



ANATOMY IN CLAY® LEARNING SYSTEM



The mind cannot forget what the hands have learned.™



February: Heart Awareness Month

In the United States, someone has a heart attack every 34 seconds, while each minute, someone dies from a heart disease-related event.¹

In support of America's **Heart Awareness Month** in February, we asked Teri Fleming, one of our lead educators, to prepare a lesson using the ANATOMY IN CLAY® Learning System. We hope that teaching students about heart disease will lead to its prevention.

For tips on how to build the heart in clay, please refer to the Cardiovascular System section, pages 2-6, of the ANATOMY IN CLAY® *Starla On MANIKEN® Teacher's Guide, Curriculum*.

Lesson Length: 45 minutes

Unit Title: Cardiovascular System

Skill/Strategy Focus: Kinesthetic Building on Maniken® models, Peer Conversations

Overarching Understanding:

Personal health choices impact present and long term health outcomes of individuals, families, and society

Essential Questions:

1. Why is knowledge of human anatomy and physiology the foundation for maintaining positive personal and public health?
2. How does knowing the anatomy of a system help prevent its destruction, or enhance its survival?

National Standards Addressed:

1. Comprehend concepts related to health promotion and disease prevention to enhance health.
2. Demonstrate the ability to relate cause and effect in relation to behavior and life choices.
3. Demonstrate a working understanding of the anatomy of the Cardiovascular System and how changes in the anatomy based on behavior choices and aging, correlate to health risks.

Integrate-Building A Heart

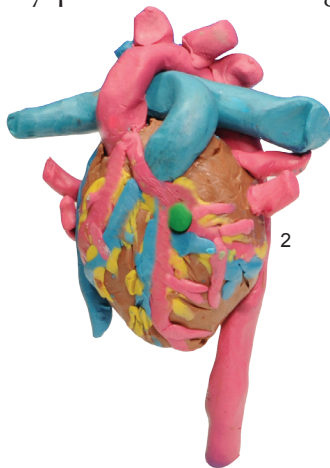
Ask students to follow along with you and build a human newborn heart out of clay. Use terra cotta clay to represent cardiac muscle, red clay for arteries, blue clay for veins, and yellow clay for cardiac adipose (fat).

1. Hearts should include:
 - a. Heart
 - b. Aorta Arch
 - c. Descending aorta
 - d. Pulmonary arteries
 - e. Pulmonary veins
 - f. Superior vena cava
 - g. Inferior vena cava
 - h. Left coronary artery
 - i. Right Coronary artery
 - j. Anterior Interventricular artery (LAD)
 - k. Posterior Interventricular artery
 - l. Circumflex artery
 - m. Marginal artery

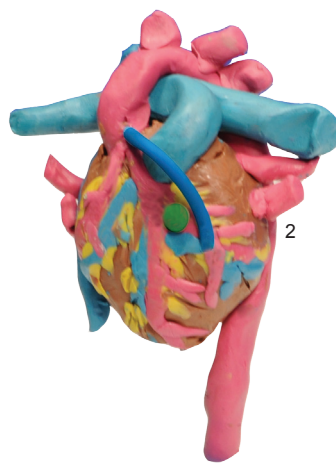


Synthesis/Application-Heart Disease-Coronary Artery Disease

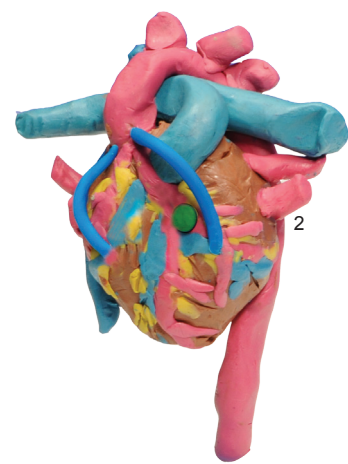
1. Explain to students how cholesterol or plaque can build up in arteries, in much the same way as drain pipes can become clogged with hair, roots, or paper.
2. If an artery becomes clogged, there is usually an alternative route (anastomoses) that the blood can take to get to its destination, however, in the heart there is no alternate route for blood to get to the left heart muscle (biggest and strongest part of the heart) other than the left coronary artery. This design flaw causes more deaths every year than all other heart-related illnesses.
3. The left coronary artery is dominant in 70% of all people (in about 30%, the right coronary artery is dominant). If the left (or right) coronary artery becomes blocked with cholesterol or plaque, the heart muscle begins to suffocate and angina (heart pain) may indicate an impending heart attack. The left coronary artery is sometimes referred to as the “widow-maker”, because so many people die from a blocked coronary artery and leave widows behind.
4. If symptoms of heart blockages occur and treatment is received in time, the coronary artery can be surgically by-passed or a balloon can be passed through it to reduce the blockage.
5. Ask students to demonstrate by placing a piece of green clay on the left coronary artery to represent a blockage (can place more than one blockage-green clay dots along the length of the left coronary artery). Have students use a tube of blue clay to by-pass the blockage. (Blue clay is used because the most common by-pass is created from the redundant great saphenous vein). Sometimes there is more than one blockage, and 1-5 by-passes must be surgically created.



Blockage



**Single by-pass left
coronary artery**



**Double by-pass right and
left coronary arteries**

1. http://www.cdc.gov/dhdsdp/data_statistics/fact_sheets/fs_heart_disease.htm

2. Anatomy in Clay® work of Teri Fleming, and student at HAPS 2011 building the cardiovascular system using Maniken® models.

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