Anatomy Outreach Program – 2009

Itinerary for the Program (approx. 180 minutes total)

Arrival at NEOUCOM
Proceed to the Read Distance Education Center (90-105 minutes)
  Plane of Section Exercise
  Case presentation of a patient with a cardiovascular problem
    Gross anatomy of the human heart
    Examination of arteries and veins
    Virtual microscopic study of the heart, blood vessels and veins
    Virtual microscopic study of cells found in blood
  Case Wrap-up
Tour of Yassine Gross Anatomy laboratory, Multidisciplinary laboratory and Pharmacy Compounding laboratory (15 minutes)
Lunch with faculty and/or medical students, pharmacy students or biomedical science graduate students (60 minutes)
Board busses and return to school

Objectives:

• To learn the basic structure of the heart including its layers, chambers and conduction system.
• To understand the flow of blood to and from the heart, i.e. the systemic, pulmonary and cardiac circulations.
• To understand how structural differences in arteries, veins and capillaries relate to the functional demands placed on these vessels.
• To learn the origin and general function of the cellular components of blood
• To develop a respect among students for handling human tissues
• To acquaint students with recent technological tools for studying the human body
Plane of Section Exercise

A banana is oriented with the tip being superior (cranial), the stem being inferior (caudal), the concave surface being anterior (ventral) and the convex surface being posterior (dorsal).

1. A. Draw the shape of a transverse section cut near the tip of the banana; B. Draw the shape of a transverse section cut at the midsection of the banana; C. Draw the shape of an oblique section cut near the middle of the banana; D. Draw the shape of a coronal section that passes through the superior and inferior portions of the banana, but not the middle; E. Draw a shape of coronal section that cuts through the middle of the banana, but not the tip or stem; F. Draw the shape of a mid-sagittal section of a banana.
The following statements or questions relate to the basic structure of the cardiovascular system.

1. Diagrammed below are the basic components of the circulatory system in humans. Draw arrows connecting the boxes to show the flow of blood in the body.

![Diagram of the circulatory system]

2. What are the four chambers of the heart? What are the valves associated with the heart? Locate the major vessels entering and exiting the heart. The heart is supplied with blood by what route?

3. What are the three layers of the heart and what types of tissues/structures are found in each layer?

*Image 22, lower left. Heart*

Identify the three layers of the heart (endocardium, myocardium and epicardium in this section. How do the thicknesses of each layer compare with each other? What structures are found in each layer?

4. What are the three layers that compose a blood vessel? What are the functional differences between an artery, vein and capillary? How does the structure of these vessels change to meet the functional demands placed on them?
Which blood vessels (arteries or veins) have circular lumens? Which have thicker walls (arteries and veins or capillaries)

5. **What are the different types of cells found in blood, and in general terms, what is their function? Where do the cells found in blood originate?**

**Image 30  Blood smear**

What cell in the blood is responsible for the clotting of blood? Look at the blood smear (image 30) and using your atlas, try to locate this cell/cell fragment in the blood.

**Image 8  Megakaryocyte in bone marrow**

The cell fragment responsible for the blood clot is part of a larger cell found in the bone marrow. Identify this cell.

6. **What is a deep vein thrombus (DVT) and what danger do DVT’s pose to the health of a patient?**