

Living Earth – Week 2

Name _____ Period ____

Teacher's Name _____

Summary from last week: Your body cells, although very different in structure/shape and function/jobs, are genetically identical (same exact DNA) because they all originated from one single cell the moment you were conceived (sperm + egg → single cell). Think of your body as a *population* of trillions of cells, all working together, even though they may have different jobs. You may recall from last week that once a cell has *differentiated*, it is committed to one job and cannot take on another job (for example, a lung cell cannot decide to change jobs and become a blood cell or digestive cell).

Big ideas for this week:

- Your body cells are organized into different levels:

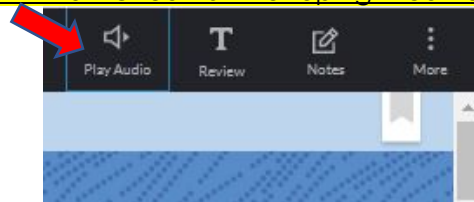
Cells → Tissues → Organs → Organ Systems → Individual

- Each organ system depends on all the other ones doing their jobs, so that your body can stay alive. If one organ system stops functioning or is damaged, the other systems suffer and the organism could die.
- Homeostasis is an organism's ability to maintain a stable internal environment.
- Keep in mind that organ systems are found in multicellular organisms, so if we're learning about human organ systems, know the same systems are present in goldfish, worms, insects, birds, snakes, etc. Plants also have many organ systems but some are structured differently.

Assignment 1: (if you don't want to do the online login and have your textbook with you, read pages 474-479 in place of doing steps 1-4)

- Please log into the HMH Textbook through Clever (login instructions on my website)
- On the top tab bar in the middle is "Assignments"...click on that.
- Click on "Student EBook: Explore/Explain 3: Interacting Systems in Organisms."
- Read and click/watch the interactives. (I suggest you have the "quiz" open and complete it as you are reading. It will make things go more quickly)
 - Please skip the "Hands on Lab," "Scaling Down/Language Arts" section about nanobots, and the "Collaborate" sections.

Remember you can get the text read to you by clicking the PLAY AUDIO icon at the top right corner



4:45 min video

Optional video for more info on Interacting Organ Systems:

TED-Ed: "How Your Muscular System Works – Emma Bryce": <https://www.youtube.com/watch?v=VVL-8zr2hk4>

(odd relationship here, for those who eat meat, particularly turkey and other birds: "Dark meat" is the slow-twitch muscle like leg muscles, and "light meat" is the fast-twitch muscle like flight muscles).

If you can, try the "Observe a sarcomere contracting" video at the very bottom and check to see how well you did with the drop-down answer choices.

After completing the HMH reading, please complete the quiz below

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Distance Learning Week 2 question.

Assignment 1 "Quiz". Please circle the correct answer to each

- Which level of organization is made up of many tissues working together to carry out a specialized function in the body?
 - Cell
 - Tissue
 - Organ
 - Organ System
 - Individual
- Which level of organization is considered the most basic unit of life?
 - Cell
 - Tissue
 - Organ
 - Organ System
 - Individual
- Once a cell has undergone differentiation (for example, becoming a muscle cell) will it later be able to change its function and become a different type of cell?
 - Yes, it can change function if it is needed for something else.
 - No, it is stuck serving the same function as long as it is alive.
- According to the text, which type of tissue receives and transmits impulses, and processes information?
 - Connective Tissue
 - Epithelial Tissue
 - Muscular Tissue
 - Nervous Tissue
- According to the text, which tissue contracts and relaxes to allow for movement, support, and heat production?
 - Epithelial tissue
 - Nervous tissue
 - Muscular Tissue
 - Connective Tissue
- Which term best describes an organism's ability to maintain a stable internal environment?
 - Differentiation
 - Homeostasis
- Which type of muscle tissue is used for movements under your own control (like walking, texting, chewing, or speaking)?
 - Smooth muscle
 - Skeletal muscle
 - Both smooth and skeletal muscle
- Think of blinking your eyes, as well as breathing. Under which type of control are your eyelid muscles and the muscles that help you breathe?
 - Involuntary control only
 - Voluntary control only
 - Both Involuntary and voluntary control.



