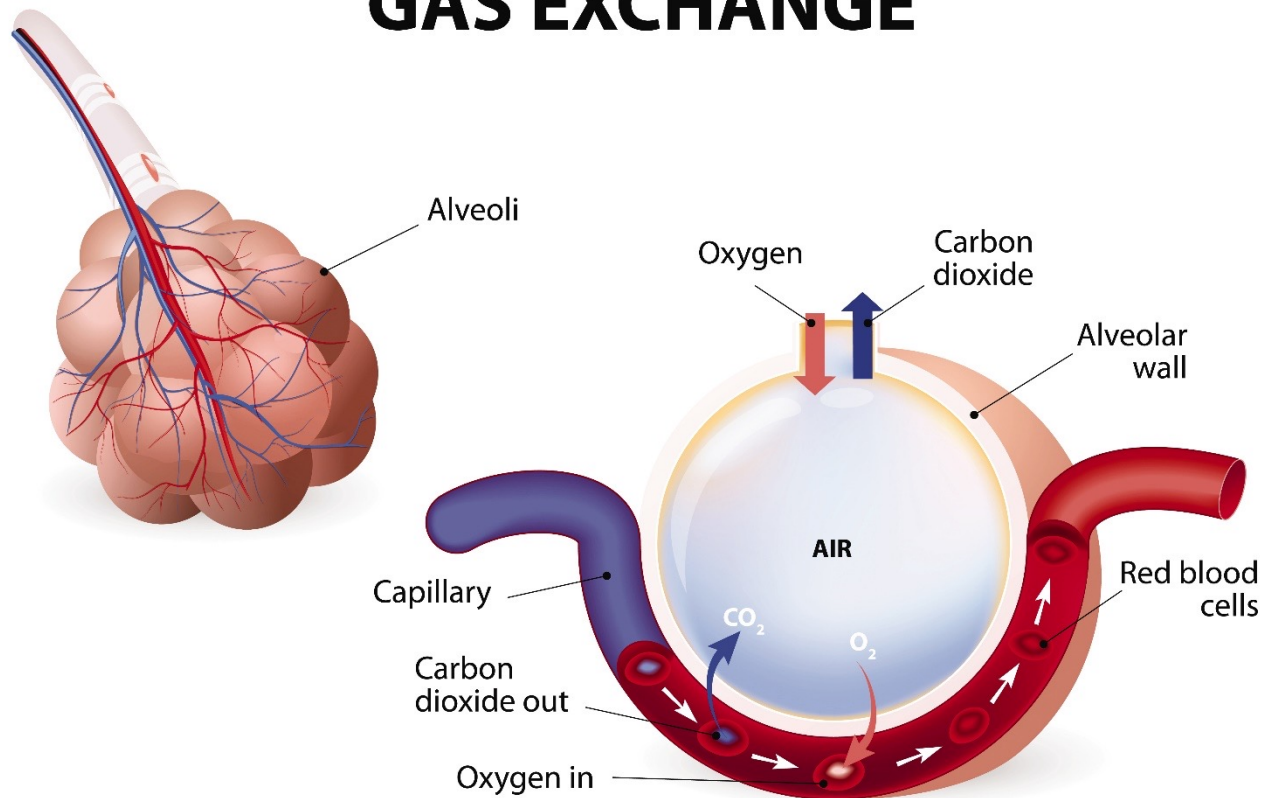
Breathing



Pluck Demo

Respiration & Circulation

ALVEOLUS GAS EXCHANGE



Workshop “Organ”ization

Procedure:



1. Sheep pluck demonstration

2. Dissect the sheep heart

3. Dissect the bull testicle

4. Time permitting, dissect the cow eye

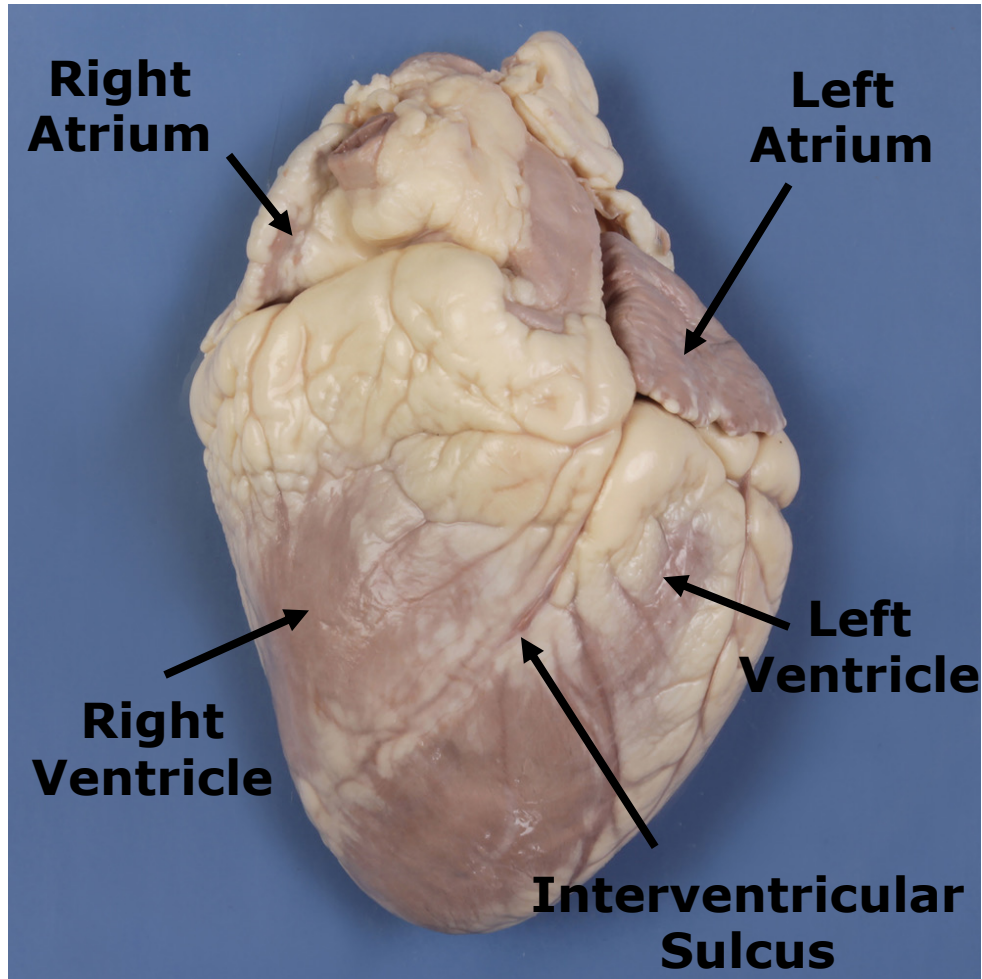


Teacher Tip

1. At the anterior of the specimen, locate an area where there is excess plastic.
2. Force any fluid out of the area to prevent spills.
3. Cut a small hole in the excess plastic. This will allow the fluid to drain to the bottom of the bag.
4. Continue to cut around the anterior of the specimen until you can easily remove the specimen from bag.
5. **Keep bag upright until we collect fluid and bag.**



