Laboratory Manual for Anatomy and Physiology 6th edition Marieb Solutions Manual

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2 EXERCISE

Organ Systems Overview



Time Allotment: 1½ hours (rat dissection—1 hour; human torso model—½ hour).



Multimedia Resources: See Appendix B for a list of multimedia resource distributors.

Homeostasis (FHS: 20 minutes, DVD, 3-year streaming webcast)
Homeostasis: The Body in Balance (HRM, IM, 26 minutes, DVD)

Advance Preparation

1. Make arrangements for appropriate storage and disposal of dissection materials. Check with the Department of Health or the Department of Environmental Protection, or their counterparts, for state regulations.
2. Designate a disposal container for organic debris, set up a dishwashing area with hot soapy water and sponges, and provide lab disinfectant such as Wavicide-01 (Carolina) for washing down the lab benches.
3. Set out safety glasses and disposable gloves for dissection of freshly killed animals (to protect students from parasites) and for dissection of preserved animals.
4. Decide on the number of students in each dissecting group (a maximum of four is suggested; two is probably best). Each dissecting group should have a dissecting pan, dissecting pins, scissors, blunt probe, forceps, twine, and a preserved or freshly killed rat.
5. Preserved rats are more convenient to use unless small mammal facilities are available. If live rats are used, they may be killed a half hour or so prior to the lab by administering an overdose of ether or chloroform. To do this, remove each rat from its cage and hold it firmly by the skin at the back of its neck. Put the rat in a container with cotton soaked in ether or chloroform. Seal the jar tightly and wait until the rat ceases to breathe.
6. Set out human torso models and a predissected rat.

Comments and Pitfalls

1. Students may be overly enthusiastic when using the scalpel and cut away organs they are supposed to locate and identify. Have blunt probes available as the major dissecting tool and suggest that the scalpel be used to cut only when everyone in the group agrees that the cut is correct.
2. Be sure the lab is well ventilated, and encourage students to take fresh air breaks if the preservative fumes are strong. If the dissection animal will be used only once, it can be rinsed to remove most of the excess preservative.
3. Organic debris may end up in the sinks, clogging the drains. Remind the students to dispose of all dissection materials in the designated container.

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M02_MARI5487_05_C02_pp004-007.indd 4 Laboratory Manual for Anatomy and Physiology 6th edition Marieb Solutions Manual 10/02/16 10:16 AM

Answers to Activity Questions

Activity 6: Examining the Human Torso Model (pp. 15–16)

Digestive: *esophagus, liver, stomach, pancreas, small intestine, large intestine (including rectum), gallbladder*

Urinary: *kidneys, ureters, bladder*

Cardiovascular: *heart, descending aorta, inferior vena cava*

Endocrine: *thyroid gland, pancreas, adrenal gland*

Reproductive: *uterus*

Respiratory: *lungs, bronchi, trachea, diaphragm*

Lymphatic: *spleen*

Nervous: *brain, spinal cord, medulla of adrenal gland*

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2 EXERCISE

REVIEW SHEET

Name _____

Lab Time/Date _____

Organ Systems Overview

1. Using the key choices, indicate the body systems that match the following descriptions. Then, circle the organ systems (in the key) that are present in all subdivisions of the ventral body cavity.

Key: (cardiovascular) digestive endocrine integumentary (lymphatic) muscular (nervous) reproductive respiratory skeletal urinary

urinary 1. rids the body of nitrogen-containing wastes

endocrine 2. is affected by removal of the adrenal gland

skeletal 3. protects and supports body organs; provides a framework for muscular action

cardiovascular 4. includes arteries and veins

endocrine 5. composed of glands that secrete hormones

integumentary 6. external body covering

lymphatic 7. houses cells involved in the body's immune response

digestive 8. breaks down ingested food into its absorbable units

respiratory 9. loads oxygen into the blood

cardiovascular/endocrine 10. uses blood as a transport vehicle

muscular 11. generates body heat and provides for locomotion of the body as a whole

