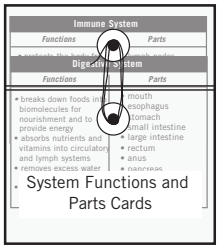
Biological Processes and Systems

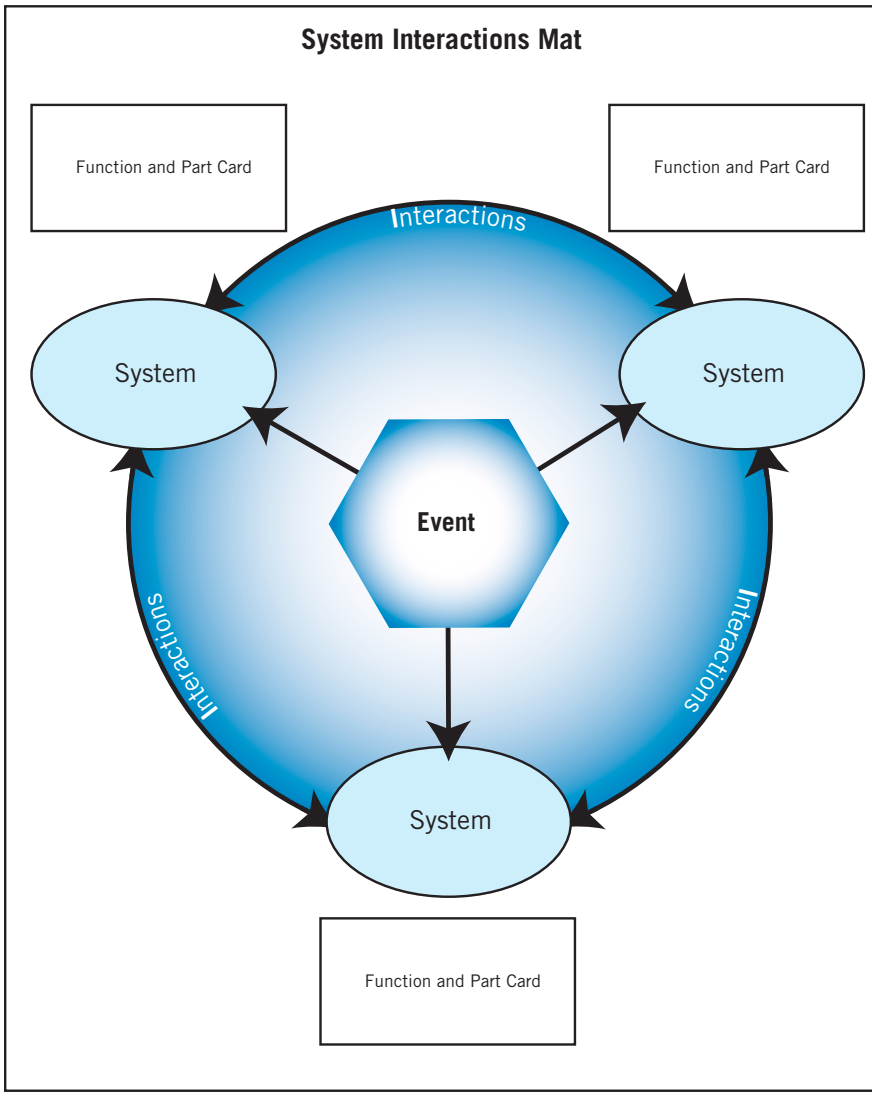
INTERACTIONS AMONG ANIMAL SYSTEMS

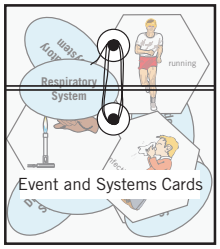
Blackline Masters

Contents

Station Information:
Interactions Among Animal Systems

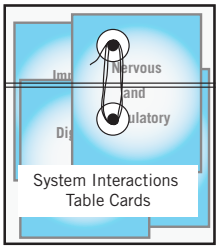






System Interactions Table

These two organ systems interact to protect the body from infection caused by bacteria and other germs.	Both of these organ systems interact to protect the body from infection and regulate an animal's body temperature.	These two systems work together to digest fats and transports the digested fats to the blood stream.
The oxygen supply for the body is controlled by the interaction of these two systems.	Without the interaction between these two systems, touching a hot surface could result in more damage than a simple blister.	These two systems interact to ensure a species of animals will continue by making specialized cells and hormones.