Sheep Heart External Anatomy

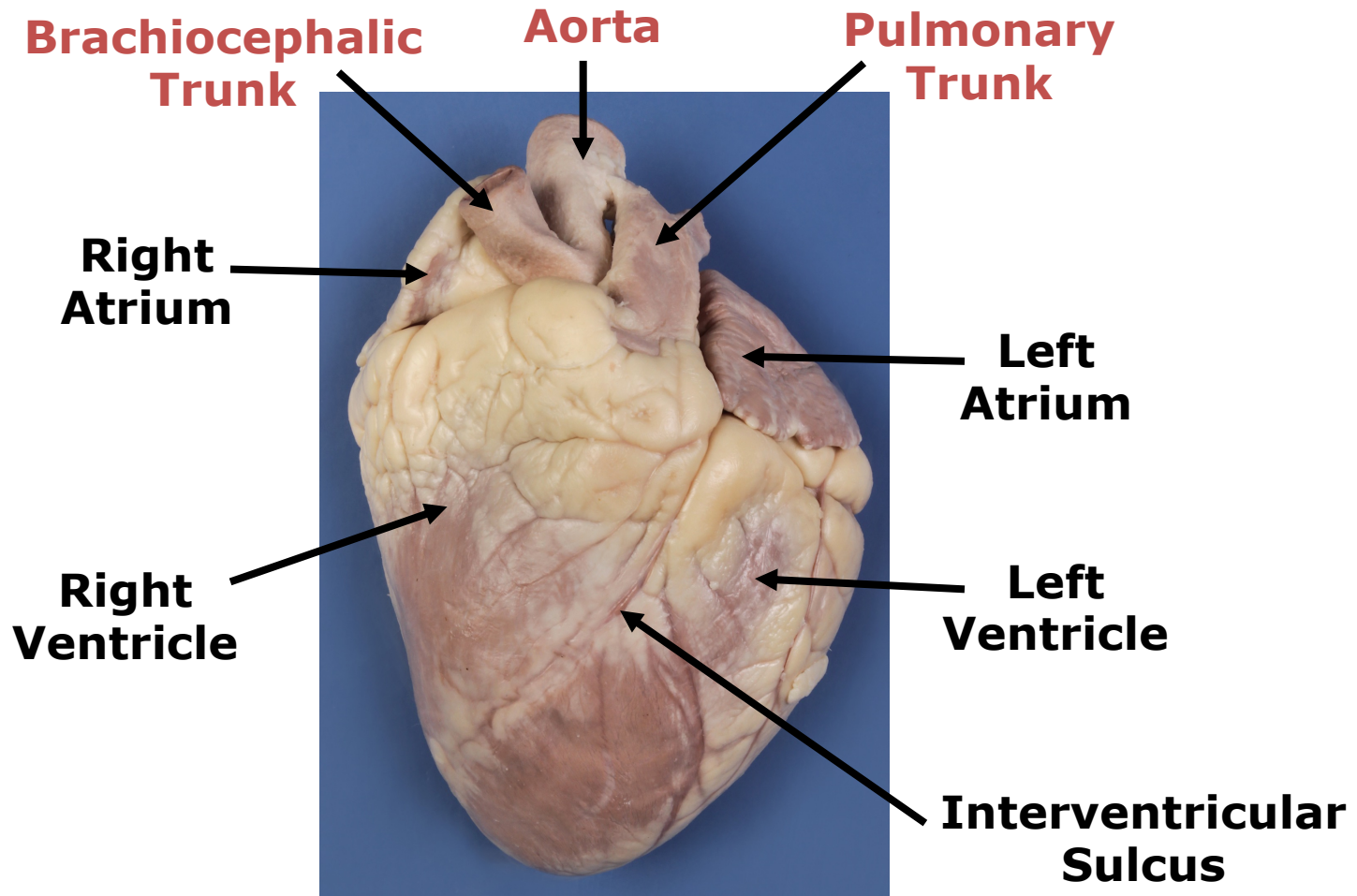


Anterior Surface

**With scissors,
trim the fat from
the upper portion
of the heart and
the blood vessels.**

