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Frog dissection guide pdf

Frog Dissection Images: Modern Biology, Holt Background: As members of the class Amphibia, frogs can live some of their adult life on land, but they must return to water to reproduce. Eggs are laid and fertilized in water. On the outside of the frog's head are two external nares, or nostrils; two tympani or eardrums; and two eyes, each with three lids. The third lid, called the nictitating membrane, is transparent. Inside the mouth are two internal nares, or openings in the nostrils; two vomerine teeth in the middle of the roof of the mouth; and two maxillary teeth on the sides of the mouth. Also inside the mouth behind the tongue is the throat, or throat. In the throat there are several openings: one in the esophagus, the tube in which food is swallowed; one into the glottis through which the air enters the larynx, or larynx; and two into eustachian tubes, which connect the wet to the ear. The digestive system consists of organs in the digestive tract, or food tubes, and digestive glands. From the esophagus, swallowed food moves into the stomach and then into the small intestine. Bile is a digestive juice made of the liver and stored in the gallbladder. Bile flows into a tube called the common bile duct, where pancreatic juice, a digestive juice from the pancreas, also flows. The content of the common bile duct flows into the small intestine, where most of the digestion and absorption of food into the bloodstream takes place. Indigestible materials pass through the colon and then into cloaca, the common exit chamber of the digestive system, excretory organs, and reproductive systems. The respiratory system consists of the nostrils and the larynx, which open in two lungs, hollow sacks with thin walls. The walls of the lungs are filled with capillaries, which are microscopic blood vessels through which materials pass in and out of the blood. The circulation consists of the heart, blood vessels, and blood. The heart has two receiving chambers, or atria, and a transmitting chamber, or ventricle. Blood is transported to the heart in vessels called veins. Veins from different parts of the body enter the right and left atria. Blood from both atria goes into the ventricle and is then pumped into the arteries, which are blood vessels that carry blood away from the heart. The urinary tract consists of the frog's kidneys, ureters, bladder and cloaca. The kidneys are organs that secrete urine. Connected to each kidney is an ureter, a tube through which urine passes into the urinary bladder, a sac that stores urine until it passes out of the body through cloaca. The organs of the male reproductive system are the testes, sperm channels and cloaca. Those of the female system are ovaries, oviducts, uteri, and cloaca. The testes produce sperm, or male germ cells, which move through sperm channels, tubes that carry sperm into the cloaca from which sperm move outside the body. The ovaries produce eggs, or sex cells that move through oviducts into uteri, then through cloaca outside the body. The central nervous system of the frog consists of the brain, which is surrounded by the skull, and the spinal cord, which is surrounded by the spine. Nerves branch out from the spinal cord. The frog's skeletal and muscle systems consist of its frames of bones and joints, to which almost all the voluntary muscles in the body are attached. Voluntary muscles, which are the ones over which the frog has control, occur in pairs of flexors and extensors. When a flexor of a leg or other body parts contracts, this part is bent. When the extensor of this body part contracts, the part dishes. Dimensions: • Describe the appearance of different organs found in the frog. • Name the organs that make up different systems of the frog. Purpose: In this laboratory, you will dissect a seed to observe the external and internal structures of the frog anatomy. Materials: • safety glasses, gloves and a laboratory apron • tweezers • preserved seeds • dissecting pin (6-10) • dissect tray and paper towels • plastic storage bag and twist tie • scissors • marker pen • dissectable needle AUSTRALIAN CURRICULUM ALIGNMENT Multicellular organisms have a hierarchical structural organization of cells, tissues, organs and systems (ACSBLO54) The specialised structure and function of tissues, organs and systems may be related to cell differentiation and cell specialisation (ACSBLO55) In animals, the exchange of gases between the internal and external environments of the organism is facilitated by the structure and function of the respiratory system at cell and tissue levels (ACSBLO56) In animals, the exchange of gases between the internal and external environments of the organism is facilitated by the structure