System Cards

Immune System

Circulatory System

Lymph System

Integumentary System

Digestive System

Reproductive System

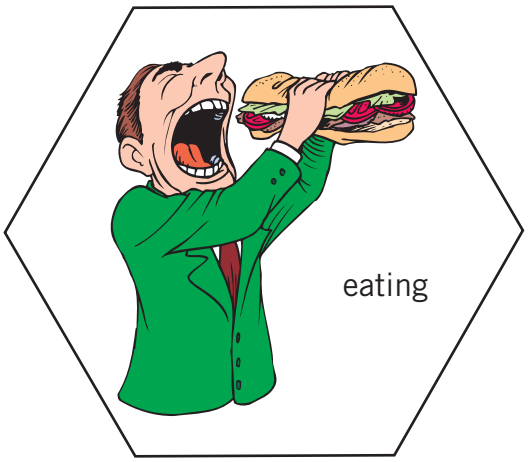
Endocrine System

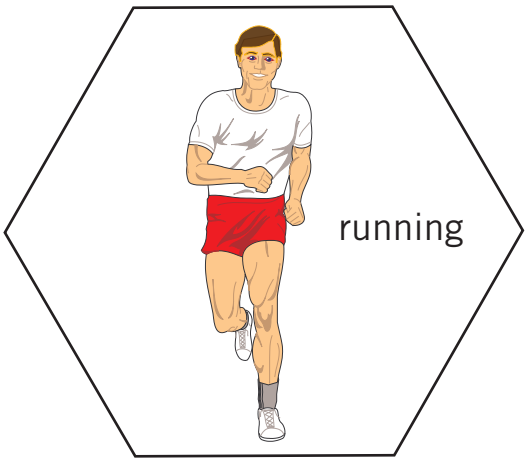
Nervous System

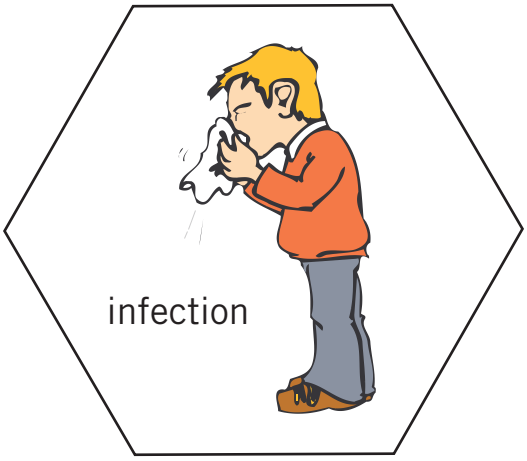
Reproductive System

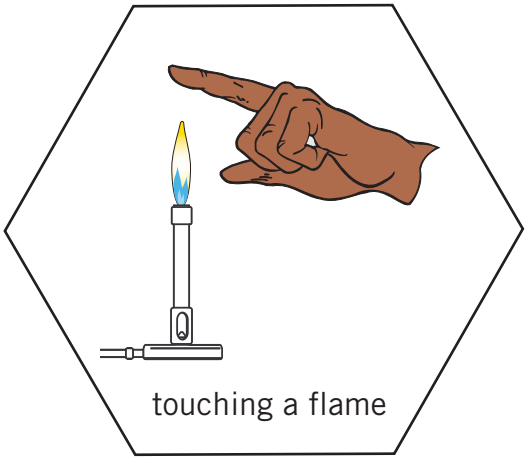
Respiratory System

Event Cards









System Functions and Parts Cards

Immune System

Functions	*Parts*
• protects the body from illness and infections • produces mucus antibodies, T-cells, and lymphocytes	• lymph nodes • spleen • bone marrow • thymus gland • tonsils • white blood cells • T-cells • antibodies • interferon

Digestive System

Functions	*Parts*
• breaks down foods into biomolecules for nourishment and to provide energy • absorbs nutrients and vitamins into circulatory and lymph systems • removes excess water in large intestine • produces acid in stomach that destroys foreign bacteria	• mouth • esophagus • stomach • small intestine • large intestine • rectum • anus • pancreas • liver • salivary glands

