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Category: Animals Dissection Labs, Recommended, Frog, Pre-Medical Tags: abdominal cavity, arteries, pre-library, cloaca, diaphragm, oesophagus, eustayan tubes, external fertilization, outer bunks, frog, dissection frog, frog autopsy guide, gallbladder, gastrointestinal tract, glottis, heart, internal fertilization, internal bunks, kidneys, colon, liver, lungs, jaw-jawed teeth, nerves, nictitating membrane, egg, pancreas, peritoneal membrane, throat, throat, small intestine, spleen, ventricular, ventricular, As it turns out, dissection of the frog, like other complex dissection of animals, shows enough about how our bodies work to be valuable. They are also practical, too. Dissection of a frog is cheaper to carry out than large dissection of animals and organs. They are small animals (requiring less sleight of hand) and can be raised quickly for laboratory work. The introduction of frogs is an animal frog that belongs to an amphibian class commonly known as amphibian. Amphibians live both on land and in water; sometimes they live in water only before they are fully grown. They have moist skin that water can pass in and out of, and most of them spend part of their lives (in tadpoles as larvae stage before they mature) in water. The name Amphibian means literally both lives. There are three orders of amphibians: frogs and toads with more than 2,000 species, salamanders (including trites) with approximately 300 species, and caecilians of about 160 species. How do frogs differ from other amphibians? They have smooth skin, usually tailless as adults, and have the ability to jump. Some frogs are aquatic, spending most of their time in the water. Other terrestrial, remaining mostly on land or on trees. (Toads are also tailless, bouncing amphibians, but they usually have rough, bearded skin.) Frogs range in size from less than 0.5 inches to 12 inches long! Frog Science Lesson Frog Life cycle frog life cycle begins with a fertilized egg. A female frog usually lays eggs in water in a string or mass that sticks to vegetation. The male frog fertilizes the eggs as they are laid. The outer layer of the fertilized egg represents if it bulges in water, forming a protective coating, i.e. a jelly-like material. A fertilized egg is a single cell that quickly divides over and over again, producing new cells that quickly differentiate into the organs of a frog embryo. For 2 to 25 days, depending on the temperature of the water, the egg hatches into the tadpole. The head is at first more like a fish than a frog. As the tadpole develops, it forms gills that allow it to breathe effectively underwater. Its tail grows longer and forms a fin that allows the tadpole to swim. The headmaker continues to swim, eat and grow for a few weeks before he to the next stage. The first sign of further development is the appearance of hind legs. Then the front legs develop and the tail gets shorter as it is resorbed. The tadpole gills are replaced by the lungs until the tadpole becomes a frog. The young frog grows and matures to adulthood within 2-4 years. Adult frogs then lay eggs and start the cycle again. Anatomy of adult frogs Some frogs are able to jump 20 times their body length! Their front legs are short and specially designed to absorb the impact of the landing. Their muscular hind legs also work well for swimming. Water frogs have webbed hind legs, usually with five legs. Their front legs are not webbed and are usually four legs. The tree frogs have suckers on their feet that allow them to cling to the bark of the trees. Frogs have large, convex eyes that rotate in the socket, providing vision in almost any direction. Their nostrils are positioned on top of the head to allow breathing while most of the head is submerged. Although frogs have a good sense of hearing, they do not have typical external ears. Instead, frogs have a tympanic membrane behind each eye. They pick up sound waves and carry them into the inner ears. Frog tongues are usually long and sticky and are designed to be snapped quickly to catch insects and other prey. Frogs have skin that is specially designed to protect them from enemies and protect them from drying out. To hide from their enemies, frogs have camouflage skin colorings that help them fit into their surroundings. Special pigment cells in the skin control the camouflage pattern and colors. In addition, some frogs have serous glands in their skin that secretes poison that will irritate the mouths of their predators. American tree frogs secrete deadly poison, but most of them just annoy people. To help them keep from drying out, frogs have mucous glands that secrete a waterproof coating to keep their skin moist and slippery. Have you ever wondered how frogs breathe? When underwater, the frogs receive oxygen from the water that passes through the skin. Capillaries take oxygen from the skin into the bloodstream. On land, frogs usually receive oxygen by taking air through the throat into their mesh lungs. Frog hearts have three chambers. To learn more about frogs, do research on one of these topics: what species of frogs live in your area? Can you find more than one kind of tadpole locally? If so, compare them. What do local frogs eat? How would the mosquito population suffer if there were few frogs in the marshland or were there none? Choose a frog or frog feature that is interesting to you, and see what you can learn about it. Look for close-up of frog photos in magazine like National or on the website. Frog Dissection Guide One of the Best Ways to Learn About Adult Amphibians is to dissect the surviving frog and see how all the organs fit together inside its body. Use