

these muscles that any block in their flow results in damage to the heart; if the block injures the heart enough, a heart attack or “coronary” results. The name arises from the fact that the vessels encircle the heart like a crown (corona in Latin).

Tag the coronary arteries (or veins). Completed _____

What do the coronary arteries and veins do? _____

What happens when you have a “coronary”? _____

Slice the heart open in a coronal section (the connection of this with crowns is not dear!) and pick out any coagulated blood in the chambers.

Completed _____

Behold, a self-healing high powered pump guaranteed to last a lifetime! Blood enters the right atrium, largely because it is pushed there as muscle contractions all over the body squeeze blood out of your veins and up toward your heart. (Now you know why you’d rather walk a mile than stand one!) As the heart relaxes between beats, the blood then enters the right ventricle. But on the next contraction it is forced violently against the other side of the tricuspid valve through which it entered the ventricle, and this side won’t give. It seals up firmly, and is prevented from blowing out into the atrium by the chordae tendinae, fine anchor lines which you can see running almost the length of the ventricle (pry back the sides of the chamber to see them.)

Tag: an atrium, a ventricle, chordae tendinae Completed _____

Which is larger, the right or left ventricle? _____

Note any differences in the right and left atria. _____

Locate the anterior and posterior vena cava. These carry blood from the anterior and posterior portions of the body, respectively. Into what chamber of the heart do they open? _____

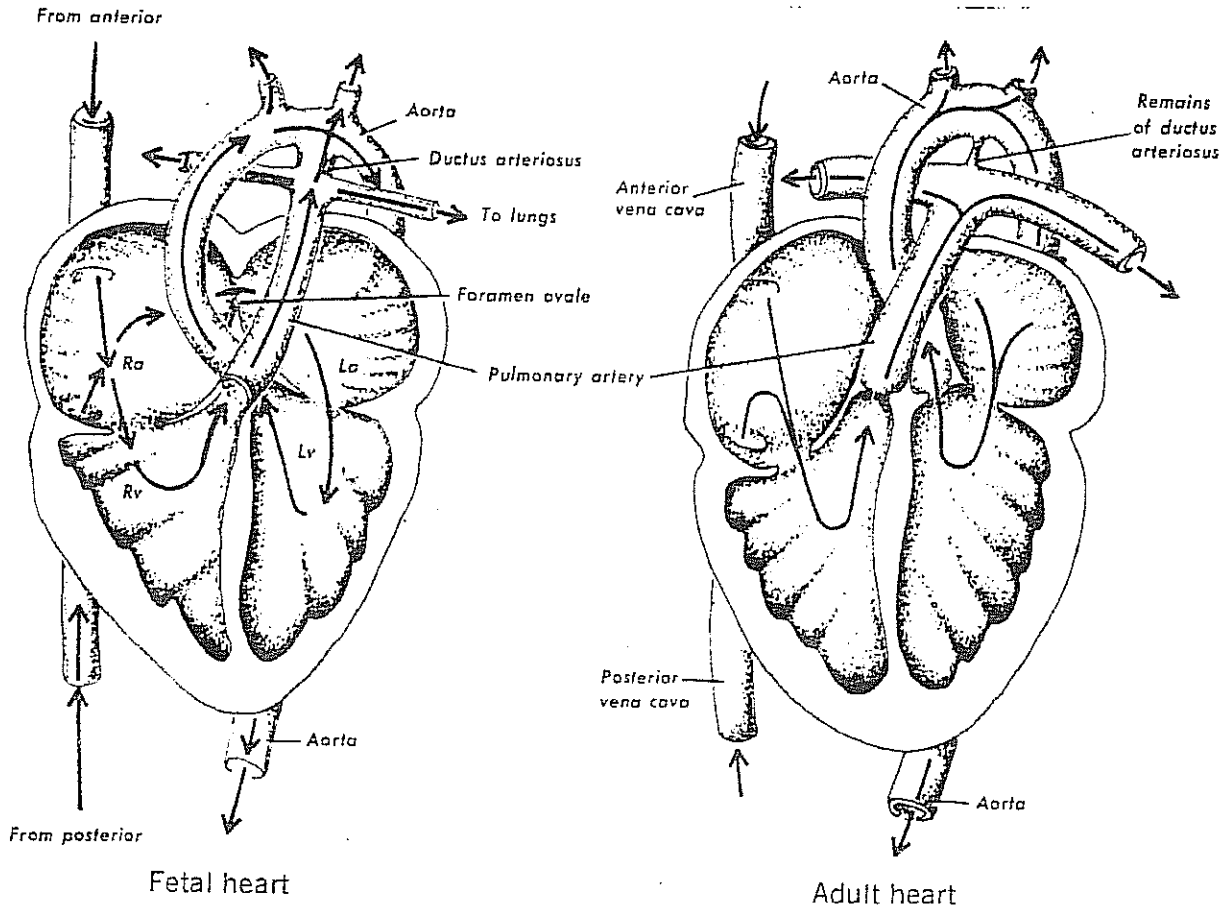
Find the pulmonary veins which carry blood from the lungs. Into which chamber of the heart do they open? _____