Lymph System

Functions	*Parts*
• filters bacteria and toxins • transports enzymes, hormones, and agents of the immune system in blood vessels • produces lymphocytes to fight infection • transports digested fats from small intestines to bloodstream • returns plasma proteins to bloodstream • collects and transports tissue fluids to veins	• lymph nodes • lymph fluid • lymph vessels • bone marrow • thymus gland • adenoids • tonsils • spleen • appendix

Integumentary System

Functions	*Parts*
• protects internal parts of the body from infection, foreign materials, and dehydration • eliminates waste products • regulates body temperature • produces vitamin D • holds and grasps objects • makes fingertips sensitive • includes the largest organ (skin)	• skin • hair • nails • glands

Circulatory System

Functions	*Parts*
• transports oxygen and carbon dioxide, wastes, nutrients, hormones • fights infection • stabilizes pH and ionic concentrations of body fluids • maintains body temperature • forms red blood cells	• red blood cells • white blood cells • spleen • bone marrow • heart • blood vessels • platelets

Reproductive System

Functions	*Parts*
• ensures continuation of the species • produces egg and sperm cells • produces hormones • develops and nurtures offspring	• testes (sperm) • scrotum • vas deferens • epididymis • prostate gland • bulbourethral gland • ovaries (eggs) • fallopian tubes • labia • clitoris • vagina • uterus • Bartholin's gland

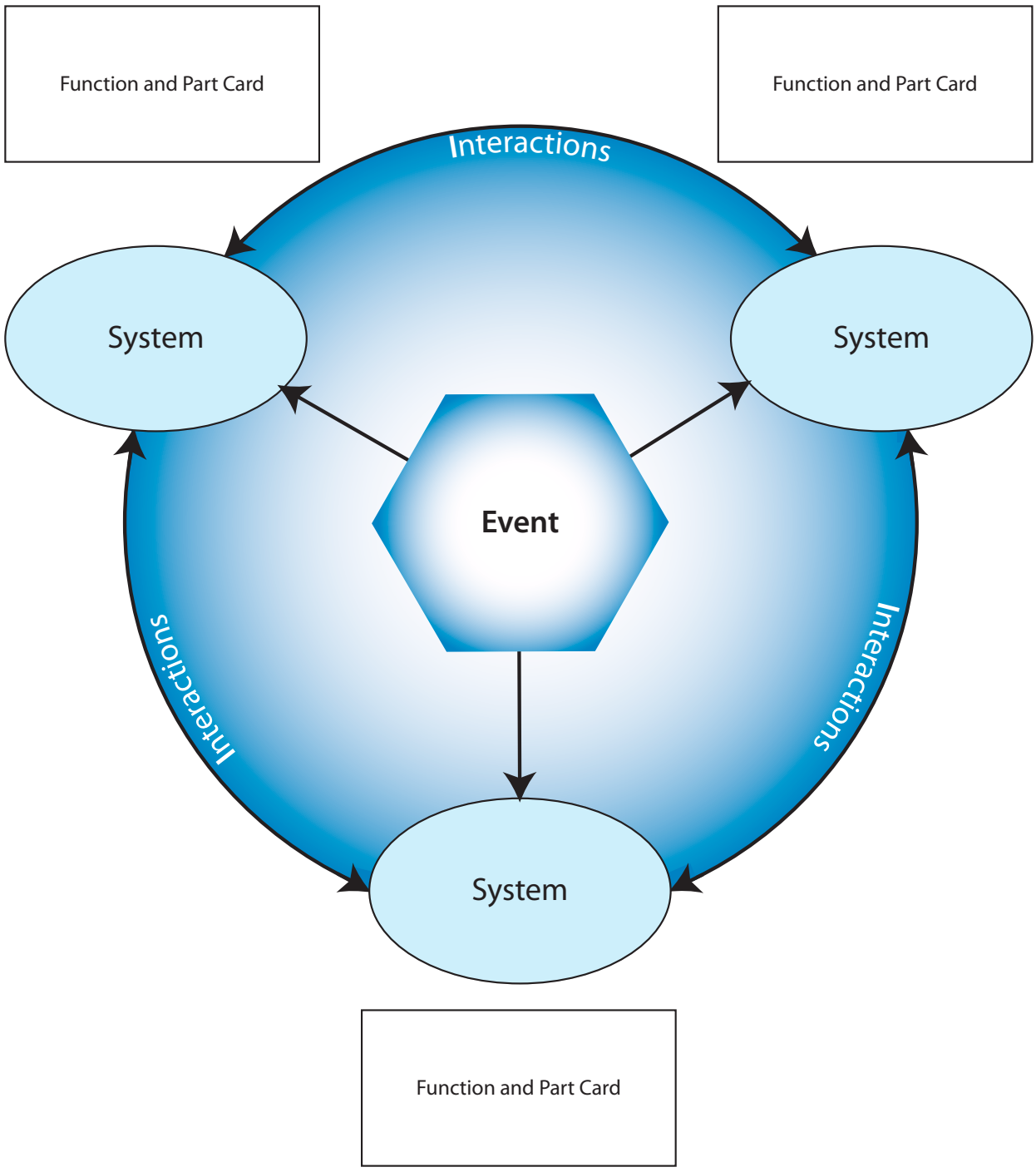
System Functions and Parts Cards, continued

