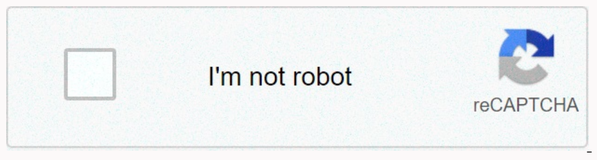

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Animal system interactions worksheet answers

A system is a group of bodies that work together and provide an organism with an advantage for survival. This is the most complex organization in your body and the final level of progression from cells to tissues to bodies and then the system. The system works alone and with other systems to allow your body to maintain homeostasis. Homeostasis is a stable internal environment that allows you (and your cells) to survive. While each one of your systems is needed to survive, your nervous system is most important as you continue reading this page. Your eyes and brain are reading these words and remembering all the information about the system. If you think about it, you are also using your muscular system to help move your eyes, students, and keep your head up. Agencies work together agencies that are part of every system. Your heart is classified as an agency and it is part of the circulatory system. The body can work in several systems of your body. Many bodies also have specific cells or tissues that have different functions. Your kidneys are not just part of your excretion system; they also have specific parts that serve the endeer ende ende system. You, and many advanced mammals, have similar bodies and systems. However, there are a variety of organs found throughout the animal kingdom. Some aquatic animals have bodies that remove salt from saline and an animal as one can have multiple stomachs in the digestive system. The system can not work alone We just explain how agencies can be part of some systems. Similarly, systems rarely work alone. All systems in one organism are connected to each other. A simple example is the connection between the circulatory and respiratory systems. When blood circulates through your body, it eventually needs fresh oxygen (O2) from the air. When blood arrives in the lungs, part of the respiratory system, the blood is oxidized again. Your stomach, part of the digestive system, constantly interacts with your endeerland system and spreads hormones throughout your body. Examples of systems It's easy to point out a few in your body. The two of you think the most are probably your respiratory and digestive system. A few times a day you can get hungry, sit down, and have a nice meal. All these foods are broken down in your digestive system so that your body has the energy to survive. The body thing you don't need is pooped out at the other end. Since you are breathing all the time, the respiratory system is always at work. You inhale in and out from your nose and mouth while your lungs are the main bodies that allow your body to absorb the oxygen you need from the air. There are many other systems in your body and specialized systems in dynamic other parts of the world. Cells, Tissues, Bodies and Nerves (NASA SciFiles Video) You are familiar with the smallest cell-structures and and units of a living organism. Each cell can perform all the basic activities necessary for life. Some organisms, like bacteria, are single-celled - the whole organism is made of only one cell. These single-celled organisms rely on diffusion and osmosis to be in the necessary raw materials (such as food and oxygen) and to release waste (such as carbon dioxide). What happens when the organism becomes more complex? How do organisms that build billions, or even trillions of cells (like humans), get the necessary materials for each and every cell? The answer is the body system. Large, complex organisms need multiple levels of organization to ensure all cells get what they need to perform life functions. Organize the body system starting with the cells. Cells work together to form tissues, tissues work together to form bodies, and bodies work together to form agency systems. For example, myocardial cells group together to form myocardial tissue, thus form the heart. The heart pumps blood through the circulatory system, provides the necessary materials (glucose, oxygen) and takes waste (carbon dioxide) from cells throughout the body. Agency systems work together to effectively and efficiently supply all body cells with their basic need to perform life functions. You can think of bodies and systems as puzzle pieces. The whole animal is pictured on the puzzle. So, like anyone assembling puzzles, let's look at the box to see the first big picture. Instructions: Watch Human Body Systems: The 11 Champions for a review of the human body systems and their functions. The Amoeba Sisters. Human Body System: 11 champions. Taken from Homeostasis | Internal Environment | Control System | Feedback Systems in Homeostasis Body Systems and Homeostasis | Link We are all familiar with many systems of bodies including the body of advanced animals: such as the circulatory system, nervous system, etc. Many of us are aware of the essential nature of the immune system these days of HIV, AIDS, and emergency viral diseases like Ebola and Hanta. The following chapters will focus on animals, such as sponges with no bodies at all, and other organisms that lack many of the agency systems we allow. Recall that in the Introduction chapter, we discussed the organizational levels that we see in biology, from atoms to the agency systems that make up a multi-celled organism. We have also seen somewhat of the myth of the cells and tissues that occur in humans (and by expansion in other animals). This chapter will introduce you to eleven systems of organs operating in our body, and how they coordinate to keep us active in a dynamic range of internal conditions, I call it homeostasis. Animal organs usually consist of more than one type of cell. Recall that the stomach contains all four types of animal tissue: animals: to line the stomach and secrete gastric secretion; connective tissue to give the stomach the flexibility to expand after a large meal; smooth muscle