

Lab 4: Heart & Basic Vessels

1. Use the heart models and the figures in Exercise 30 to become familiar with the anatomy of the heart (Activity 1).
2. Become familiar with the flow of blood through the heart and be able to trace its flow through the chambers (Activity 2).
3. Examine the slide of cardiac muscle. Refresh your memory about its defining features compared to skeletal and smooth muscle (Activity 4).
4. Examine the available animal hearts and find all the structures you identified on the models. The calf/pig hearts may have already been opened up for you. Identify the great vessels entering and exiting the heart by passing through each with either your finger or a blunt probe. You can figure out which vessel is which by the chamber of the heart it connects to (you absolutely have to know the blood flow pattern to do this!!)

On the calf/pig hearts & models, identify the parts, and know the basic functions of:

pericardium - **epicardium or visceral pericardium**
- **parietal pericardium**
- **fibrous pericardium**

layers of the heart - **epicardium or visceral pericardium**
- **myocardium**
- **endocardium**

misc. parts of the heart - **auricles, atria, ventricles, aortic semilunar valve, pulmonary semilunar valve, bicuspid (Mitral) valve, tricuspid valve, chordae tendineae, interventricular septum**

musculature - **papillary muscles**
- **trabeculae carneae**
- **pectinate muscles**

basic vessels - **Aortic artery, Brachiocephalic artery, L common carotid artery, L Subclavian artery, Pulmonary trunk artery, Superior and Inferior vena cavae, Pulmonary veins**

circulation changes before birth/after birth (p.487)
- **Ductus arteriosus/Ligamentum arteriosum**
- **Foramen ovale/Fossa ovalis**
- **Ductus venosus/Ligamentum venosum**
- **Umbilical vein/Ligamentum teres**
- **Umbilical arteries/Medial umbilical ligaments**

5. Differentiate between an artery, vein and capillary, and know the tunics and tissues associated with each (Exercise 32, Fig 32.1).

layers - **Tunica intima or Tunica interna**
- **Tunica media**
- **Tunica externa or Tunica adventitia**

Name the serosa covering the heart. _____

What is the scientific name of the muscle tissue of the heart? _____

Name the vessels connecting to the right atrium. _____

Do they return blood to the heart or convey blood away from the heart? _____

Do the pulmonary arteries contain high O₂ blood or low O₂ blood? _____

Name the valve between the right atrium and right ventricle. _____

Which ventricle has the thicker myocardium? _____

Name three distinguishing characteristics of cardiac muscle tissue? _____

Which vessel connects to the left ventricle? _____

Which vessel connects to the right ventricle? _____

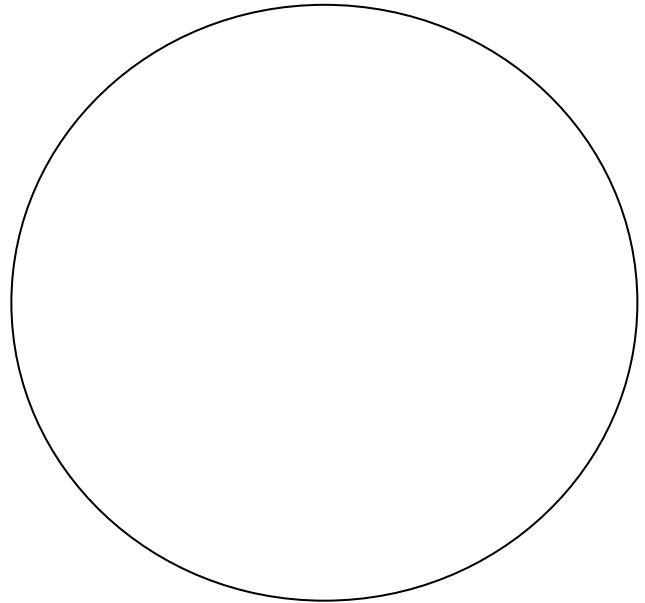
The inside of the heart is lined by a thin endothelium called _____.

Slide Assignment: Heart & Basic Vessels

(Beginning on p445 & p471 in Lab Text, p159 & p217 in Histology Text)

Draw the following slides using the figures in the lab and histology texts as a reference. Use whichever magnification works best to show all given structures. Please note that not every slide will show everything; you will need to look at multiple slides and/or sources. Your drawings should artistically combine views to include all structures.

- **Cardiac Muscle**– label and understand function of the following:
 - Muscle fibers
 - Nucleus
 - Sarcomeres
 - Intercalated discs



- **Artery, Vein, & Capillary** – Label and understand function of the following:
 - Artery
 - Tunica intima or Tunica interna
 - Tunica media
 - Tunica externa or Tunica adventitia
 - Vein
 - Tunica intima or Tunica interna
 - Tunica media
 - Tunica externa or Tunica adventitia
 - Capillary Beds