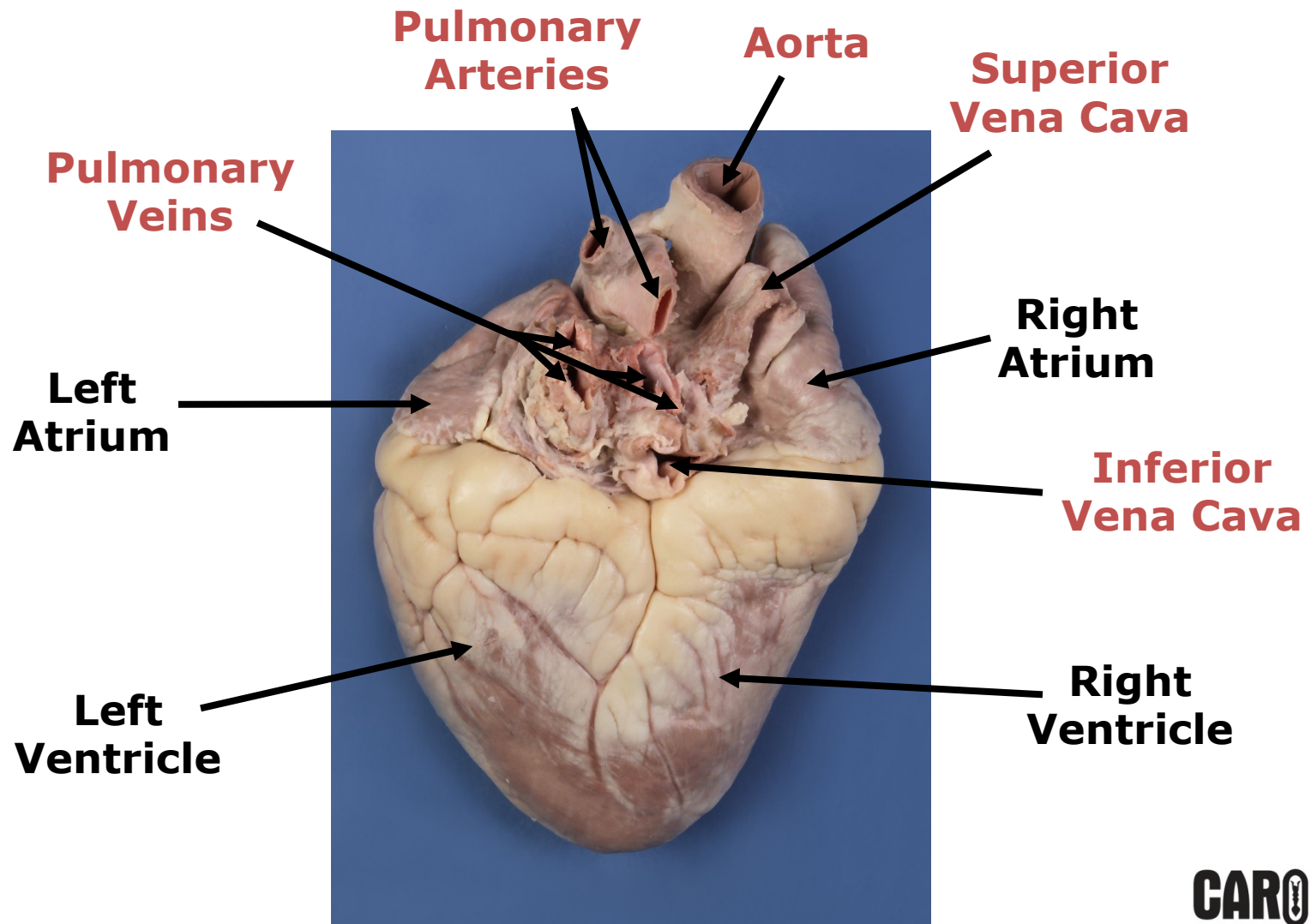
**Correctly orient
the heart.**

Sheep Heart External Anatomy



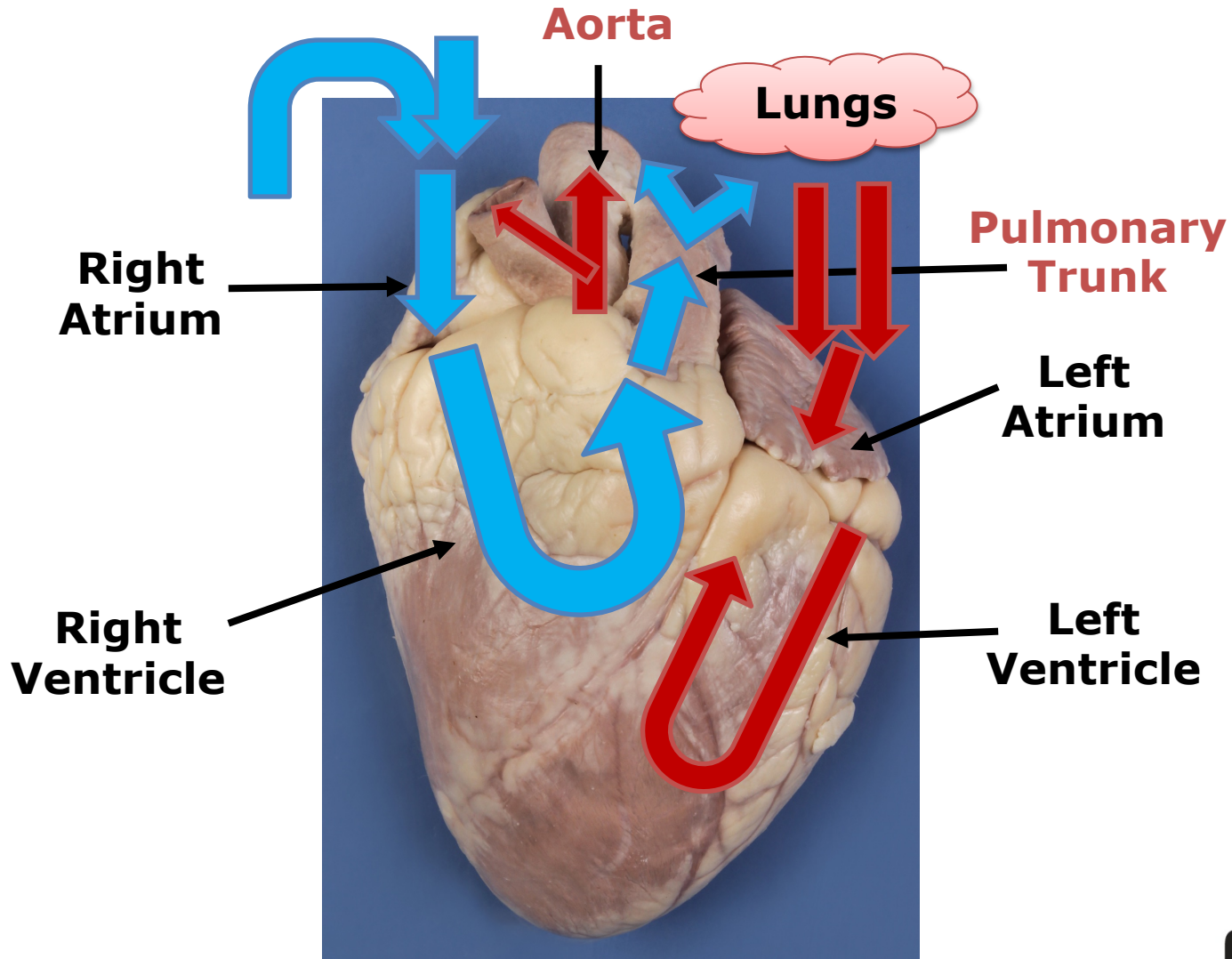
Anterior Surface

