Cat respiratory system, heart and upper circulatory system
We'll be looking at the thorax, so you will cut through the rib cage – slightly off-center so you’re not cutting through the thick sternum. You'll have to pin back or remove the most ventral section of ribs to be able to have an unobstructed view of the thorax. You'll also have to cut away the pericardial sac to see the heart and its accompanying vessels. When pulling back the ribs after cutting, be careful not to destroy the mammary vein, which will be attached to the underside of the sternum and connecting near the heart.

Diagram of the respiratory system starts on p.367. You should look at the lung lobes first, and then remove tissue (much of it thymus gland) that covers blood vessels leading from the heart. Thymus tissue covers the top portion of the heart and some blood vessels.

To find pulmonary arteries and veins, you will need to push the heart far to the cat's right and remove tissue at the top of the heart to reveal the blood vessels leaving the heart on the cat’s left (pulmonary trunk, pulmonary arteries, aorta behind these) see Fig. 39.7C. Expose the blue vena cava and follow its branches. Just about at the pectoantebrachialis, you should make a cut that goes down an arm. This cut should be continuous with the cut through the rib cage. This will expose the blood vessels we are looking at today Fig. 39.8, 39.10. You will need to remove connective tissue to see them. In the arm, there are also many nerves associated with the brachial plexus – nerves are like white, tough strings. Helpful circulatory figures start on p. 390

**Remember to look at other cats because arteries and particularly veins tend to differ between cats – don’t let small changes confuse you on a practical**

Expose the upper part of the trachea until you find the thick, cartilagenous larynx. You can feel the hyoid bone above it. Make a transverse cut just above the transverse jugular – you should be cutting through soft tissue and not cartilage! With some cuts to the side of the larynx, you should be able to pull the larynx towards you (along with the trachea) and see the epiglottis and vocal cords. You will not need to make a cut as in Fig. 37.14.

Respiratory system:
Paired lung lobes: anterior (apical), middle (cardiac), posterior (diaphragmatic)
one accessory (intermediate) lung lobe

Arteries
innominate (brachiocephalic)
common carotid
subclavian
axillary
brachial
subscapular
intercostals (several can be seen)

Veins
costocervical
innominate (brachiocephalic)
internal jugular
external jugular
transverse jugular
subclavian
subscapular
axillary
brachial
posterior vena cava (post cava)
anteior vena cava (precava)
internal mammary
intercostals (several can be seen)
azygos

Heart:
right and left atria
aortic arch
pulmonary trunk
pulmonary arteries
pulmonary veins
FIGURE 4.4  
Larynx and trachea (ventral view).

FIGURE 4.5  
Larynx and trachea (longitudinal section).

FIGURE 4.6  
Respiratory system.
Do not remove your cat's heart

VENTRAL VIEW

DORSAL VIEW

DORSAL HALF

VENTRAL HALF

FIGURE 5-1
Heart.

FIGURE 5-2
Heart (internal view).
Cat Circulatory Lab 1
Study Guide

If you are unclear about where some of the arteries begin and end, this guide may help.
- **Innominate**—this artery begins at the aortic arch and ends when both of the common carotids branch.
- **Subclavian**—this one is very small in the right side. It begins after the last common carotid branches and ends when the artery leaves the rib cage. The *left subclavian* begins at the aortic arch and ends when it exits the rib cage.
- **Axillary**—This artery begins just outside of the rib cage. From this artery, the subscapular artery branches. If you follow the axillary beyond the subscapular, you will encounter another branch (the anterior humeral circumflex artery). This branch marks the end of the axillary.
- **Brachial**—It's the remaining artery beginning where the axillary ends and extending toward the elbow.

**Simplified Artery Diagram**

*Note that some variation occurs from cat to cat. This is why you should look at several different kitties. Also, make sure that you can identify the arteries in both arms of the cat.*
FIGURE 5-8
Anterior arteries.
Guide for detecting veins:

*Keep in mind that the blood is actually draining toward the heart. I am discussing these veins from the heart outward because most of you have studied them this way already.

- **Azygos**—From the base of the precava, this vein extends down the length of the ribs. This vein receives blood from the lower intercostal veins.
- **Precava**—This one begins at the right atrium and ends when it splits into two branches. The *internal mammary* drains into the precava.
- **Innominate**—The two branches after the precava are the innominate veins. The branching of the external jugular marks the end of the innominate. Note that the *costocervical* vein drains into this main vein.
- **External jugular**—Note that the *internal jugular* drains into this vein, and the *transverse jugular* connects the right and left external jugulars near the larynx.
- **Subclavian**—The subclavian is the short part beginning after the external jugular branches and ending where the subscapular branches, usually very short.
- **Axillary**—This vein begins after the subscapular branches. If you follow the axillary from this point toward the elbow, you should encounter three branches. This third branch (the thoracodorsal vein) marks the end of the axillary.
- **Brachial**—This one starts after the thoracodorsal branch and extends toward the elbow.

**Simplified Diagram of the Veins**

*Sometimes the internal jugular does not get injected with latex and is hard to see.*
FIGURE 5-10
Anterior veins.
FIGURE 5-3
Arteries and veins of the neck, thorax, and upper arm.