

Ministry of Higher Education
and Scientific Research
University of Ishik
Department of Biology
College of education



CIRCULATORY SYSTEM

6th LAB.

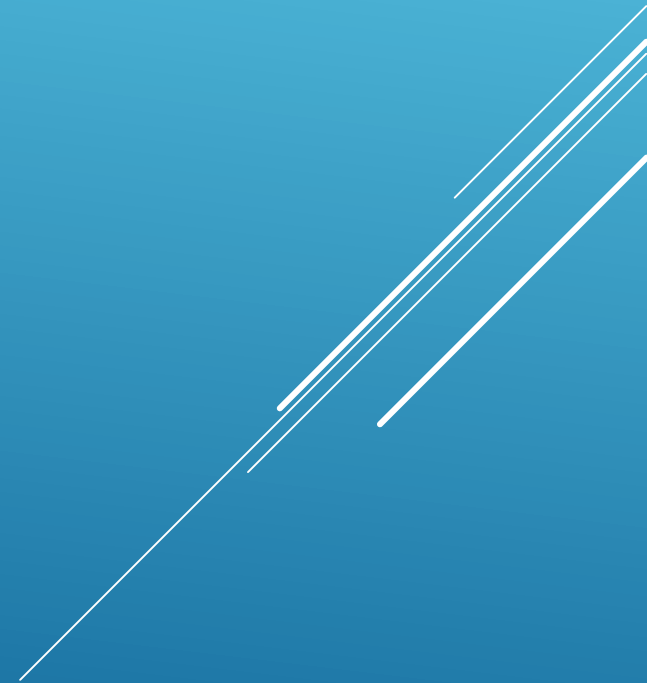
(4TH GRADE)

2018-2019

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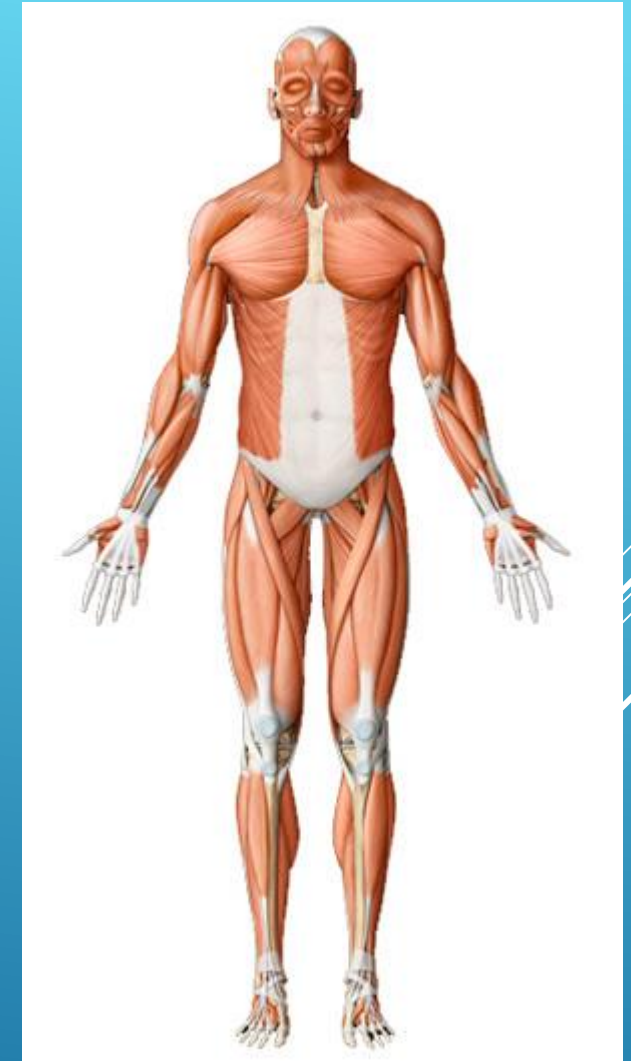
QUIZ

- ▶ Write the types of circulatory system ??
- ▶ Components of cardiovascular system are,.....
and BLOOD