Sheep Heart External Anatomy

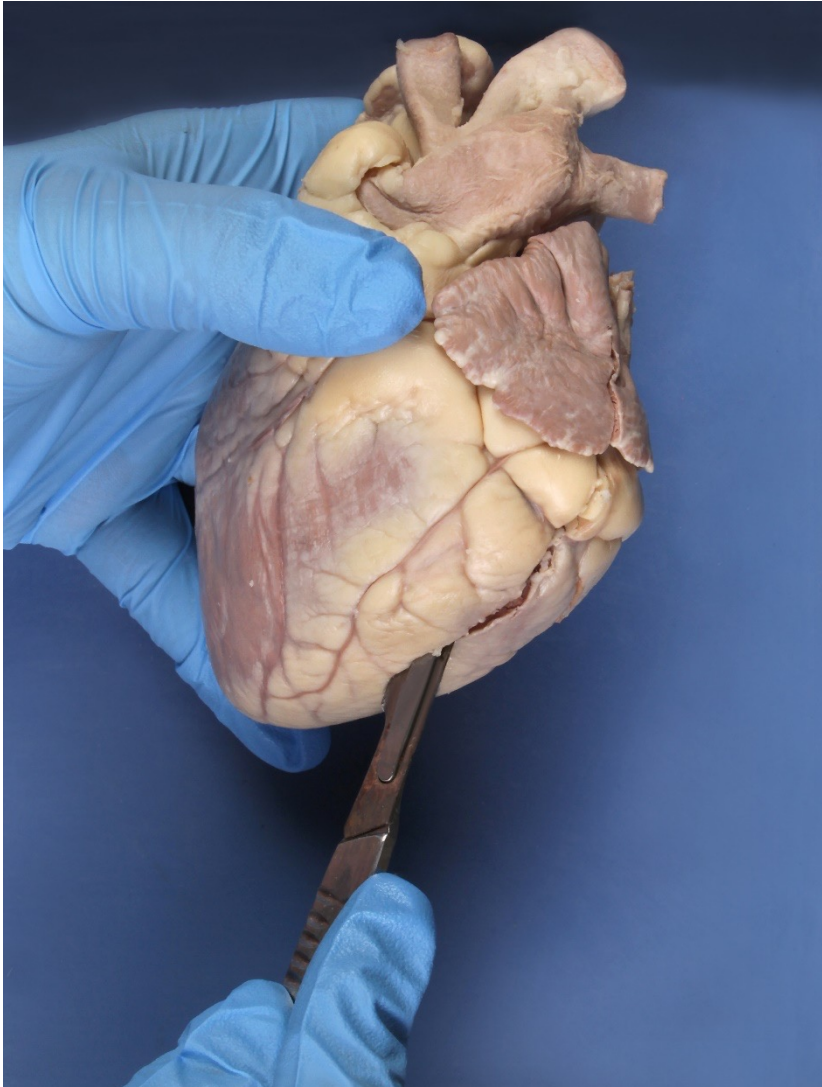


Posterior Surface

Trace Blood Flow Through the Heart

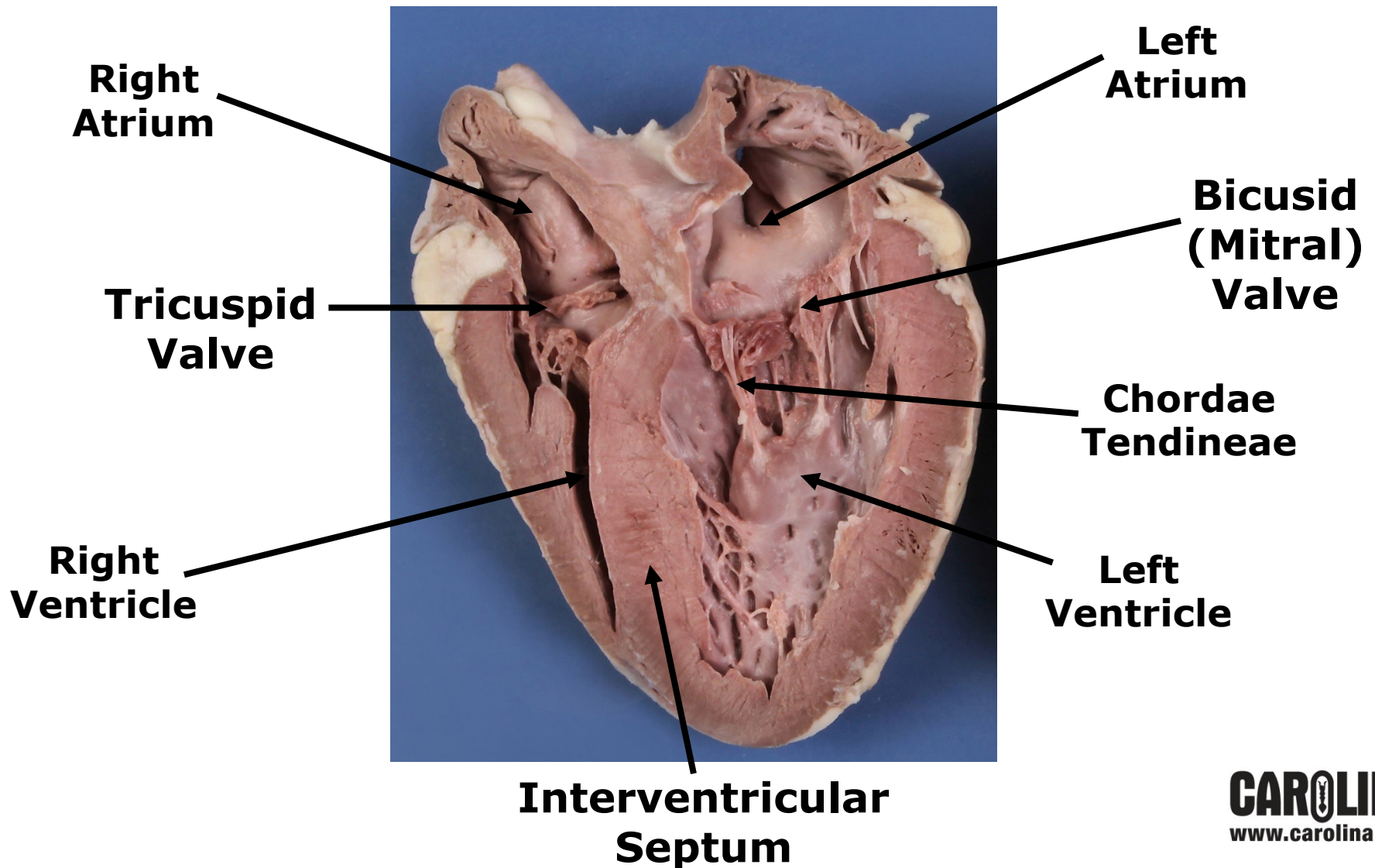


A Knife in the Heart!