urinary 12. regulates water and acid-base balance of the blood

reproductive and *endocrine* 13. necessary for conception and childbearing

integumentary 14. is damaged when you fall and scrape your knee

2. Using the above key, choose the *organ system* to which each of the following sets of organs or body structures belongs:

lymphatic 1. lymph nodes, spleen, lymphatic vessels

skeletal 2. bones, cartilages, ligaments

endocrine 3. thyroid, thymus, pituitary gland

respiratory 4. trachea, bronchi, alveoli

reproductive 5. uterus, ovaries, vagina

cardiovascular 6. arteries, veins, heart

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3. Using the key below, place the following organs in their proper body cavity. Some responses may be used more than once.

Key: abdominopelvic cranial spinal thoracic

abdominopelvic	1. stomach	*abdominopelvic*	6. urinary bladder
thoracic	2. esophagus	*thoracic*	7. heart
abdominopelvic	3. large intestine	*thoracic*	8. trachea
abdominopelvic	4. liver	*cranial*	9. brain
spinal	5. spinal cord	*abdominopelvic*	10. rectum

4. Using the organs listed in item 3 above, record, by number, which would be found in the following abdominopelvic regions:

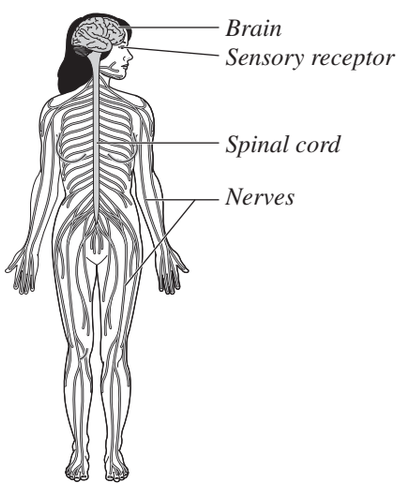
3, 6, 10	1. hypogastric region	*1, 3, 4*	4. epigastric region
3	2. right lumbar region	*3*	5. left iliac region
3	3. umbilical region	*1, 3*	6. left hypochondriac region

5. The five levels of organization of a living body, beginning with the cell, are as follows: cell, *tissue*, *organ*, *organ system*, and organism.

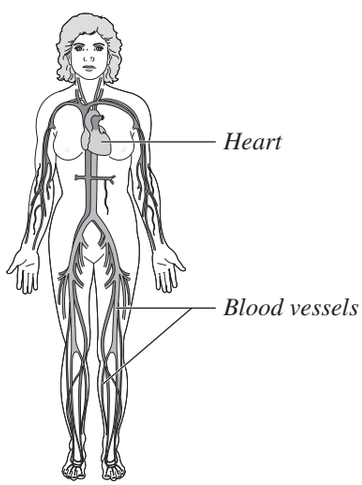
6. Define *organ:* *A structure composed of two or more tissues that performs a specialized function*

7. Using the terms provided, correctly identify all of the body organs provided with leader lines in the drawings below. Then name the organ systems by entering the name of each on the answer blank below each drawing.

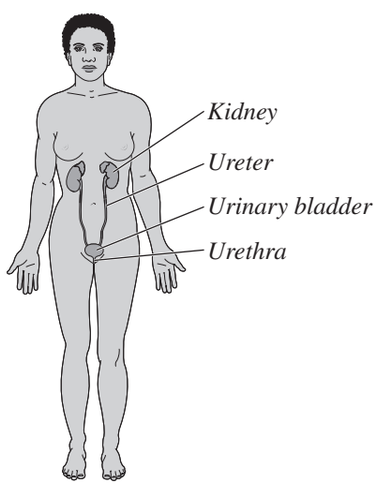
Key: blood vessels, brain, heart, kidney, nerves, sensory receptor, spinal cord, ureter, urethra, urinary bladder



1. *Nervous*



2. *Cardiovascular*



3. *Urinary*

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