tissues to stir and digest that meal without conscious thought (actually, we are only aware of that action when we belch or suffer from some kind of stomach pain!); and nerve tissues to monitor the progress of food as it is working on the stomach, and to direct excretion and muscle activity. Each agency usually performs a certain set of functions. The stomach is an agency consisting of tissues that aid in the mechanical and chemical decomposition of food. Most bodies have functions in only one agency system. The stomach is only involved in the digestion of food as part of the digestive system. The system of bodies, such as the digestive system, is the set of bodies that perform a major function for the organism. Homeostasis | Returning to homeostasis is about maintaining a stable internal environment. Homeostasis is a term given in 1959 to describe the physical and chemical parameters that an organism must maintain to allow the proper functioning of its component cells, tissues, bodies and system of bodies. Recall that enzymes work best when within a certain range of temperature and pH, and that cells must try to maintain a balance between having too much or too little water in relation to their external environment. Both situations show napalm. Just as we have a certain temperature range (or comfort zone), so our body has a wide range of environmental parameters (internal as well as external) in which it works best. Multi-celled organisms do this by having bodies and agency systems that coordinate their homeostasis. In addition to other functions that life must perform (recall the discussion in our introductory chapter), single-celled organisms must perform their homeostasis within but a single cell! Single-celled organisms are surrounded by their external environment. They move the material in and out of the cell as prescribed by the cell membrane and its activity. Most multi-celled organisms have most of their cells protected from the external environment, having them surrounded by an environment inside the water. This internal environment must be maintained in such a state to allow maximum efficiency. The final control of homeostasis is carried out by the nervous system. Often this control is in the form of a negative feedback loop. Heat control is a major function of homeostatic conditions involved in integrating the skin, muscles, nerves, and circulatory system. The difference between homeostasis as a single cell does it and what a multi-celled organism does comes from their basic organizational plan: a single cell can dump waste outside the cell and is done only with it. The in a multi-celled organism, such as a human or cat, also dumps waste outside the but like trash cans or dumpsters outside my house/apartment, the waste must be carted away. The carting away of the waste is done in my body by the circulatory system in combination with the excretion system. For my home, I have phoenix city sanitation department do it (and get paid every month for their service!). The final control of homeostasis is carried out by the nervous system (for quick reactions such as reflexes to avoid picking up a hot pot out of the stove) and the endeland system (for long-term reactions, such as maintaining body levels of calcium, etc.). Often this homeostatic control has the form of a negative feedback ring. There are two types of biological feedback: positive and negative. Negative feedback turns off the stimulus that caused it in the first place. Your home heater (or cooler for those of us in the Solar Belt) works on the principle of negative feedback. When your house cools below the temperature set by your thermo regulator, the heater is turned on to warm air until the temperature is equal to or higher than the temperature set at the heat level. The thermo regulator detects this temperature increase and sends a signal to turn off the heater, allowing the house to cool until the heater is turned on again and the cycle (or loop) continues. Positive feedback causes amplification provoked by the reaction. Examples of each will be presented below. Internal Environment | Back to the Top There are two types of out-of-cell fluid in animals: the out-of-cell fluid that surrounds and bathes plasma cells, the liquid composition of the blood. Internal components of homeostasis: Oxygen and carbon dioxide pH concentrations of the environment inside nutrient concentrations and waste products Salt concentrations and other electrolyxes Volume and pressure of the out-of-cell fluid control system | Returning to the Top Open system is linear and has no response, such as a light switch. The closed system has two components: a sensor and an effector, such as a heat (sensor) and an effector. Most of the edi biological systems in the body use feedback to maintain the body's internal environment. Most homeostatic systems are external: they are controlled from outside the body. The endocont secretion and nervous system is the main control system in higher animals. The nervous system depends on sensors in the skin or sensory bodies to receive stimulation and transmit a message to the spinal cord or brain. Sensory input is processed and a signal is sent to an effects system, such as muscles or glands, that affect the response to stimuli. The endotic system is the second type of external control, and involves a chemical composition for reflection. The sensor detects a change in the body and sends a message to an endotropially (mesoroid) effector, which makes PTH. PTH is released into the bloodstream when calcium is in the blood Low. PTH causes bones to release calcium into the bloodstream, increase calcium levels in the blood and turn off PTH production. Some reflexes have a combination of neural and endo endotic reactions. The thyroid gland secretes thyroxin (which controls the metabolic rate) into the bloodstream. Lowering thyroxin levels stimulates receptors in the brain to signal the hypothyroid