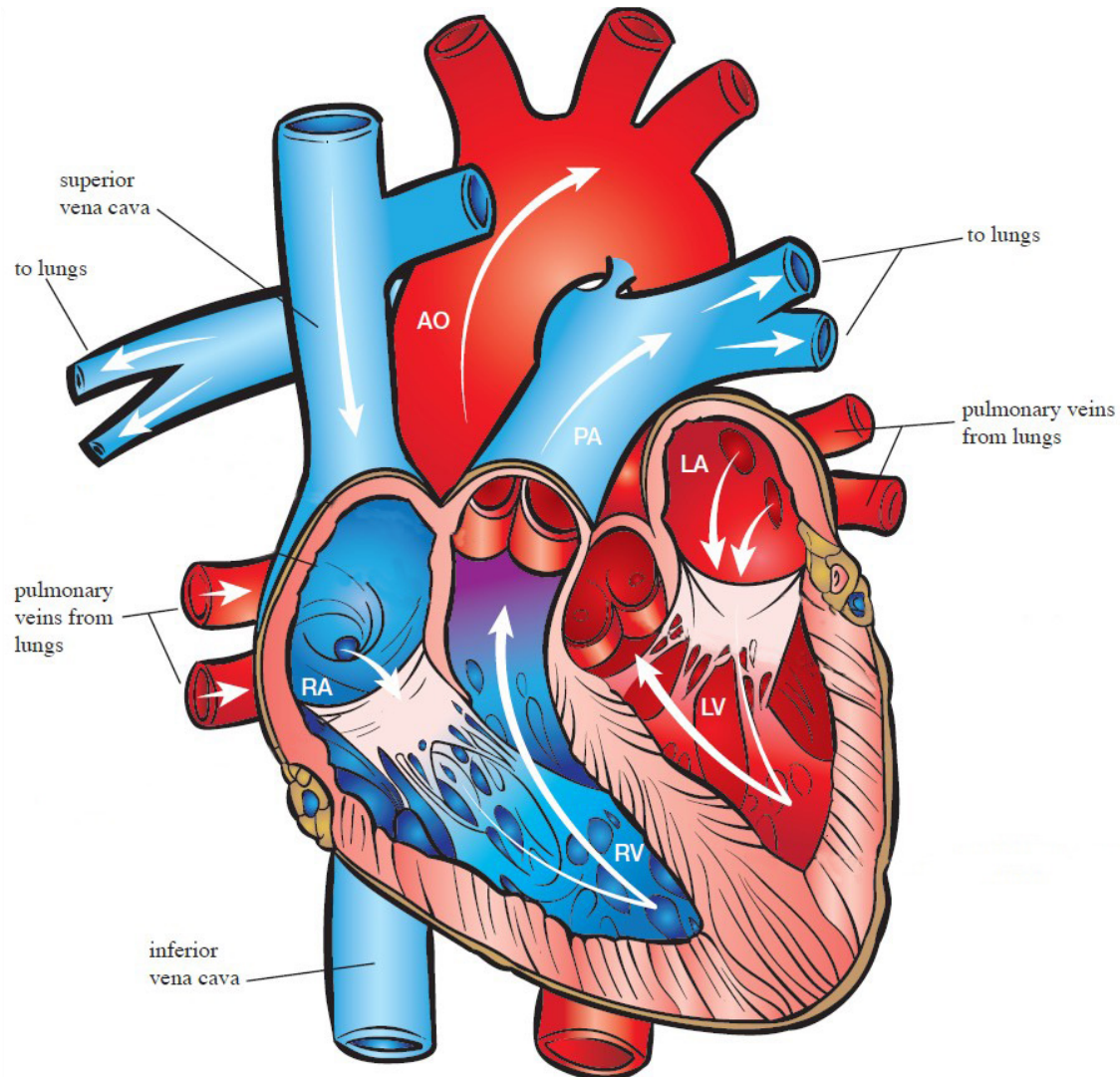


**Cut the heart in half,
across the atria and
ventricles, as shown.**

Sheep Heart Internal Anatomy



Blood Flow



Workshop “Organ”ization

Procedure:

- 😊 1. Sheep pluck demonstration
- 😊 2. Dissect the sheep heart
3. Dissect the bull testicle
4. Time permitting, dissect the cow eye



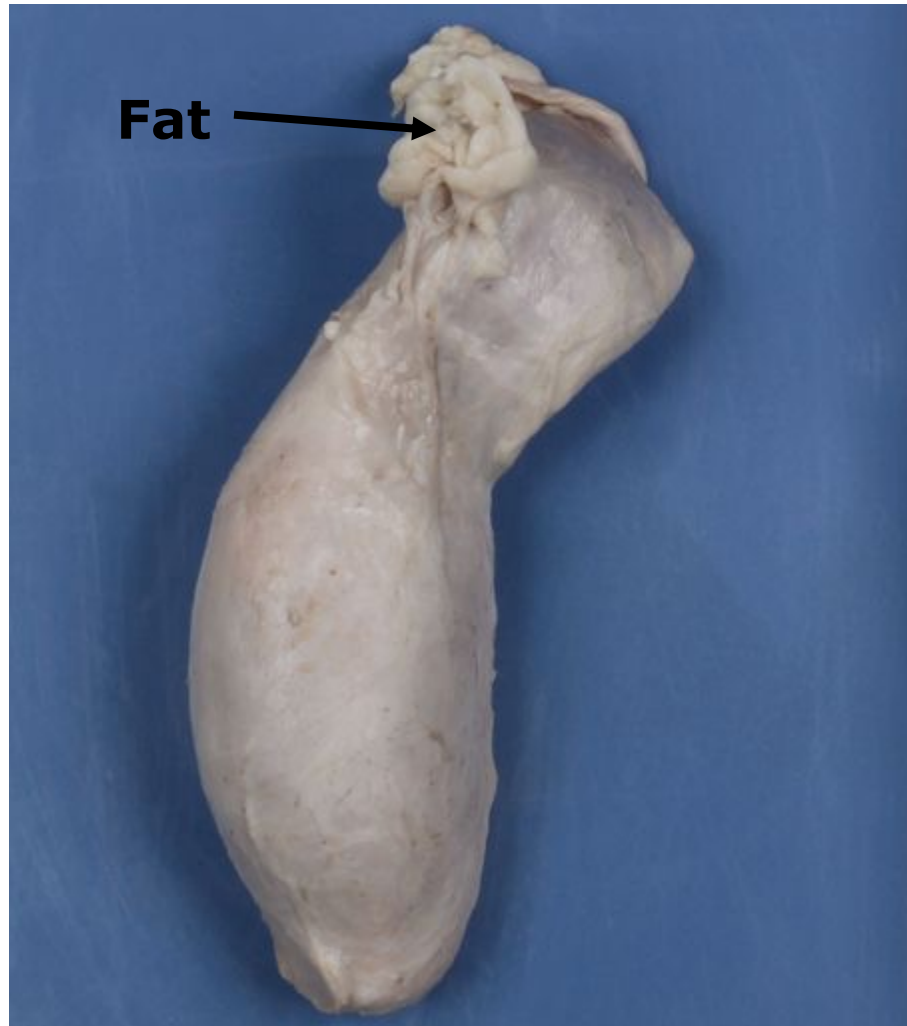
Dissection Preparation Tips

- **Put your sheep heart on your blue pad.** *Someone will come around and collect it for you.*
- **Place the bull testicle on the tray.**
- **We will dissect together!**