and function of the respiratory system at cell and tissue levels (ACSBLO56) In animals, the exchange of nutrients and waste between the internal and external environments of the organism of the structure and function of digestive cells and tissues (e.g., villi structure and function), and excretory system (for example nephron structure and function) (ACSBLO57) In animals, the transport of materials in the internal environment for exchange with cells are swirls with specialized amphibian properties and behaviors. They provide a large model organism for a number of biological studies; including evolution, behaviour, anatomy and physiology. Dissection of preserved frogs is an established initial activity in vertebrate anatomy and mature body systems. It provides insight into evolutionary adaptations, such as the transition from a water life to life on land. Exploring the internal systems of frogs provides a tangible example of different anatomical structures and how they work. This practicality requires only a few materials and takes a short time, but provides students from a number of year levels with engaging, memorable lesson in anatomy. Preparation BY LAB TECHNICIAN General preparations To prepare seed samples, open the sealed bag with scissors, pour out excess liquid and rinse the sample with tap water. Dab dry with a paper towel if necessary. This should be done in a well ventilated room, and appropriate PPE should be worn. Preparation workstations Give each workstation the following materials: Preserved Frog (Perfect Solution) Dissect Pan Dissection Pad Dissection Kit Concise Frog Dissection Guide Frog Dissection Mat Absorbent Mat METHOD - STUDENT ACTIVITY External Frog Anatomy Place the preserved seed on the dissection tray with the dorsal surface upwards. Observe the frog pendant that has evolved to adapt to terrestrial life. The frog uses 4 limbs to travel and move, making it a tetrapod. You will see that each forelimb contains an upper arm, forearm and hand. The frog's hind legs are divided into a thigh, lower leg and foot. Looking upside down, identify the 2 external nares at the tip of the head. These act as a means of respiration. Find the round tympanic membranes that form the frog's external sound receptors. You will find these on the back of the eyes. Look closely at the eyes and try to find the frog's third eyelid; this is the nictitating membrane that moisturizes and protects the eye. Since the frog is deceased, this will appear as a cloudy eyelid attached at the bottom of the eye; but it seems clear in a living frog. Identify cloaca, located at the rear end of the sample. The cloacal opening provides the function of exit for all urine, reproductive, and digestive system. Move the frog to lie on its dorsal side. Gently cut the jaw joints on each side of your mouth so you can open your mouth wide. Find glottis (leading to the lungs) and esophagus opening (leading to the stomach). See Figure 1. Fore conduct a dental analysis. You will find 2 sets of teeth. First, you need to find the fine maxillary teeth lining the upper jaw. Second, find the two prominent vomerine teeth located behind the center of the region of the upper jaw. On the sides of the roof of the frog's mouth, you should see 2 openings; eustachian tubes leading to the tympanic membranes you identified earlier. These tubes aim to help with pressure staining. Figure 1: Glottis Internal Seed Anatomy Place the frog on the dissecting tray, ventral surface upwards. Use scissors, cut into the frog's stomach. To do this, squeeze the skin on the frog's stomach and make a small incision in the middle. Cut through the skin, keeping your cuts as straight and clean as possible. Follow the cutting pattern in Figure 2. Using the same pattern, cut through layers of muscles until you reveal the internal organs underneath. Find the frog's liver in the stomach body cavity; it will be relatively large in size and brown. The largest internal organ, the liver consists of 3 lo controls. Move the liver tabs to reveal the gallbladder underneath. The gallbladder, which bile, appears considerably smaller and greenish. After your dissection guide and Figure 3, identify the following internal structures: Belly small intestine Colon Spleen Heart Lungs Fat Organs Figure 2: Frog Dissection Guide Figure 3: Illustration of Frog Internal Organs Safety Use Appropriate Personal Protective Equipment (PPE). Know and follow all regulatory guidelines for the disposal of laboratory waste. Handle the scalpel with care as it has the potential to cause serious damage. Sterilize the work surfaces before and after the practical. Do not cut this dissection in areas of food preparation or consumption. Useful links || Biology|| Practical features in the classroom|| Physiology|| Year 11 & 12|| 12||