



## Student Discovery Sheet

### Grades 9 - 12

Everything in these discovery sheets is on the exhibit floor. Locate the exhibits described below, and after you explore the cases, feel free to answer the question(s). The answers are available in the text or the object. Some questions you may have to think about and draw upon your own knowledge, or research upon return to your classroom. Please do not write on the exhibits or lean against the display cases. Borrow a writing board from the Information Desk and use only pencils. Have fun and enjoy your museum experience!

### **“To Bind Up the Nation's Wounds: Medicine During the Civil War”**

#### **The State of Civil War Medicine: *“The hurt and wounded I pacify with soothing hand”***

Examine the photos, gunshot wounds, and artifacts in this exhibit. List some of the sanitary conditions that existed during the war. What pain-killers were available? What anesthetics were available?

#### **Trauma and Surgery: *“The smell of ether, the odor of blood”***

Despite the inadequate conditions that existed during the war, surgical procedures were sometimes the only way to save a soldier's life. Based on information in these cases, describe some surgical procedures used during the war. Would they be used today? What was the purpose of the Chisolm Inhaler? What types of wounds were considered nearly always fatal?

**Disease and Hygiene: "*The rapid march, the life of the camp*"**

A silent killer lurked in all the camps. The discovery of diseases and the germ theory were years away. Name some of the diseases that killed many of the soldiers. Did more men die of disease or battle wounds? Explain the conditions of the time to support your answer. How did the acceptance of female nurses change medical care during the war?

**Evacuation and Hospitalization: "*Some on the bare ground, some on planks or stretchers*"**

The Civil War is credited for making significant changes in evacuation and hospitalization. Describe some of the changes introduced in the processes of evacuation and hospitalization? Which are still in use today? Name the military physicians who were largely responsible for these changes. List some of the methods of evacuation displayed in the cases.

## Abraham Lincoln: The Final Casualty of the War

X-rays, which would be one of the technologies used to locate the bullet today, were not discovered until 1895. What instrument did Dr. Barnes use to locate the bullet lodged in Lincoln's brain? What type of equipment is used today to conduct noninvasive autopsies? (Go to the "RESOLVED" exhibit to learn more.)

## “Visibly Human: Health and Disease in the Human Body”

### **Muscle and Bone**

Look at the seated skeleton of a man (located in the museum lobby). What characteristics of the bones (the white ones) do you see that support the original diagnosis of arthritis?

### **Liver**

The hepatic system involves the liver, the largest gland in the body. Which of the following statements are true about the liver? Correct false statements.

- Stores fat soluble vitamins, iron and copper.
- Normal liver tissue is yellow in color.
- Regulates sugar levels in the blood stream.
- Produces glycogen for the digestion of fat.
- The liver and spleen recycle useable elements from red blood cells, proteins and hormones.

A major function of the liver is to filter toxic wastes from the blood. How does excess alcohol damage the liver? If evidence supports that alcohol causes damage to the body, why do individuals drink excessively?

### **Kidneys**

Which of the following statements about the kidney are true? Correct false statements.

- Regulates the amount of water, salt, sugar and proteins in our body.
- Rids the blood stream of toxic nitrogen containing products like urea and renin.
- Activates vitamin C for use in our bodies.
- Synthesizes glucose (sugar) during prolonged periods of fasting.
- Releases three important hormones which effect red blood cell production and blood pressure.

Kidney stones are formed from crystals of calcium and other substances. Why do you think that drinking water helps prevent the formation of kidney stones?

### **Stomach: The Gastrointestinal System**

Humans cannot digest hair. Trichotillomania is a neurological disorder that leads to uncontrollable pulling of hair. If a person eats large amounts of hair, it can form a mass in the stomach. What do you call an undigested mass of hair?

### **Lungs**

Describe the lungs from each of the following people. Explain what accounts for the different colors.

iron miner

coal miner

city dweller

The incidences of iron lung and black lung have decreased over the years. What factors could have contributed to this decrease?

Notice the lungs of a smoker. Describe the appearance of the smoker's lung? What is the hard, white tissue?

### **Lymphatic System**

Lymph is the excess fluid from the body's tissues. Elephantiasis involves the enlargement of a body part in which the lymph vessels have become blocked, in this case by a parasitic worm. Why does this blocking cause enlargement?

### **Heart**

High blood pressure (hypertension) is an abnormally high measure of the pressure of the blood on the walls of the arteries. How does high blood pressure contribute to heart disease?

What can you do to help keep your heart healthy?

**Skin**

The skin is the largest organ of the body--1.7 square meters (18.3 square feet). Why is it considered our “first line of defense”?

**Endocrine**

The endocrine system is a collection of glands that produce hormones. What are the different hormones produced by men and women?

One of the goals of this exhibition is to help visitors identify behaviors or activities that can impact their individual health. List at least three personal decisions that may result in staying healthy. Why do you think it is so difficult to follow recommendations for healthy living?

<b>Exhibit Section</b>	<b>Personal Decision</b>	<b>Reason Difficult to Follow</b>
Skin		
Lungs		
Heart		

## “From A Single Cell”

### **Childhood Skeletal Growth**

The skull bones of babies are not fused when they are born. What purpose does this serve for the infant's development?

These skeletons from young humans have heads that are large in proportion to the rest of their bodies. What does the relatively large size of the head show about human development? How does this relate to the requirement of human infants for relatively more parental care than other animal babies? Compare to the development of another animal.

Do you believe that drugs, alcohol or excessive smoking could alter normal fetal development? Explain your answer.

## “Evolution of the Microscope”

Butterfly wings, plant cells and the webbing of the frog's foot -- this was the fantasy world observed by the fortunate few with the invention of the microscope in the early 16th century. If the magnification lens is the heart of the instrument, what purpose is served by the mirror that tilts at different angles?

Galileo is famous for his contributions to astronomy. What was his connection with the microscope?

### **Comparison Microscope**

Describe a unique feature of the comparison microscope. What special use do police make of this microscope?

## **“RESOLVED: Advances in Forensic Identification of U.S. War Dead”**

What is the difference between antemortem and postmortem data?

Who was responsible for the first forensic identification of a U.S. service member using dental remains?

A forensic scientist uses bones to create a biological profile. They can use bones to estimate a person’s age, sex, stature, ancestry, and signs of trauma or pathology. What is the most useful bones in determining sex? Can you name another bone used to determine sex.

Which type of DNA is most useful in determining the identification of U.S. service members killed in the current conflict? Which type of DNA is most useful in determining identification in ancient remains (remains from previous conflicts)? Why?

Name the six lines of evidence that are used to determine the identification of a U.S. service member?

From the six lines of evidence, three are considered scientific methods. Two out of three must match up with comparative data in order to make a legal identification that is recognized by the Armed Forces Medical Examiner. Name the three forms of scientific identification.

- 1.
- 2.
- 3.

## **“Trauma Bay II, Balad, Iraq”**

What is the name of the device that attaches to a litter (stretcher) that allows for Intensive Care Unit-level monitoring of patients while they are being flown to higher-level treatment facilities? What do you think medics did with all this monitoring equipment before the invention of this device?

What is the significance of the Trauma Bay II concrete floor on display?