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Anatomy and physiology powerpoint

Most people can recognize cockroaches instantly. These are brown or black insects that are usually between half an inch and two inches long (12-50 millimeters), minus their long antennae. Their heads point downwards, almost as if they are built to sink. Males usually have wings, but females often do not. Those who usually have vestigial wings - small undeveloped wings that often do not allow the roach to fly. Although their reputation often distinguishes them, cockroaches have much in common with other insects. Their bodies have three primary regions -- the head, chest and abdomen. They have three pairs of articulated legs, a pair of antennae and a rigid exoskeleton. Cockroaches lose their exoskeleton, or moult, several times in their lifetime. After moulting, most cockroaches are white and easily injured until a hormone called bursicon causes the exoskeleton to darken and harden. Sometimes a cockroach can repel a lost limb when it moults and even postpone moulting to allow the new limb to grow. The heads of cockroaches shelter their eyes, antennae and mouthpieces. Contrary to popular perception, their heads also house their brains. However, much of their nervous system activity takes place in the nerve nodes located throughout their body. This is one of the reasons why a headless cockroach can live more than a week. The other is that cockroaches don't breathe through the nose or mouth. Instead, they pull the air through the spiracles, or holes in their sides. The tubes called tracheas provide oxygen from the spiracles to organs and tissues. When a headless cockroach finally dies, he dies of thirst. Although they are not as distinctive as the eyes of dragonflies or house flies, the eyes of cockroaches are composed and are made of photoreceptor cells called ommatidia. A hard ring called ocular scleritis surrounds the photoreceptors. Because of this compound structure, cockroaches see the world as a mosaic. Mobile antennae, also known as the antennal flagella, allow cockroaches to feel and feel the world that is them. Although antennae look like wires, they are really made of many tiny hair-covered segments. These segments are shorter and thicker near the roach head, and are longer and thinner near the ends. The mouths of cockroaches, like that of other insects, are very different from that of mammals. However, many buccae parts serve the same function as parts of a mammal's mouth: the labrum and labium form the lips. Mandibles have cutting and grinding surfaces like teeth. Two maxillae handle food while the roach chews. The thorax of a cockroach houses the attachments of three pairs of legs and, if the roach has one, two pairs of wings. Each of the three pairs of legs is named after the area of the chest to which it attaches: the prothoracic legs are closest to the cockroach's head. These are the shortest legs of the roach, and they act as brakes when the roach runs. Some of the prothorax also The cockroach's head. The middle legs are the mesothoracic legs. They move back and forth to speed up the roach or slow it down. The very long metathoracic legs are the back legs of the cockroach, and they move the roach forward. Using its metathoracic legs, a roach can move about 50 body lengths in a second. A fast-moving human would be running about 200 miles per hour. When a cockroach runs so fast, it sometimes gets up and runs on its hind legs only. The force of the air he encounters keeps him straight. These three pairs of legs have significantly different lengths and functions, but they have the same parts and move in the same way. The upper leg, called a coxa, stands, attaches the leg to the chest. The other parts of the leg are closer to the parts of a human leg: The trochanter acts like a knee and lets the cockroach bend its leg. The femur and tibia resemble the bones of the thighs and shins. The segmented tarsus acts like an ankle and a foot. The crochets also help cockroaches climb walls and walk upside down on ceilings. Each leg moves up and down like a pogo stick and back and forth like a pendulum. The front and rear legs on one side move at the same time as the middle leg on the other side. This way, the roach can move on almost any terrain. When a roach runs as fast as it can, its legs move back and forth about 27 times per second. When it runs upside down on a ceiling, it takes more steps to try not to fall. In fact, it takes a lot more energy for a roach to run upside down than to build a vertical wall. The abdomen Most insects have a segmented abdomen that contains most of their internal organs, and cockroaches are no exception. Inside the abdomen of a roach, a tube-shaped heart moves blood to organs and tissues. Unlike human blood, the blood of a roach does not use hemoglobin to carry oxygen, so it is colorless instead of red. The blood also does not circulate through a large circulatory system. Although an aorta carries blood to specific organs, much of the blood moves through a network of spaces called hemolymph. Cockroaches also store fat a little differently from people. Instead of spreading it through most of their physical structure, they store it in a centralized place called the fat body. The digestive system of a roach is located in its abdomen, and much of it resembles a simplified version of a mammal's digestive system. However, the