The most noticeable artery is the aorta. From what chamber does it arise? _____

The aorta curves to the left and passes posteriorly along the dorsal side of the thoracic and abdominal wall as the dorsal aorta. The next largest artery is the pulmonary artery. It arises from the anterior portion of the right ventricle and soon divides to form the right and left pulmonary arteries.

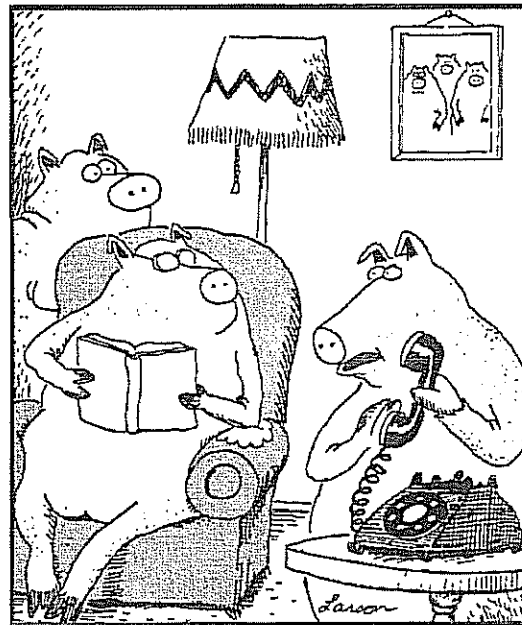
To what structure do the pulmonary arteries lead? _____

Look at the diagram of the fetal and adult hearts below.

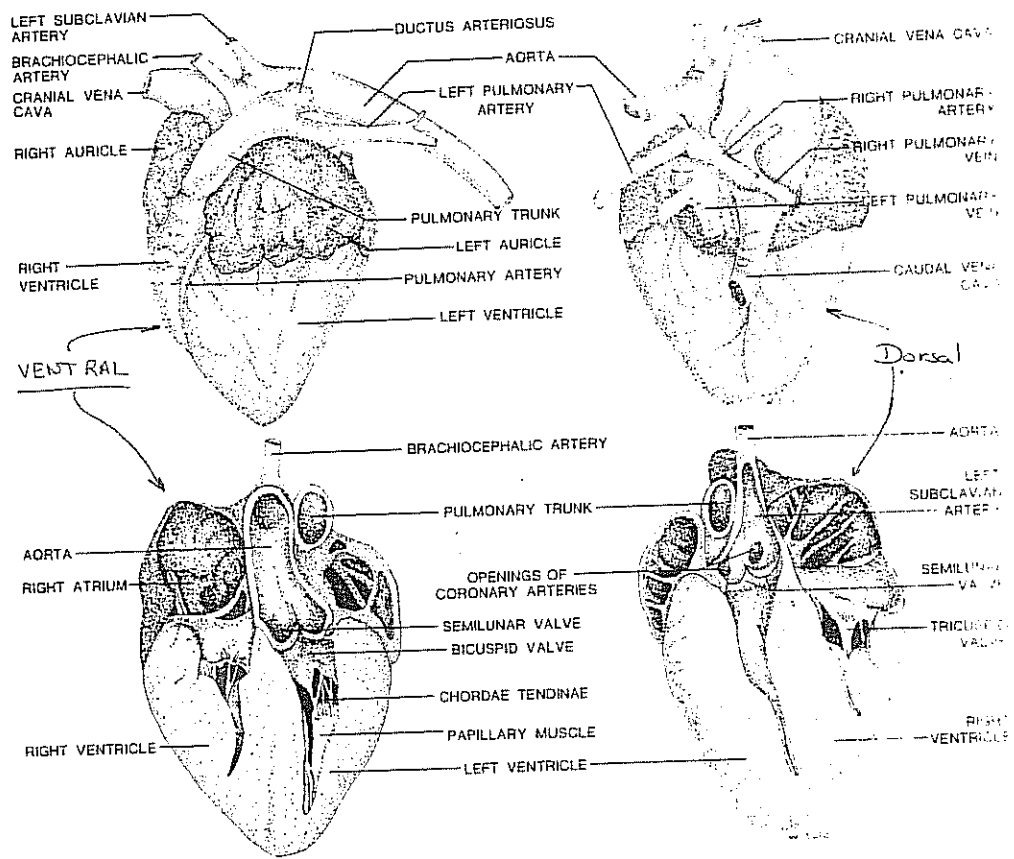


What change can you observe that occurs?