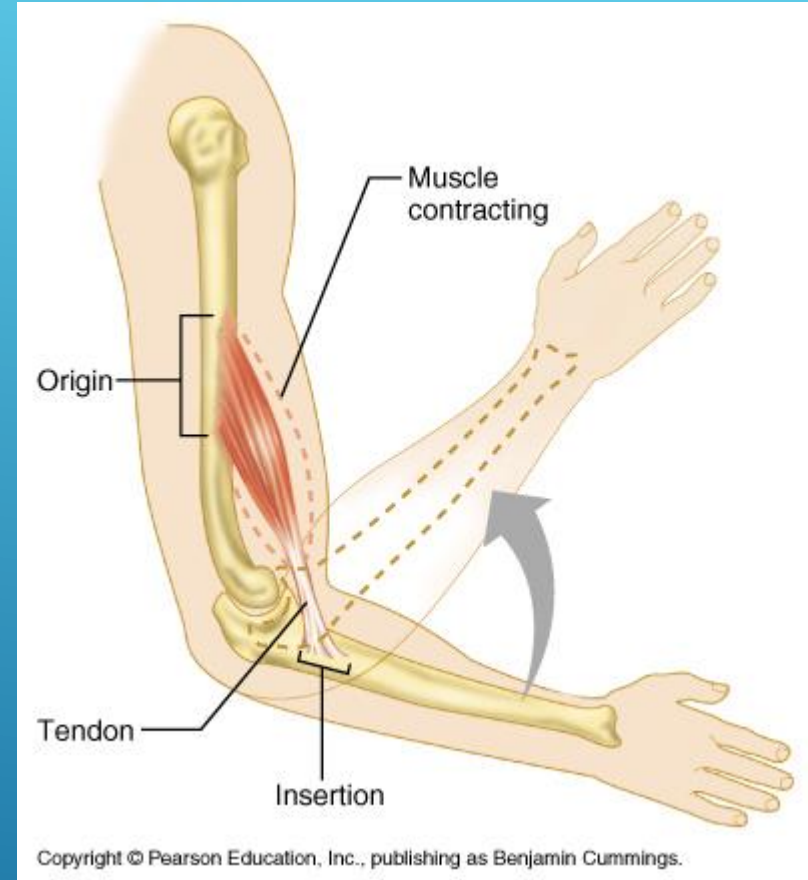
WHAT IS MUSCULAR SYSTEM ?

- ▶ The muscular system is a set of tissues in the body with the ability to change shape. **Muscle** cells contain a variety of proteins which help them contract in size. The proteins form fibers, which connect various parts of the cells. The main proteins used are *actin* and *myosin*.