Nervous System	
Functions	**Parts**
• body's communication system • automatically controls digestion, respiration, body temperature, and heart rate • controls activities of the body, such as walking and talking, as voluntary actions	• brain • spinal cord • nerve cells

Endocrine System	
Functions	**Parts**
• produces hormones that control the body's metabolism • controls digestion, mood, physiological development, and reproductive system's development	• pituitary • pancreas • hypothalamus • parathyroid • thyroid • adrenal • ovary • testis • pineal

Respiratory System	
Functions	**Parts**
• moistens, warms, and filters air • passes air over vocal cords to produce sound • diffuses oxygen into the blood and carbon dioxide out of the blood	• nose • larynx • pharynx • trachea • bronchi • lungs • diaphragm

System Interactions Mat



System Interactions Table

These two organ systems interact to protect the body from infection caused by bacteria and other germs.	Both of these organ systems interact to protect the body from infection and to regulate body temperature.	These two systems work together to digest fats and transport the digested fats to the bloodstream.
The oxygen supply for the body is controlled by the interaction of these two systems.	Without the interaction between these two systems, touching a hot surface could result in more damage than a simple blister.	These two systems interact to make specialized cells and hormones, which ensure that a species of animal continues.

System Interactions Cards

Immune and Digestive	Integumentary and Circulatory	Digestive and Lymph
Endocrine and Reproductive	Integumentary and Nervous	Nervous and Circulatory

Biological Processes and Systems

INTERACTIONS AMONG ANIMAL SYSTEMS

Student Pages

Purpose

The purpose of this activity is to reinforce your understanding that systems in animals constantly interact with one another to keep the animals functioning properly.

Before You Begin...

Check to see that all the items are present and organized according to the Station Information sheet. If you notice a problem, notify your teacher immediately.

Materials

- Systems and Event Cards (both sets in one envelope)
- System Functions and Parts Cards
- System Interactions Mat
- System Interactions Table and System Interactions Cards (both in same envelope)

Essential Question

Why is it important that an organ system interact with other organ systems?

Discuss the essential question with your teammate(s) and record your answer.