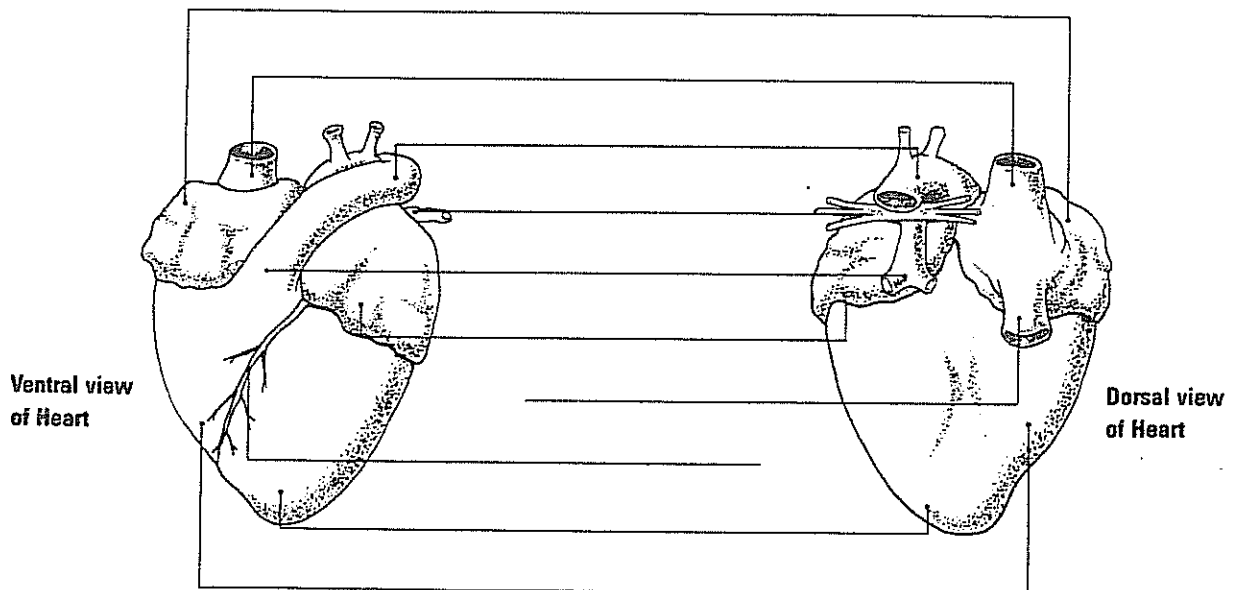
In the fetus, the source of nutrients and site of gas exchange is the placenta. The umbilical arteries and vein supply depleted, waste laden blood to it and return oxygen—and nutrient-rich blood from it. Look to see where these vessels connect to the rest of the circulation. Since the lungs aren't needed, they are effectively bypassed; a passage between the atria—the foramen ovale, which can be located by probing gently just dorsal to the aorta within the atria—permits blood returning to the heart to pass directly in to the left heart without going through the lungs. The ductus arteriosus, a short bridge connecting the pulmonary artery to the aorta near their point of emergence from the heart, allows blood pumped out of the right atrium to enter the aorta rather than continuing toward the lungs. When the lungs first inflate with air at birth, their greater resistance to blood flow sets off a rapid sequence of events that closes off these short circuits.



"Disgusting! ... It's just a sort of heavy huffing and puffing."



To help you “sum up” the external anatomy of the heart, label the following diagram...



Respiratory System

Strip away the remaining thymus, etc. to expose the larynx and trachea (windpipe). Notice that the larynx and trachea are hard; the trachea contains rings of cartilage that give it support. The cartilage rings serve a function much like that of the ribbing in a vacuum-cleaner hose; they keep the tube from collapsing under low internal pressure.

Tag the trachea and larynx

Completed _____

Using a sharp scalpel, make a transverse (across) slice into the larynx exposing the inner cartilage. You should see a slit when you have cut deep enough. Obtain a CLEAN soda straw, insert it in the slit and blow lightly on the free end. If you're lucky, and you get a good seal, you might be able to see the lungs inflate slightly.