this guide to get full instructions. Watch this video to get started! What you need you can get a handy autopsy kit of the frog, or collect the following elements: Saved sample frog dissection tray Scalpel Dissecting Scissors Forceps Frog Outer Anatomy - Observation Guide Look closely at the surviving frog. Notice his powerful hind legs for jumping. The hind legs have five webbed digits (legs), while the front legs have four digits without weaving. Contact the opinion that the frog's skin is stained and spotted to help mask it. This coloration can change and is controlled by skin pigment cells called chromatophores. At the base of the frog's back, find the anus, which is the hole from which the waste, eggs and sperm are dumped. On the head of the frog, observe large, convex eyes that rotate to sight in many directions. Frogs do not have external ears, but just behind each eye is a round, flat membrane called tympanum (drum membrane), which senses sound waves. Timpan looks similar in size to females, but much larger in males. Look for the nostrils (external nostrils) in front of the eyes and then open the frog's mouth to see the inner opening of the nostrils (inner nostrils). (Cut the hinge joints of the mouth with scissors to make it easier to open.) Next to the inner bunks are two vomerine teeth on the roof of the mouth. Rub your finger along the rim of the upper jaw to feel the tiny jaw teeth. Male frogs have holes for vocal bags near the hinges of the lower jaw. Frog Internal Anatomy - Dissecting Guide Click for a full-size PDF Put the frog on his back, spread out his limbs, and pin them to the tray. Use tips to lift the skin between your hind legs and make a small cut with a scalpel. Continue to cut the center of the frog's body with scissors, be careful to cut through only the skin. Use tips to keep the skin away from the muscles during the incision if necessary. Make horizontal incisions just above the legs and just below the hands, then fold the flaps back and attach them. (You may need to use a scalpel to help separate the skin from the muscle underneath as you fold it back.) Repeat the incisions as before, this time cutting through the muscle layer to a point just below the hands. Lift the muscles with tips to prevent cutting the organs underneath. When you reach the area just below your hand, turn the scissors and make horizontal incisions through the hard sternum. Repeat the horizontal incisions just above the hands and then remove the bony stripes completely. Attach the remaining muscle flaps back, just like with the skin. Look in the body cavity, yellow projections, similar to the finger, are thick bodies. You may need to remove some of them to see the organs. Similarly, the female specimen may have well-developed eggs that fill the body cavity and obscure organs. Remove them as needed. Now identify the main organs: Click for a full-size PDF Use this printed opening chart of frogs with tagged parts (.pdf) as a guide to detecting them. Heart. The heart of the frog is a small triangular organ at the top. Unlike the heart of mammals, it has only three chambers - two atria at the top and one ventricle below. Gently cut off the pericardium, the thin membrane surrounding the heart. Notice the arteries connected to the upper part of the heart, giving it the shape of 'Y'. Liver. Just below the heart, the three-bladed liver is the largest organ in the frog's body. Gallbladder. Lift up the liver lobes to find a small greenish-brown gallbladder bag located between them. This keeps the bile produced by the liver. Light. Again, lift the liver lobes to find the lungs on either side of the heart. They are made of spongy fabric. Stomach. Bend below the stomach liver; it looks like a big whitish tube. After identifying other organs, you can open the stomach and see what the frog has eaten. (Frogs swallow food whole.) Small intestines. The stomach connects to the small intestine. The first section, or duodenum, is quite straight, but the rest of the intestine is spiraled and held in place of a blood vessel-filled membrane called mesenteria. Pancreas. The pancreas is a thin, flat, tape-like organ that lies between the stomach and the small intestine. Big intestine. The small intestine narrows to the point where it meets a shorter, wider colon. It opens into a chamber called cloaca, the last stop before the waste exits the body through a shred of opening, or anus. The frog's sperm or eggs also come out through the cloaca. Spleen. Lift up the small intestine to find a round, reddish spleen attached to the mesentery on the underside. The spleen stores blood as part of the circulatory system. Ovarian. Female frogs have ovaries full of dark eggs; if the eggs are well developed, the ovaries will be very large and visible. If not, lift the stomach and intestines to see the ovaries underneath them. Oviduki. Move the ovaries to one side to see the spiral tubes of the pecies. If the eggs in the ovaries are not fully developed, the eggs will be small and densely coiled. Kidney. The kidneys are flat, oval-shaped organs on the back wall of the body cavity under the ovaries. Testicles. Male frogs have bean-shaped testicles attached to their kidneys. When you're done, print out this chart and fill the labels yourself to test your knowledge of frog anatomy: Chart of dismembered frog on the label (.pdf) See our other free autopsy guides with photos and PDF. I think you're ready to open something a little more? Sheep are the big next step up. Check Check Out Our sheep autopsy samples below to continue your autopsy and exploration journey! Intelligence! frog dissection lab manual answers

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