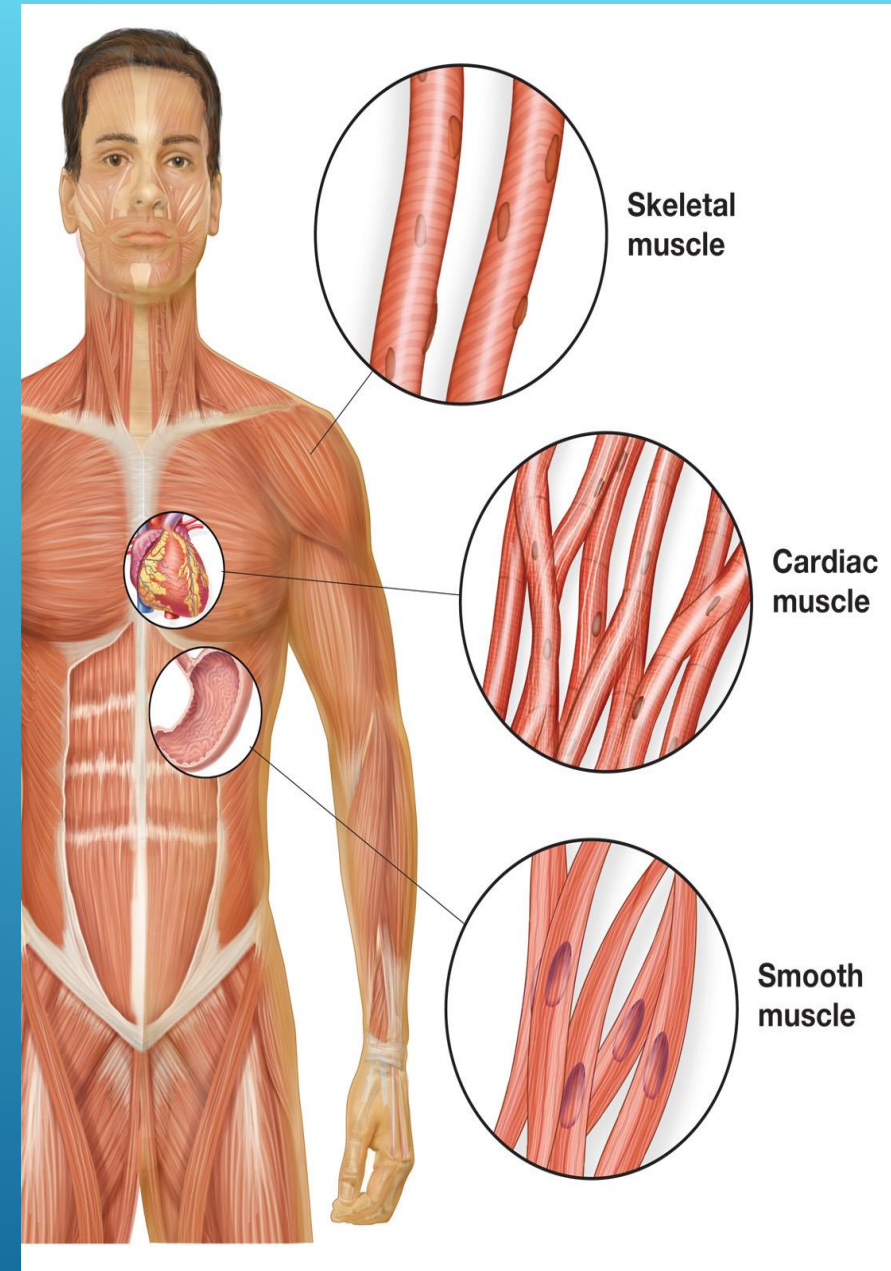
FUNCTIONS OF THE MUSCULAR SYSTEM

- ▶ 1. Mobility
- ▶ 2. Stability
- ▶ 3. Posture
- ▶ 4. Circulation
- ▶ 5. Respiration
- ▶ 6. Digestion
- ▶ 7. Urination
- ▶ 8. Childbirth
- ▶ 9. Vision
- ▶ 10. Organ Protection
- ▶ 11. Temperature regulation



MUSCLE ORGANIZATION

- ▶ **Visceral Muscle** – Muscle surrounding or attached to the circulatory and digestive systems, which helps circulate fluid and food through the body.
- ▶ **Striated Muscle** – Muscles with distinct striated appearance by bands of actin and myosin, which are often part of the voluntary, or somatic nervous system.
- ▶ **Cardiac Muscle** – Specialized muscle tissue of the heart, which is striated and connected to adjacent cells

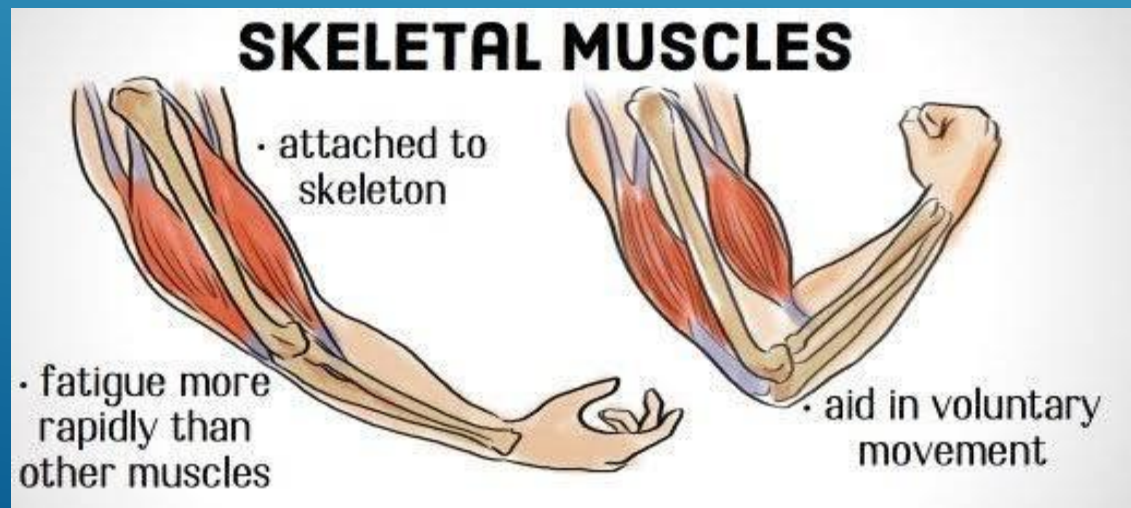


THERE ARE 3 TYPES OF MUSCLES IN THE BODY:

The muscular system contains more than 600 muscles that work together to enable the full functioning of the body.

Skeletal muscle

- ▶ Skeletal muscles are the only muscles that can be consciously controlled. They are attached to bones, and contracting the muscles causes movement of those bones.
- ▶ Any action that a person consciously undertakes involves the use of skeletal muscles. Examples of such activities include running, chewing, and writing.