Bull Testicle External Anatomy

Anterior



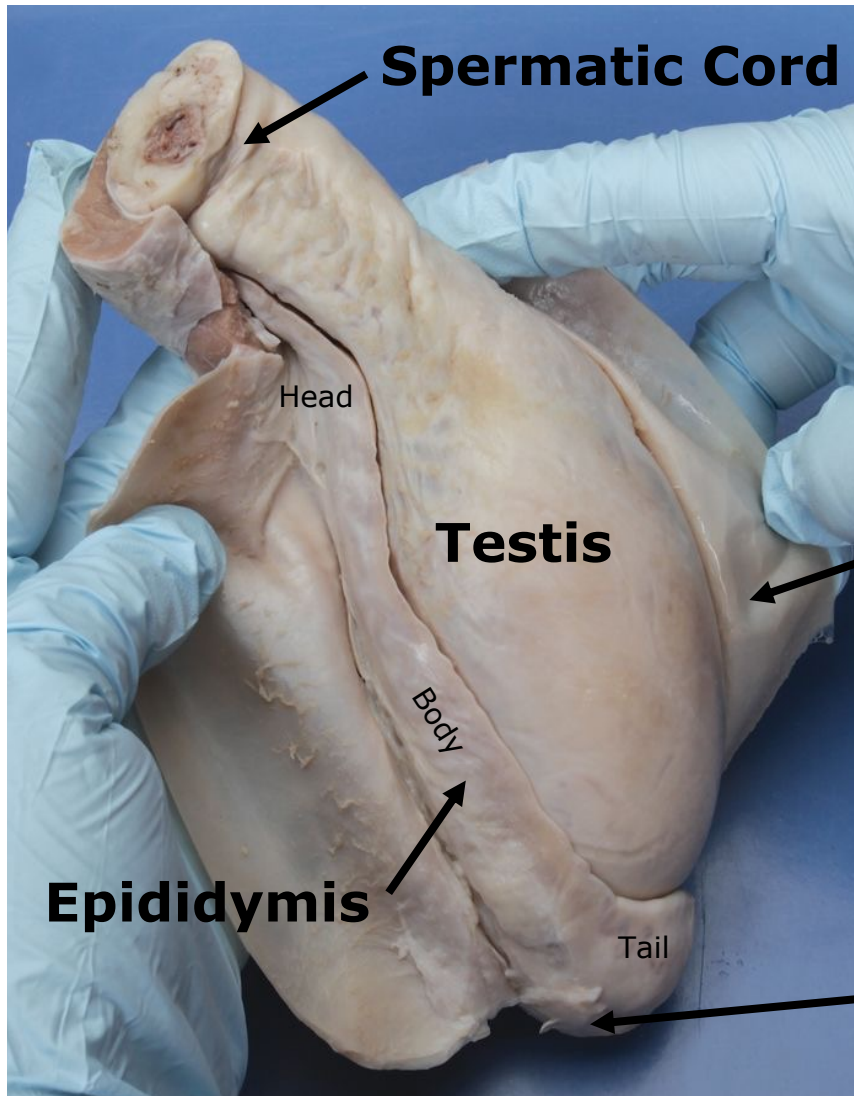
Fat

Peel away fat, if necessary.

Locate the anterior (cord) and posterior ends of the specimen.

Posterior

Bull Testicle Anatomy



With scissors, at the anterior end, make a longitudinal cut through the outer coverings (tunics) over the testicle.

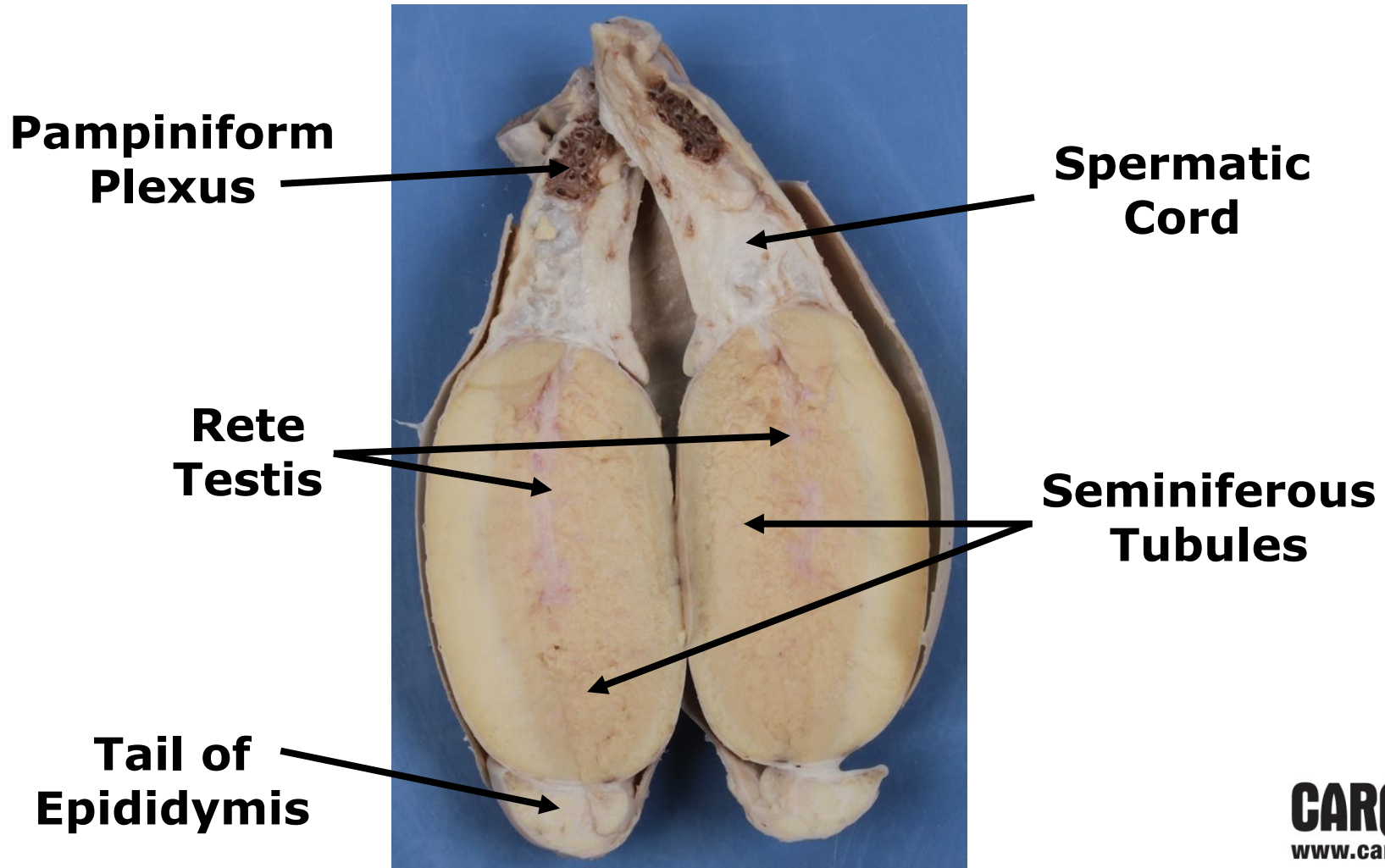
**Outer: *tunica vaginalis*
Inner: *tunica albuginea***

Peel them back to reveal more structures.