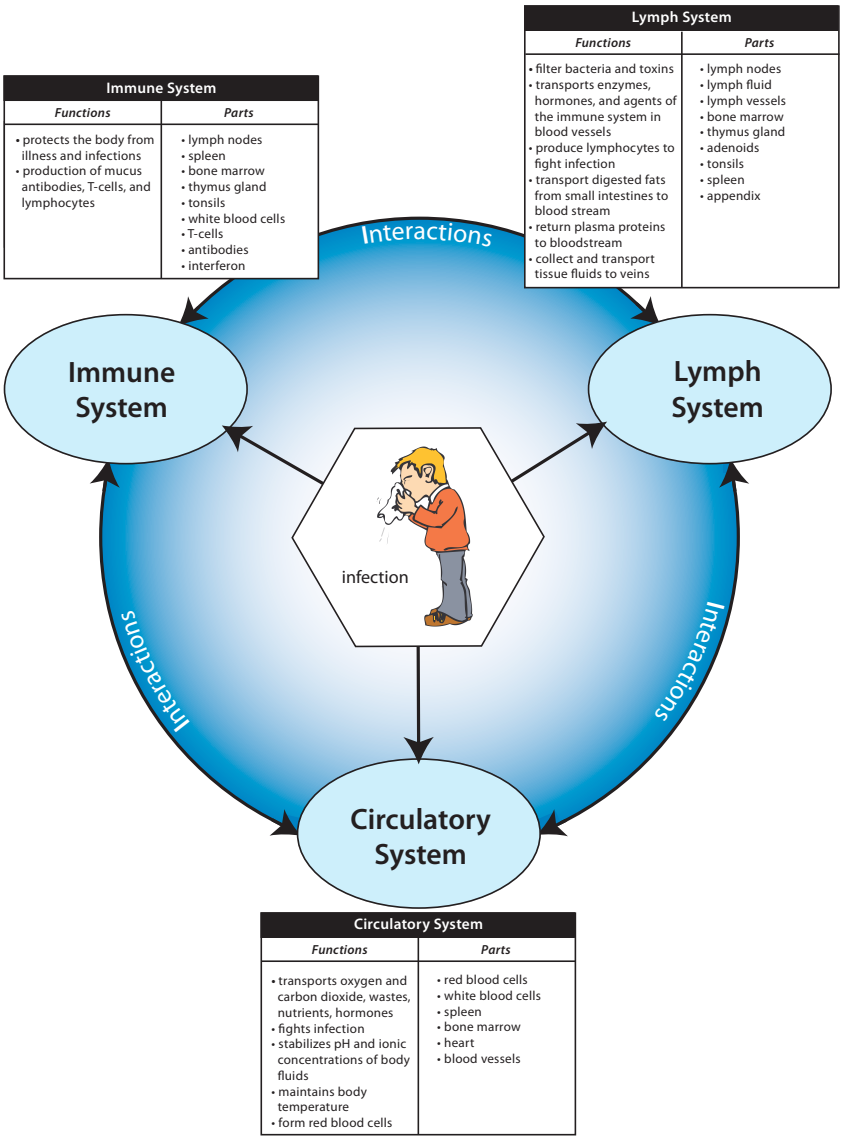
Activities and Questions

Locate the envelope containing the Systems and Events Cards and the envelope containing the System Functions and Parts Cards. These cards will all be used with the System Interactions Mat.

Remove the cards from the Systems and Events envelope. Separate the cards into two stacks: systems cards and events cards.