Demonstrate this for your instructor.

Completed _____

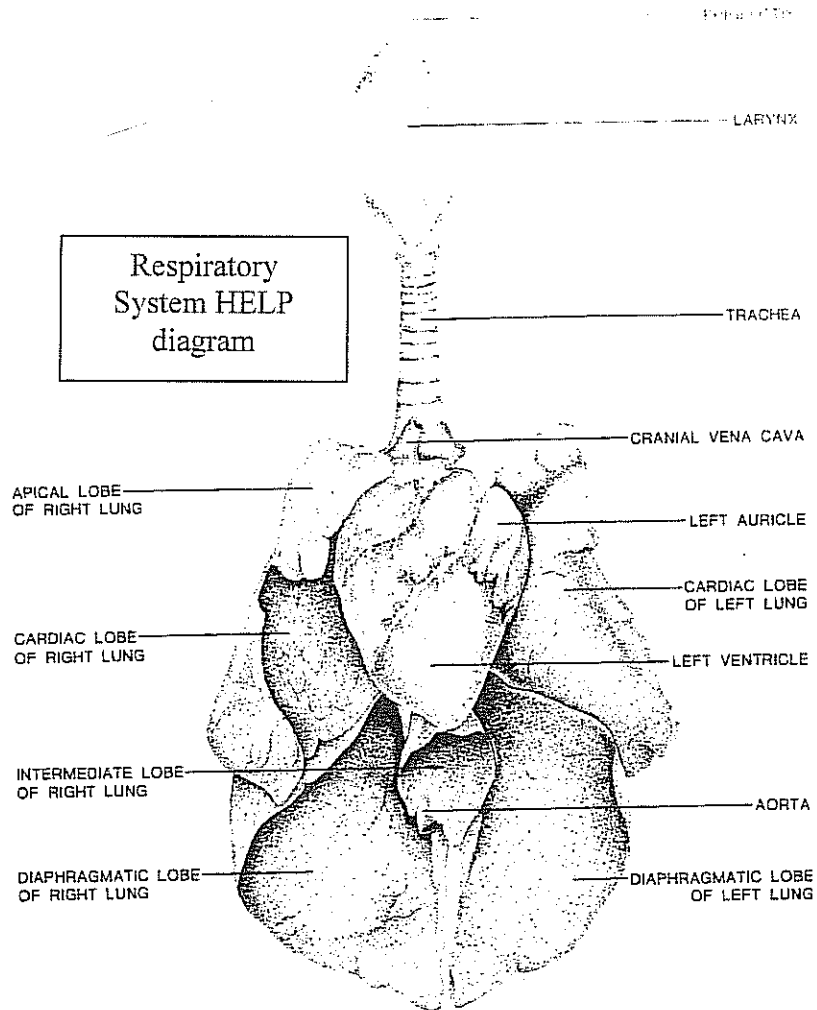
Do the cartilage rings completely circle the trachea? _____ What is the function of the cartilage? _____

You probably know how the respiratory system works, the expansion of the closed thoracic cavity creating a low pressure inside the millions of sacs in which the bronchi's branches end, causing air to flow down the trachea to fill them. But, as the capillaries are at the remote end of the circulatory system, so the alveoli are at the remote end of the respiratory system—so tiny that we will need the microscope to see them.

The lungs in your pig are unremarkable looking. Like ours, they are divided into lobes. If you slice into a lobe you will see its central tree of arteries, veins, and bronchi—the last are the smaller divisions of the trachea, which has carried the air from the larynx on down.

Slice into the lungs to expose their internal anatomy.

Completed _____



Give the function of the thymus. _____

Tell what atria do in the heart. _____

Tell what coronary arteries and vein do. _____

What does the esophagus lead to? _____ The trachea? _____

What is the purpose of the epiglottis? _____

Describe the path the air follows from the external nares to the alveoli in the lungs. (A diagram on the next page might help you with following the path.) _____

Describe how the diaphragm, along with the muscles of the rib cage, is responsible for drawing air into the lungs. _____

Complete the color diagram of the respiratory system below:

RESPIRATORY SYSTEM.

NASAL CAVITY_A

PHARYNX_B

LARYNX_C

TRACHEA_D

BRONCHI-/BRONCHIOLE_E

LUNGS_F

AIR SAC_G

BLOOD VESSELS_H

SUPPORTING STRUCTURES *

PLEURA: PAR./VISC._I

DIAPHRAGM_J

INTERCOSTAL MUSCLES_K