Vas Deferens
(dissect off tail of epididymis & up thru spermatic cord)

Bull Testicle Internal Anatomy

With a scalpel, cut the testis in half as shown.



Workshop “Organ”ization

Procedure:

- 😊 1. Sheep pluck demonstration
- 😊 2. Dissect the sheep heart
- 😊 3. Dissect the bull testicle
4. Time permitting, dissect the cow eye

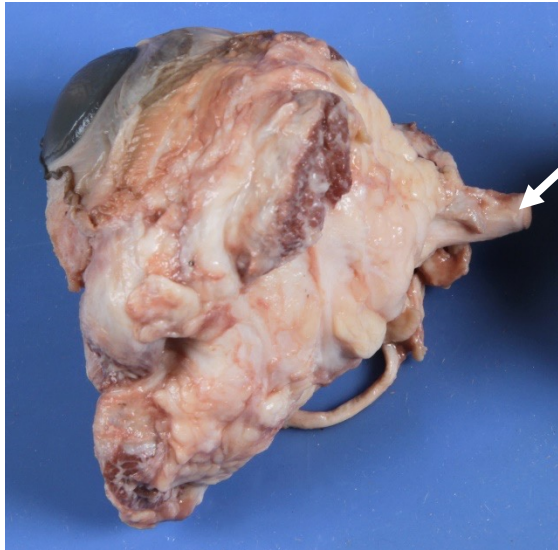


Dissection Preparation Tips

- **Set your white tray with your bull testicle on it to the side.**
Someone will come around and collect your waste.
- **Put your red tray on the blue absorbent pad.**
- **Place the cow eye on the tray.**
- **We will dissect together!**



Cow Eye External Anatomy

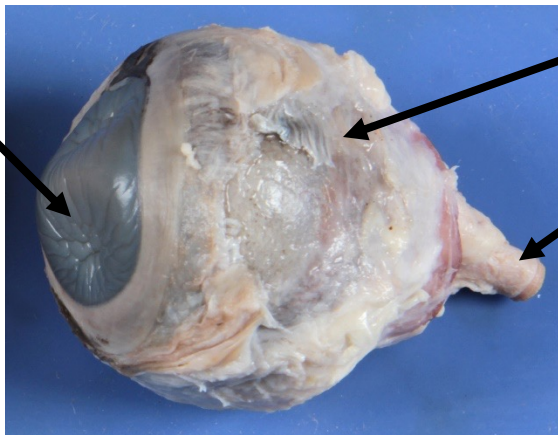


**Optic
nerve**

**Use scissors to remove
fat from the eye.**

**Watch out for the
optic nerve.**

Cornea



Sclera

**Optic
nerve**

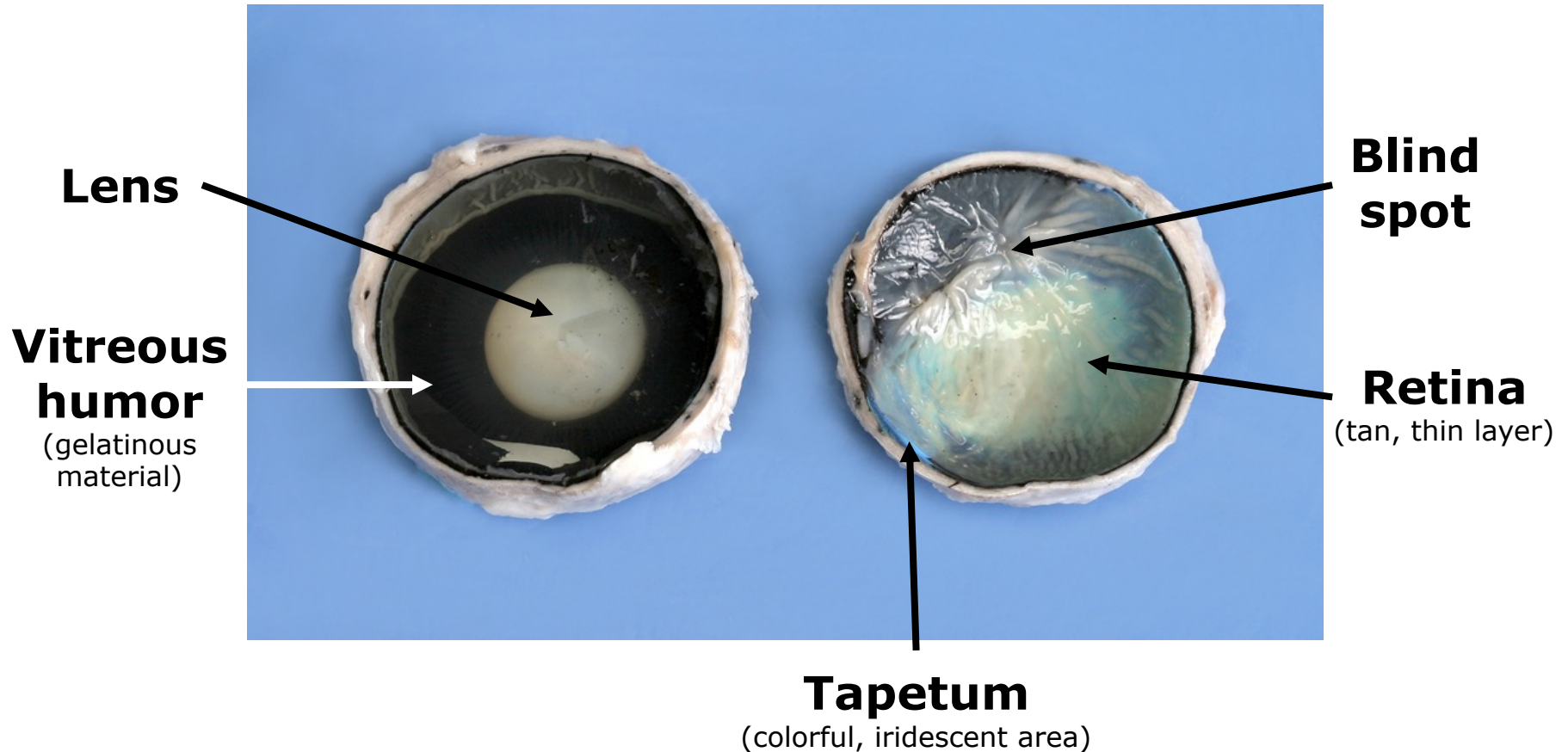
It's Eye Opening!