region to release an active hormone on the pit pit gland to release thyroid-stimulating hormone (TSH) into the bloodstream. TSH acts on the thyroid gland, causing it to increase thyroxin production. Local, or in-house control, usually involves only one organs or tissue. When muscles use more oxygen, and also produce more carbon dioxide, in-house control causes dilation of blood vessels that allow more blood into those areas of muscle activity. Eventually the ships will return to normal. Feedback system in Homeostasis | Returning to the leading negative feedback control mechanism (used by most of the body's systems) is called negative because the information caused by the feedback causes a reversal of the feedback. TSH is an example: TSH levels in the blood serve as feedback for TSH production. Positive feedback control is used in some cases. Inputs increase or accelerate responses. During uterine contractions, oxytocin is produced. Oxytocin causes an increase in the frequency and strength of uterine contractions. This in turn causes further oxytocin production, etc. Homeostasis depends on the action and interaction of certain body systems to maintain a variety of conditions in which the body can function best. Body System and Homeostasis | Back to Top Eleven the main agency system is present in animals, although some animals lack one or more of them. The vertebrate body has two compartments: the chest, which contains the heart and lungs; and abdomen, containing digestive bodies. The head, or cephalic region, contains four of the five senses as well as a brain encased in the skull bone. These agency systems can be grouped according to their functions. Chart 1. Integrated systems, bones and muscles. Images from Purves et al., Life: The Science of Biology, 4th Edition, by Sinauer Associates (www.sinauer.com) and WH Freeman (www.whfreeman.com), used with permission. The muscular system (shown in Figure 1) facilitates movement and movement. The muscular system produces body movements, body temperature, maintains positioning, and supports the body. Muscle fibers are the main cell type. The action of this system is tightly tied to the bone system. The bone system (shown in Figure 1) provides support and protection, and attachment points for muscles. The bone system provides a rigid framework for movement. It supports and protects body and body parts, produces blood cells, and stores minerals. Skin or integration (shown in Figure 1) is the outer Layer. It prevents dehydration from and penetration of foreign microorganisms and viruses into the body. There are three layers of skin. The epidermis is the outer skin, thinner. The basic cells are constantly undergoing the process of stool. The skin is waterproof because of keratin, a protein produced. The next layer is the dermis of a fibrous connective tissue layer. In the dermis many structures are located, such as sweat glands, hair follicles and oil glands. The undersom layer consists of loose connective tissue. Adipose tissue occurs here, serving mainly for insulation. Nerve cells run through this area, as well as arteries and veins. Chart 2. Digestive and respiratory systems. Images from Purves et al., Life: The Science of Biology, 4th Edition, by Sinauer Associates (www.sinauer.com) and WH Freeman (www.whfreeman.com), used with permission. The respiratory system moves oxygen from the external environment into the internal environment; also remove carbon dioxide. The respiratory system exchanges gases between the lungs (carried in fish) and the external environment. It also maintains the pH of the blood and facilitates the exchange of carbon dioxide and oxygen. The system is summarized in Figure 2. The digestive system digests and absorbs food into nutritional molecules by chemical and mechanical decomposition; remove solid waste into the environment. Digestion is carried out by mechanical and chemical means, breaking food into particles small enough to enter the bloodstream. Absorption of food molecules occurs in the small intestine and sends them into the circulatory system. The digestive system also recycles water and reclaims vitamins from food in the large intestine. The system is summarized in Figure 2. Chart 3. Circulatory and lymphatic systems. Images from Purves et al., Life: The Science of Biology, 4th Edition, by Sinauer Associates (www.sinauer.com) and WH Freeman (www.whfreeman.com), used with permission. The circulatory system (Figure 3) transports oxygen, carbon dioxide, nutrients, waste products, immune components, and hormones. The main bodies include the heart, capillaries, arteries and veins. The lymphatic system also transports excess fluid to and from the circulatory system and transports fat to the heart. The immune system (Lymphatic System, Figure 3) protects the internal environment from penetration of microorganisms and viruses, as well as cancer cell growth. The immune system provides supporting cells that protect the body from disease through antigen/antibody reactions. A variety of common reactions are also part of this system. Chart 4. Excretion system. Images from Purves et al., Life: The Science of Biology, 4th Edition, by Sinauer Associates (www.sinauer.com) and WH Freeman (www.whfreeman.com), used with permission. The excretion system regulates the volume of internal body fluids as well as the elimination of metabolic waste from the internal environment. The the system removes organic waste from the blood, accumulates waste such as urea in the kidneys. These wastes are then removed in the form of urine. This system is also responsible for maintaining fluid levels. Chart 5. The nervous and endo endotic systems. Images from Purves et al., Life: The Science of Biology, 4th Edition, by Sinauer Associates (www.sinauer.com) and WH Freeman (www.whfreeman.com), used with permission. The nervous system, illustrated in Figure 5, coordinates and controls the action of internal organs and body