Assignment 2: Exploring human organ systems. Before starting, remember that these systems are found in other organisms. Your cats and dogs at home have the same parts, and you'll find the same in reptiles, amphibians, birds, mammals, and some of them in bugs, worms, and more.

1. Please watch the Amoeba Sisters video: **“Human Body Systems Functions Overview: The 11 Champions (Updated)”** at <https://www.youtube.com/watch?v=gEUu-A2wfSE> **8:22 min video**
2. Optional notes section: If you want, you can use this section to write down a general description of the functions of each of the following organ systems.

| ORGAN SYSTEM | Function |
|------------------|----------|
| Circulatory | |
| Digestive | |
| Endocrine | |
| Excretory* | |
| Integumentary | |
| Lymphatic/Immune | |
| Muscular | |
| Nervous | |
| Reproductive | |
| Respiratory* | |
| Skeletal | |

*Note the excretory and respiratory are somewhat similar, as the excretory system gets rid of waste through liquid, picked up from cells throughout your body, and the respiratory system gets rid of waste gases (CO₂) picked up from your body cells. The respiratory system has an added function of oxygen into the body, needed by all cells for cellular respiration (so lungs not just used for elimination of waste gases).

When complete, and using your notes from the table above, please complete the quiz below

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Assignment 2 "Quiz". Please circle the correct answer to each question.

1. This organ system is responsible for breaking down foods and then absorbing the nutrients and getting rid of foods waste.
 - a. Nervous System
 - b. Skeletal System
 - c. Digestive System
 - d. Immune System
 - e. Circulatory System
2. When you exit a movie theater during the day, sunlight floods into your eyes, causing the pupils in your eyeballs to get smaller. They were much larger in the theater, taking in the movie in such a dark room. With the blast of sunlight, you might even sneeze in response. Which organ system responsible for taking in information, processing it, and then responding to it?
 - a. Excretory System
 - b. Endocrine System
 - c. Skeletal System
 - d. Circulatory System
 - e. Nervous System
3. Does your skeletal system rely on your digestive system to be working well and doing its job?
 - a. No way - all the organ systems work independently and have no effect on other organ systems.
 - b. Yes! Absolutely. If the digestive system isn't getting nutrients into the body, how would the bone grow or replace dead bone cells?
4. Since you were born, your cells have been dividing through mitosis, and now at every family reunion, older family members can't stop talking about how you're mysteriously taller than when you were four years old. Some hormones are made by your body to stimulate cell division and make you grow. What organ system is responsible for you growing so much?
 - a. Excretory System
 - b. Endocrine System
 - c. Immune System
 - d. Respiratory System
 - e. Muscular System
5. We're in the middle of a global pandemic, caused by a virus. Unfortunately many people are getting sick, and -sadly- many are dying. Many with the disease, however, are able to recover, their bodies having fought off the virus after some struggle. Their ability to fight that disease and many other diseases is because of their...
 - a. Skeletal System
 - b. Circulatory System
 - c. Integumentary System
 - d. Reproductive System
 - e. Immune System

