

Cell Organization in the Human Body?

Name: _____

Date: _____

Student worksheet

VOCABULARY: Use the words below as you fill in this worksheet.

Anemia: state characterized by a reduced amount of *hemoglobin* in the blood.

Bronchi: major air passage in the lungs. The *trachea* or windpipe splits into two bronchi, one for each lung, and then further into smaller and smaller bronchia.

Cell: the smallest structural and functional living unit of an organism.

Circulatory system: the *system* responsible for circulating blood through the body, also called the cardiovascular system.

Diaphragm: dome-shaped muscle separating the chest from the abdomen.

Hemoglobin: a red protein in charge of transporting oxygen in the blood. Each hemoglobin molecule contains four iron atoms.

Organ: a part of an organism that has a specific vital function, e.g. the heart or the lungs.

Respiratory system: the *system* responsible for breathing, or for taking up oxygen and releasing carbon dioxide.

System: collection of body parts that together fulfill an important function for the organism, e.g. *respiratory system*, digestive system.

Tissue: a group of similar *cells* that are specialized to perform a specific function. Some examples are connective tissue, nerve tissue, smooth muscle tissue, etc.

Trachea: windpipe

DIRECTIONS: Answer question 1 in preparation for the experiment.

1. How do you think a lack of iron can lead to shortness of breath or fatigue? How might the amount of iron in our body and breathing be connected?

Cell Organization in the Human Body?—Page 2

Name: _____

DIRECTIONS: Follow the directions to create a lung model.

2. Look at the model the teacher shows you, or the model you see at the start of the video (<https://youtu.be/mfiWzupeK3I>). How is this model similar to the human *respiratory system* (see Figure 1)?

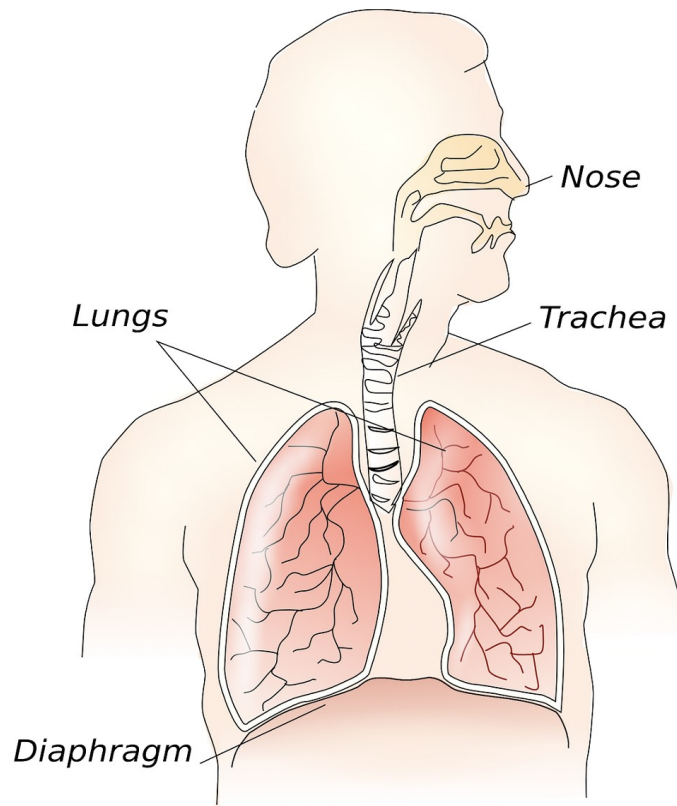


Figure 1. The human respiratory system.

3. Make the model as directed by your teacher or as explained in this video: <https://youtu.be/mfiWzupeK3I>.

Cell Organization in the Human Body?—Page 3

Name: _____

DIRECTIONS: Use the lung model to complete the following task.

4. Use your model to explore how air might flow in and out of the lungs.

Write a hypothesis (educated guess) of how air flows in and out of human lungs and support your hypothesis with your model.

DIRECTIONS: Use your model to complete tasks 5-8.

5. Use your model and the figure of the *respiratory system* to complete Table 1.

Table 1: A Comparison of the Model and the Respiratory System		
Respiratory system	Equivalent part in the model	Function of this part
Nose	End of the straw	Opening that allows air to flow in and out.
<i>Trachea</i>		
<i>Bronchi</i>		
Lungs		
<i>Diaphragm</i>		

Cell Organization in the Human Body?—Page 4

Name: _____

6. Choose two parts listed in Table 1. Concentrate on these parts for questions 7 and 8.

Chosen parts:

a.

b.

7. For each of these parts: In your model, is the material and the shape chosen to represent this body part well-chosen? Does this material choice help fulfill the function of the part or not? Explain your reasoning.

a.

b.

8. Thinking about the two parts in the human body that have the same function as your chosen parts in the model, do you think these parts are made up of the same type of *tissues*? Why or why not?

DIRECTIONS: Use your general knowledge to complete task 9.

9. The *respiratory system* is responsible for the exchange of oxygen and carbon dioxide with the outside world. Make a hypothesis (or educated guess) of how the *respiratory system* works together with at least one other *system* in the human body to fulfill its job.

Cell Organization in the Human Body?—Page 5

Name: _____

DIRECTIONS: Use what you learned to complete tasks 10-12.

10. Rewrite the following terms from **least**-complex to **most**-complex.

a. Lung, lung *cell*, human, lung *tissue*, *respiratory system*

b. *Tissue*, *system*, *organ*, *cell*, organism

11. Looking at everything you learned in this lesson, and knowing that you need iron to create *hemoglobin*, would you change your answer to question 1? Explain why or why not.

12. Write one thing you learned, one thing that surprised you, and one thing you would like to know more about.