systems. Memory, learning, and conscious thinking are a few aspects of the functioning of the nervous system. Maintaining autonomic functions such as heart rate, breathing, controlling inconce order muscle actions is carried out by certain parts of this system. The endoactive system, illustrated in Figure 5, works with the nervous system to control the activity of internal organs as well as coordinate long-range responses to external stimuli. The endo secretion system produces hormones that regulate body metabolism, growth, and reproduction. These bodies do not come into contact with each other, although they communicate with chemical messages poured into the circulatory system. Chart 6. The urological and biological systems of men (above) and females). Images from Purves et al., Life: The Science of Biology, 4th Edition, by Sinauer Associates (www.sinauer.com) and WH Freeman (www.whfreeman.com), used with permission. The reproduction system, shown in Figure 6, is primarily controlled by the endo endeer endeon system, and is responsible for the survival and maintenance of the species. Elements of the production system of hormones (from hormonal control) control and support sexual development. The bodies of this system produce combined gametes in the female system to produce the next generation (embryos). Learning Goals | Return to the Top List of major human agency systems and fit each of its main tasks. Explain how, if each cell can perform all its basic activities, the system of bodies contributes to the survival of the cell. Draw a diagram illustrating homeostatic control mechanisms. An example of positive feedback as well as an example of negative feedback, from everyday life, or dealing with specific body systems can be diagrammed. List a body system and the types of interactions it has with other body systems. Explain what reflexes are by drawing and labeling diagrams and shows how reflections work. Terms | Return to top abdominal cavity central nervous system Circulatory cranial cavity dermis System digestive system endocular endocular excretion system excretion system external environmental gonads homeostasis hormone Integumentary internal system lymphocyte system lymphocyte system Muscular system negative feedback nervous system ovarian system ovarian system peripheral neuropathy plasma positive feedback Bone Respiratory System Reproduction System testicles breast cavity zygote Review question | Back To Top Which of These Is Not a Characteristic of Living Organisms? a) reproduction and freedom; b) metabolism; c) respond to stimulation d) all characteristics of ANS life are d Control homeostasis in the body made by ____. a) Nervous system; b) Circulatory system; c) Endo endeerly system; d) both a and c ans homeostasis control is d Which of these would be the effector for a negative feedback system to heat your home? a) thermo regulator; b) wiring; c) fireplace; d) ANS air conditioning is d When we are cold, we tremble. What system does this release heat from? a) Bone system; b) Muscular system; c) The digestive system; d) The ANS circulatory system is b Heat released when we tremble to be transported from its source to the rest of the body how of these agency systems? a) Bone system; b) Muscular system; c) The digestive system; d) ANS circulatory system is d The digestive process consists of three side processes. Which of these is not part of the digestive process? a) mechanical incidents of food; b) circulation of food in the blood and lymph; c) absorption of food into the blood or lymph; d) Is ingating food into the cells of the ANS body c Of these not a function performed by the integrated system? a) protection from invaders; b) storing fat; c) prevention of water loss; d) Eliminate excess heat by sweating ANS is b Hormones produced directly by the bodies and tissues of body systems? a) Endo hormones; b) Circulatory; c) Reproduction; d) Is an ans nerve a removal of organic waste from the body made by the ___system? a) Digestion; b) Excretion; c) Circulatory; d) Is lymph ANS b Of these being part of the central nervous system? a) brain; b) nerve ganglia; c) spinal cord; d) a and b; e) a and c ANS is e Spinal cord located on which side of the body? a) back; b) abdomen; c) abdomen; d) Is cranial ANS one of these not part of the male fertility system? a) testicles; b) penis; c) ovaries; d) vas deferens ANS is C Gametes produced by cell division processes? a) originals; b) binary fission; c) photothesy; d) Meiosis ANS is d Blood leaving the heart through these types of blood vessels? a) capillaries; b) arteries; c) veins; d) Ans lymphatic vessels are b Storage of important ions such as phosphorus and calcium made by which of these agency systems? a) Bones; b) Muscles; c) Digestion; d) Ans excretion is a movement of the body that is carried out directly by the action of these body systems? a) Muscles; b) Bones; c) Digestion; d) a and b e) b and c ANS is d Link | Back to the Body's Leading Body System A view regarding the health of body system. How does the body operate a Canadian site with cool fig leaves! A collection of links dealing with agencies and homeostasis. Atlas of the human body An online atlas from the American Medical Association. Check the system of your choice. Virtual Body This website presents information about the brain, digestive system, heart and skeleton through the use of a variety of forms ® Shockwave. You'll need a plugin to view the animation, but you can access it from the Virtual Body website. Human Anatomy Online This site offers a number of fun activities that support Java on the human body. Project on the study of anatomical situations and human erology Learn about human anatomy and erology by studying practical cases. Vesalius, an online graphic resource for the medical and surgical community This website provides anatomical illustrations, many of which are posted for your viewing. 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