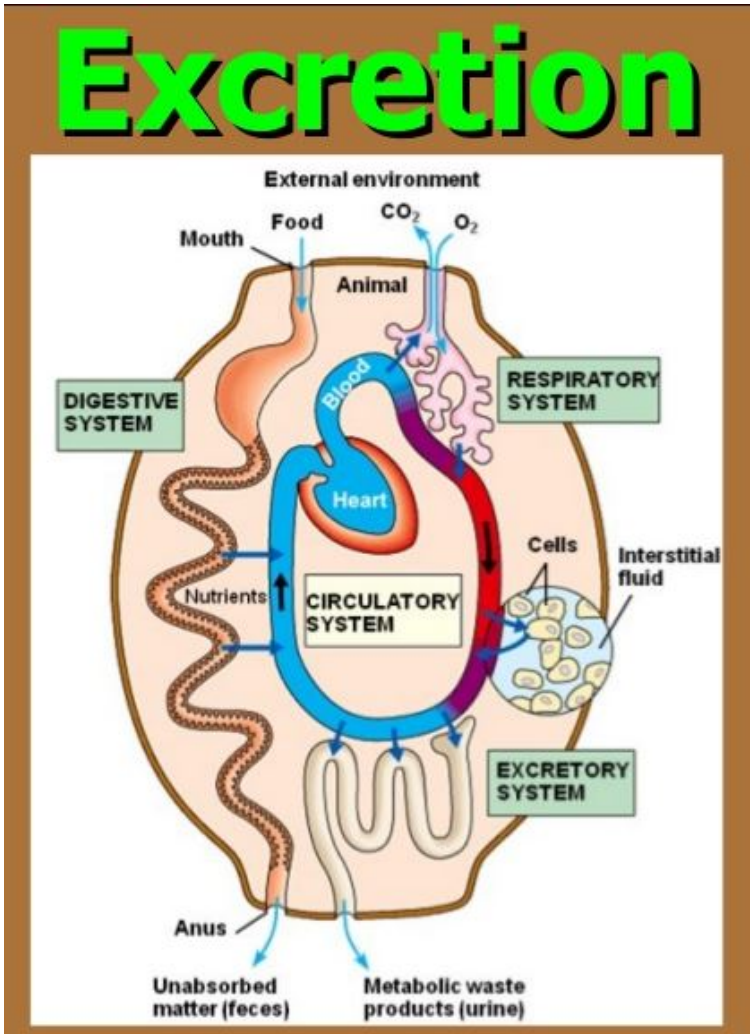


Assignment 3: Summarizing digestive, nervous, and excretory systems.

1. Please view the TED-Ed video “How Your Digestive System Works – Emma Bryce” at <https://www.youtube.com/watch?v=Og5xAdC8EUl> for a little more detail on the digestive system.

4:56 video

2. Then, examine the simplified diagram of excretion below and follow the path of food, gases, and waste through the body.



Note: it is really important to know that deoxygenated blood IS NOT BLUE in real life, but every diagram in the world shows it as blue to indicate it's deoxygenated. Deoxygenated blood is actually red, just slightly darker red than the blood that has come into contact with oxygen from your lungs.

The excretory system filters your blood, and maintains a balance of water, salts, and nutrients. Metabolic waste is eliminated from your blood...remember the nitrogen cycle we talked about in Semester 1? Also keep in mind homeostasis from earlier in this assignment.

Optional video if you have time: “The Excretory System: From Your Heart to the Toilet – CrashCourse Biology #29”

<https://www.youtube.com/watch?v=WtrYotjYvtU>

12:20 video

When done, please take the final “quiz” for this week, on the next page

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End of Week "Quiz". Please circle the correct answer to each question.

- Which organ systems work with the Digestive System to bring nutrients into the body and distribute the nutrients to the rest of the body? *Circle all that apply.*
 - Endocrine System
 - Nervous System
 - Muscular System
 - Circulatory System
 - Reproductive System
- Review question from earlier in this week's assignments: Is chewing done by smooth muscle (involuntary control), or skeletal muscle (voluntary control)?
 - Smooth Muscle
 - Skeletal Muscle
- Which organ system below is NOT involved in removal of waste (food waste, metabolic waste, and gas waste)?
 - Excretory System
 - Skeletal System
 - Circulatory System
 - Respiratory System
 - Digestive System
- Referring to the Neurons section in the HMH reading in Assignment 1 for this week, three types of neurons are described: Sensory neurons, Interneurons, and Motor neurons. Which neurons detect information, taking information (like sound, smells, temperature) into the body for processing?
 - Motor Neurons
 - Interneurons
 - Sensory Neurons
- Putting it all together: You may recall that the nervous system cells (neurons) are lined with a myelin sheath, which is an outer wrap of proteins and lipids (fats!) that insulates and speeds up communication within the body. You may have also learned that cell membranes are made from lipids, and that lipids are stored under our skin for some insulation. If someone was either malnourished / starving, or had a health condition where they couldn't digest fats, how could that affect their bodies? *Circle all answers that are correct.*
 - Their nervous system could fail, and they could lose motor control.
 - Cells in their body could have a hard time doing mitosis.
 - They could have a harder time growing, as well as repairing or replacing damaged or dead tissues.
 - Other organ systems could be negatively impacted and may not function well.
 - They may not be able to retain body heat as well.