

Lab 3: The Heart

The Heart pp. 174-178, 186, 190-197, 198

Electrocardiogram pp. C53-55

GOALS:

- Trace the flow of blood through the human heart.
- Locate and identify the chambers, valves, and major vessels of a calf heart
- Compare & contrast blood flow through a fetal heart and an adult heart.
- Describe the path of electrical signals that pace the contraction of the heart.
- Draw a normal ECG and describe what causes each wave.
- State the normal pulse rate & blood pressure reading for a resting young adult.
- Determine your pulse rate and explain how/why exercise affects it.
- Determine your blood pressure and explain how/why exercise affects it.
- State what the two numbers in a blood pressure reading represent.

KEY TERMS:

right & left atria

aorta

pulmonary trunk & pulmonary arteries

right & left atrioventricular valves

cardiac veins & coronary arteries

umbilical vein/umbilical arteries

systole (systolic)

electrocardiogram (ECG)

SA node (pacemaker)

P wave, QRS wave, T wave

right & left ventricles

superior & inferior vena cavae

pulmonary veins

semilunar valves

arterial duct

placenta

diastole (diastolic)

depolarization & repolarization

AV node

I. Fetal Pig:

p. 174-178: Read, follow instructions and answer questions. Locate the heart in your pig and identify the **left and right atrium, left and right ventricle, anterior and posterior vena cava, aorta (aortic arch), arterial duct**.

-Be sure you can trace the flow of blood in the fetal heart compared to an adult heart (see pg. 174-177 for reference)

-What is the purpose of the arterial duct in fetal pigs/humans?

II. The Heart (Use your book and the calf heart):

pp. 190-193: Read, follow instructions and answer questions.

-Be able to identify all the structures of the heart listed in the key terms using your calf heart.

-Trace the flow of blood from when it enters the heart from the vena cava until it leaves through the aorta.

-Use your probe to explore the heart chambers and how blood enters and leaves the chambers.

-Be able to explain how the muscles in the heart execute contractions and how the signal travels within the heart.

-How does a heart attack affect the path of the signal within the heart?

III. Electrocardiogram (ECG):

pp. 193-194: Read and answer questions

p. C53-C55: Read and answer questions

-We will demonstrate the EKG (ECG) machine on 1 person

-Understand what each type of wave represents and the corresponding letter for the wave.

IV. Heartbeat:

pp. 195-196: Read, follow procedures and answer questions.

-Understand the difference between systolic and diastolic when talking about blood pressure and your heart.

-Measure your *resting* heartbeat using the stethoscope and pulse-rate method

-repeat the pulse-rate method for determining your heartbeat *after* exercising

-What are some other reasons why your heartbeat may increase?

V. Blood pressure:

pp. 196-197: Read, follow directions and answer questions

-Take your blood pressure using cuffs *before* and *after* exercise and then compare your systolic and diastolic readings to normal readings

-Besides exercise, what are some factors that influence your blood pressure?

VI. Review:

p. 186: Answer questions 1-4

p. 198: Answer questions 6-8, 10-14, and 17

DON'T FORGET ABOUT THE QUIZ NEXT WEEK ON LABS 1-3!

-Lab 1: digestion experiment and oral cavity

-Lab 2: thoracic cavity, abdominal cavity, respiration, digestion and spirometer

-Lab 3: the heart, ECG, heartbeat and blood pressure