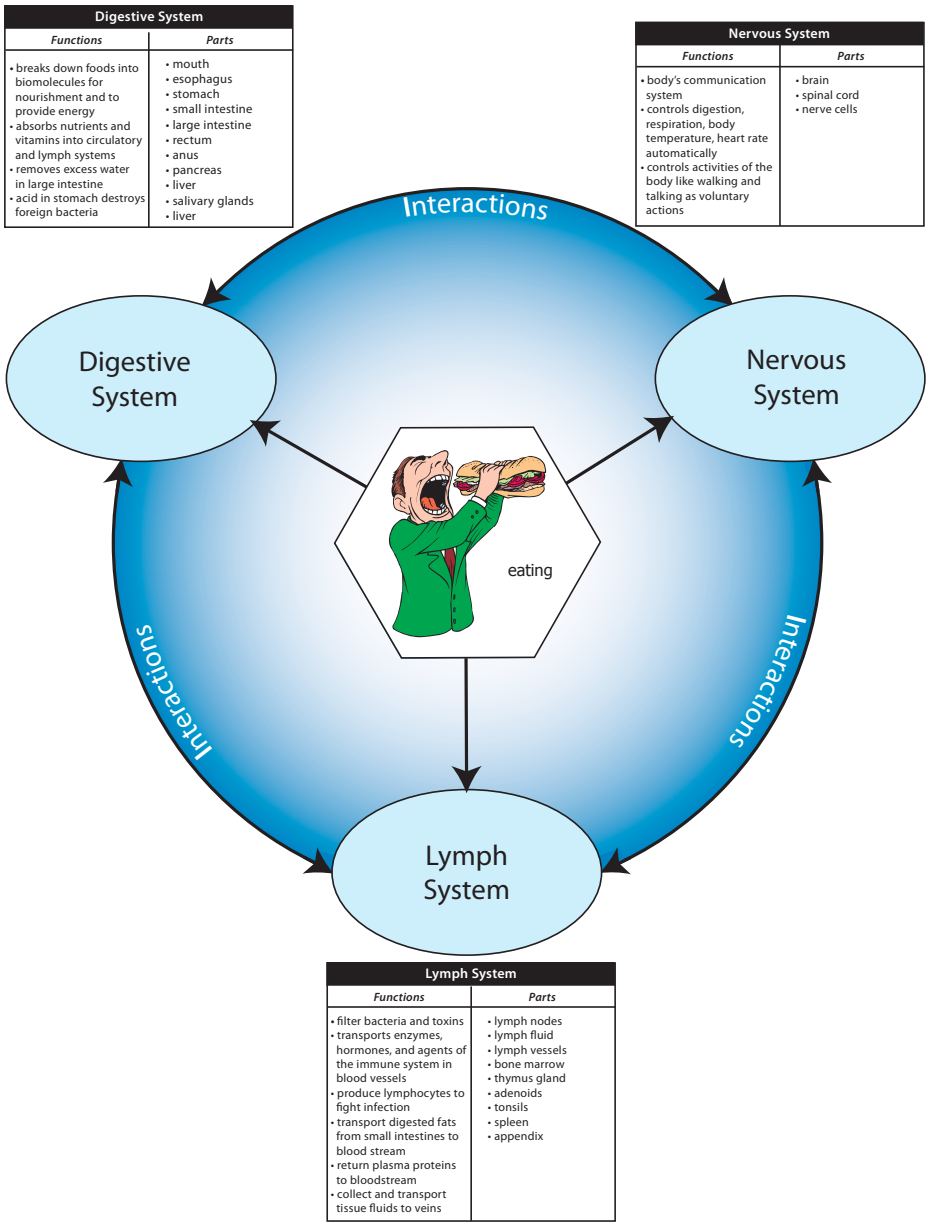
Place the Systems Interactions Mat in the center of the table. Select the event card showing infection and place it in the center of the mat, as shown in the diagram below.

From the Systems Cards, select the circulatory, lymph, and immune system cards and place them on the mat. Find the System Functions and Parts Cards, select the circulatory, lymph, and immune system cards, and place them on the mat as shown below.



1. What are some of the interactions that occur among the lymph, circulatory, and immune systems when a person is fighting an infection like the flu?

Clear the cards from the System Interactions Mat. Put the digestive, nervous, and lymph system cards on the mat, as shown below, and replace the infection event card with the eating card.



2. What interactions must occur among the digestive, nervous, and lymph systems to enable digested food (biomolecules) to be transported from the digestive system to the cells of the body?

Return all of the cards to the appropriate envelopes before answering Question 3.

3. When a runner completes a 10K race, she is breathing heavily, sweating profusely, and her heart rate is rapid. What systems are involved in causing these changes in her body systems? How do these systems interact to allow her to complete the race?

Locate the envelope containing the Systems Interactions Table and System Interactions Cards and place them on the table. Read each section of the table, then find the interaction card that names the systems described in each section and place it on top of that section. Continue until all cards have been placed on the table.

Systems Interaction Table

These two organ systems interact to protect the body from infection caused by bacteria and other germs.	Both of these organ systems interact to protect the body from infection and to regulate body temperature.	These two systems work together to digest fats and transport the digested fats to the bloodstream.
The oxygen supply for the body is controlled by the interaction of these two systems.	**Endocrine and Respiration**	These two systems interact to make specialized cells and hormones, which ensure that a species of animal continues.

4. Record the names of the systems from the cards you selected in the spaces below.

Systems Interactions Table

5. Now that you have completed these questions, return to the Essential Question. Would you like to modify your answer? Write any modifications below.

Note: Because other students are going to do the activity after you, be sure to put all the materials at the station back as you found them. Sometimes there will be materials that need to be renewed or replaced. If you need assistance or have any questions, ask your teacher.

I Need to Remember . . .

Complete this part **after** class discussion of this station.

I need to remember....

Glossary

System Interaction

System interaction occurs when two or more systems act upon or influence each other.