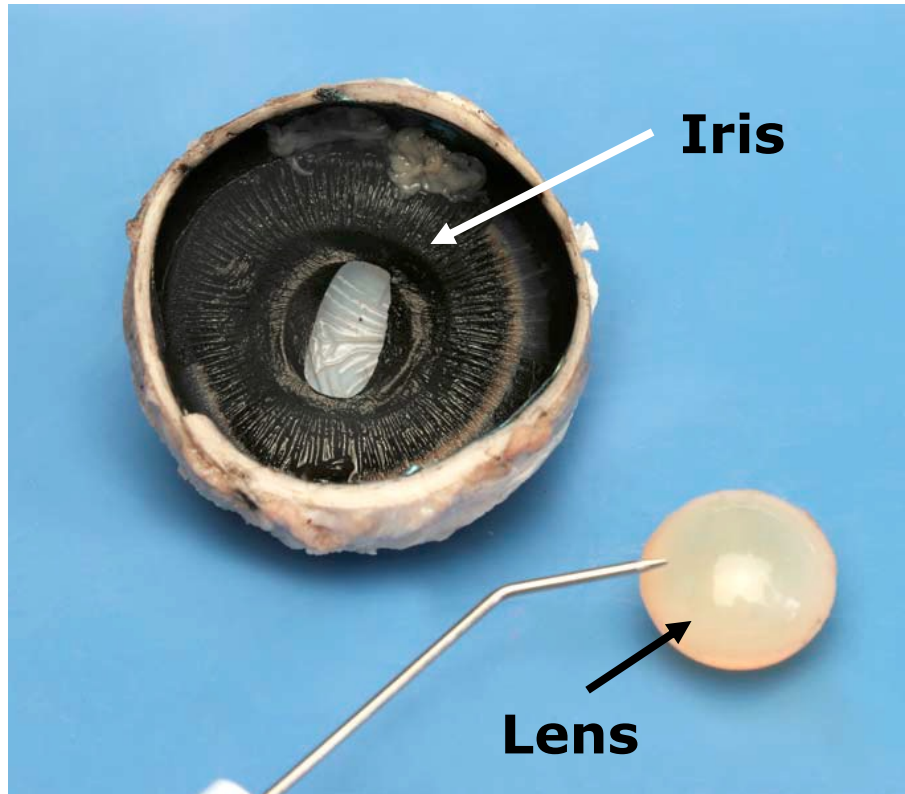
**Cut a cross section
as shown.**

***Teacher tip:* You may
start the incision with
a scalpel and allow
your students to finish
with scissors.**

Cow Eye Internal Anatomy



Cow Eye Internal Anatomy



Remove the vitreous humor and the lens.

Teacher tip: Let the lens dry. Test its magnifying abilities by placing it over some printed text.

Student Data and Artifacts

	Lungs	Heart	Eye	Testicle
Major Function				
Description				
Specialized Tissues				
Associated Organs				
System				

Student Data and Artifacts

Describe how each organ has a role in controlling or affecting the function of the other organs studied.

Discuss the interdependence of organ systems.

Create a model of an organ or organ system to show its main functions.


Teacher Tip!

With the purchase of a dissection BioKit®, you receive 1 year of free access to digital resources including dissection safety videos, fill-in student guides, and pre-lab and post-lab assessments.

Carolina Dissection BioKits: Safe Dissection Techniques Prelab Activity

CAROLINA® Carolina Dissection BioKits®:
Safe Dissection Techniques Prelab Activity 2/4

Dissection Safety: Watch the video and answer the questions below.



True False

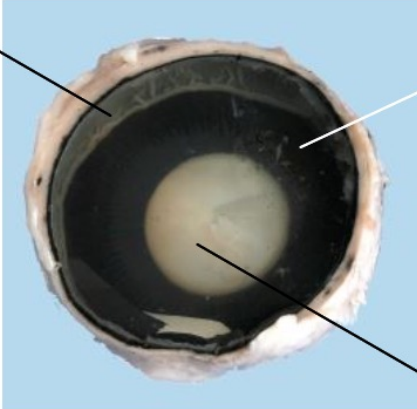
1. Goggles protect the eyes from both splatters and sharp objects. ☐ ☐

Mammalian Eye Dissection Postlab Assessment

CAROLINA® Mammalian Eye Dissection BioKit 3/7

Interior Features of the Eye

Label the interior features of the eye.



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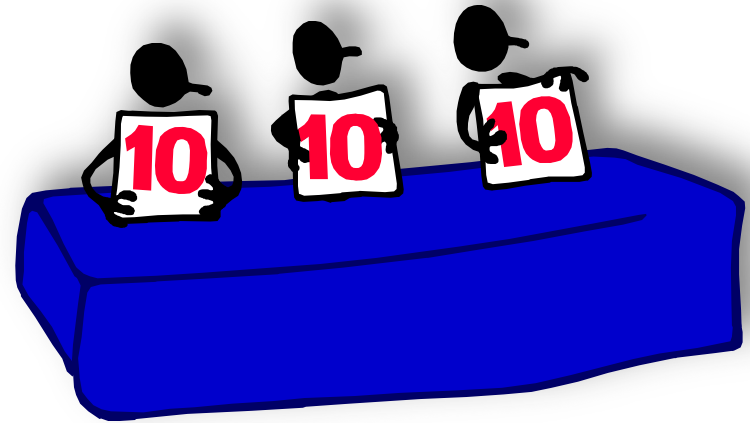
Cleanup Instructions

- **KEEP GLOVES ON!**
- **Place ONLY animal waste in buckets.**
- **All other trash goes in trash bags.**
- **Wipe out pans, clean tools, and wipe off tables.**



Evaluations: Share Your Thoughts

**We are striving to
make our workshops
great!**



**Please evaluate this session and presenter
on a scale from 0 to 10 (10 = best).**

**Please help us reset the room
by gathering your belongings
and exiting between sessions.**

THANK YOU!