digestive system of a cockroach changes that allow it to eat cellulose and other hard materials. One of them is a crop, which retains swallowed food until a toothed section of the digestive tract, called the proventriculus, can spray it. Bags called gastric caeca contain enzymes and microbes that continue to digest food. This additional digestive aid is especially important if the roach eats cellulose or wood. It is only once the material is completely decomposed that the midgut absorbs nutrients from food. Two segmented cerci are located outside the lower abdomen of a cockroach. These look a bit like antennae, and they can behave like sensory organs. A nerve inside the roach allows it to detect the movement of air around its cerci. This is one of the reasons why cockroaches can move off the road very quickly if you try to catch them or crush them. The reproductive systems of cockroaches are also located in their abdomens. We will look at this system and the life cycle of cockroaches. The lungs are the main organs of the respiratory system. Healthy lung tissue looks pink, soft and spongy. It has significant elasticity and recoil to allow air to enter and force it to recoil again. It is useful to know a little more about the other parts of the respiratory system and how they all work together to understand the anatomy of the lungs. Before air enters the lungs, it passes through the upper airways: the nose, pharynx, larynx and trachea. The lining of the nose is a soft, moist layer of cells called mucous membranes that warms and moistens the air. The pharynx and larynx form the throat and lead to the trachea or trachea. The trachea connects the upper airways to the lungs. It is a tube-shaped structure made up of cartilage rings surrounded by thin, smooth muscles. Usually, the trachea is of the middle line, but it can be slightly moved to the right and sit near the aortic arch. It is about four to five inches long and is between half and three-quarters of an inch wide. yodiyim /Getty Images After the trachea, the airways divide into the left and right main bronchi. The right bronchus is about an inch long and is wider and more vertical than the left. It is almost in a straight line with the trachea, so when someone chokes on a foreign object, it is likely to be lodged in the right bronchus. The left bronchi is about two inches long and crosses in front of the esophagus. The main bronchi are divided into smaller branches called bronchioles. There are three types of bronchioles: conductor, terminal and respiratory. Each lung has about 20 to 25 bronchioles conducting. As they continue to expand and shrink, they become terminal bronchioles, marking the end of a path. These are then divided into the smallest and narrowest branches called respiratory bronchioles. magcimine / Getty Images Respiratory bronchioles give birth to alveoli. These small bags are responsible for the exchange of gas and make up about 90 per cent of the Lung. They are arranged in units called acini, of which there are about 30,000. Each alveola has a septum that allows gas exchange, providing the structure to prevent collapse and overdistention. The lungs also release surfactant, which protects the alveoli from collapse when the volume of air is low. Mohammed Haneefa Nizamudeen /Getty Images Each alveola has a mucous membrane of tiny blood vessels called capillaries. Oxygen and carbon dioxide move freely through the lungs and blood to the membrane of each capillary. Oxygen molecules attach to the hemoglobin and return to the heart and then throughout the body. Carbon dioxide passes through the lungs, and the body expels it with each exhalation. The right and left lungs are very similar in size and shape, but are not symmetrical. The right lung has three lobes, while the left is slightly smaller and divided in two. This is because the left lung has a cardiac impression to accommodate the heart, which is located slightly to the left of the center. The pleural cavity surrounds and protects the lungs. It is made of membranes that fold over themselves to form two layers. The outer layer or parietal pleura attaches to the chest wall and is very sensitive to pain. The inner layer is the visceral pleura. It covers the lungs and has no sensory innervation. The thin space between them is the pleural cavity. It contains a small amount of liquid that acts as a lubricant. yumiyum/Getty Images While the ribs are not directly part of the respiratory system, they are necessary to maintain proper lung function and are one of the strongest structures in the body. They completely surround and protect the lungs and heart. The ribs connect to the sternum with costal cartilage, giving them the flexibility to grow when the lungs fill with air. Renphoto/Getty Images With every inhalation, the lungs pull air into the mouth and nose and through the upper airways, where it is heated and moistened. From there, it moves through the trachea and into the main bronchi, where it divides and enters the right and left lungs. Inside each lung, air descends the bronchioles and flows to the alveoli where oxygen and carbon dioxide pass through the capillaries. Oxygen enters the bloodstream and enters the heart, where it moves into the body. When the lungs exhale, the carbon dioxide that is now in the alveoli moves through the bronchioles, bronchia, trachea, mouth and nose, out of the body. Body.