▶ Smooth muscle

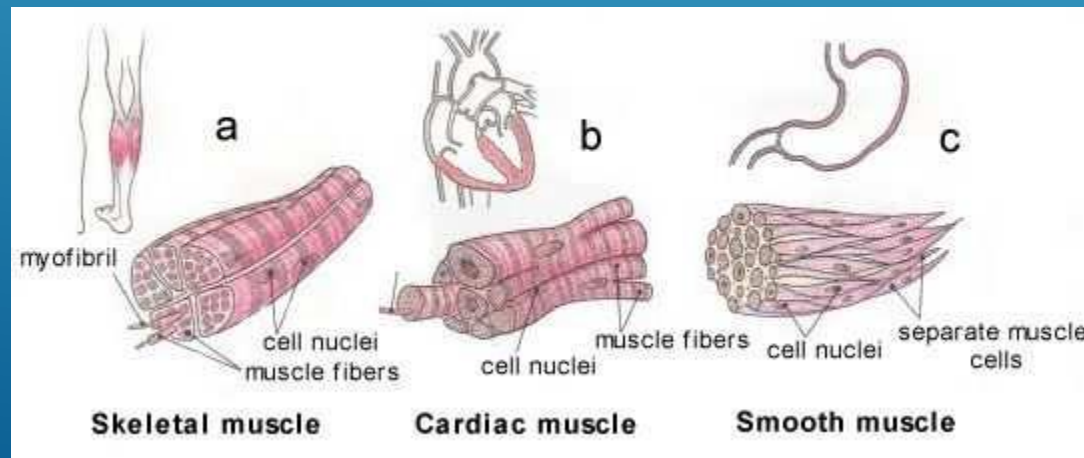
- ▶ Smooth muscle lines the inside of blood vessels and organs, such as the stomach, and is also known as visceral muscle.

It is the weakest type of muscle but has an essential role in moving food along the digestive tract and maintaining blood circulation through the blood vessels.

Smooth muscle acts involuntarily and cannot be consciously controlled.

▶ Cardiac muscle

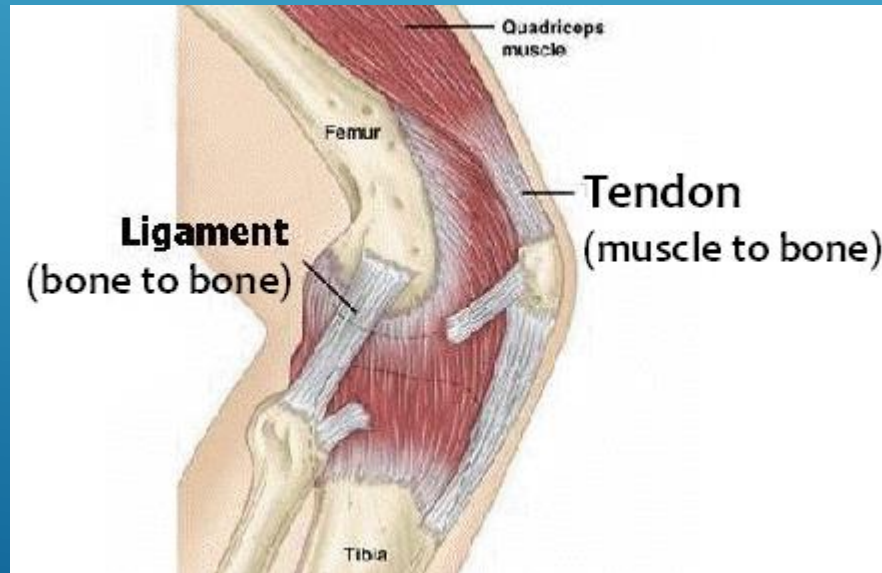
- ▶ Located only in the heart, cardiac muscle pumps blood around the body. Cardiac muscle stimulates its own contractions that form our heartbeat. Signals from the nervous system control the rate of contraction. This type of muscle is strong and acts involuntarily.



FIVE FUN FACTS ABOUT THE MUSCULAR SYSTEM

- ▶ Muscles make up approximately 40 percent of total weight.
- ▶ The heart is the hardest-working muscle in the body. It pumps 5 quarts of blood per minute and 2,000 gallons daily.
- ▶ The gluteus maximus is the body's largest muscle. It is in the buttocks and helps humans maintain an upright posture.
- ▶ The ear contains the smallest muscles in the body alongside the smallest bones. These muscles hold the inner ear together and are connected to the eardrum.
- ▶ A muscle called the masseter in the jaw is the strongest muscle by weight. It allows the teeth to close with a force of up to 55 pounds on the incisors or 200 pounds on the molars.

- **Tendons** attach skeletal muscles to the skeleton.
- **Ligaments** link bones together at a joint.
- Skeletal muscles work in pairs known as **antagonistic pairs**. As one contracts the other in the pair relaxes.
- **Flexion** is the movement that reduces the angle of a joint. **Extension** increases the angle of a joint.



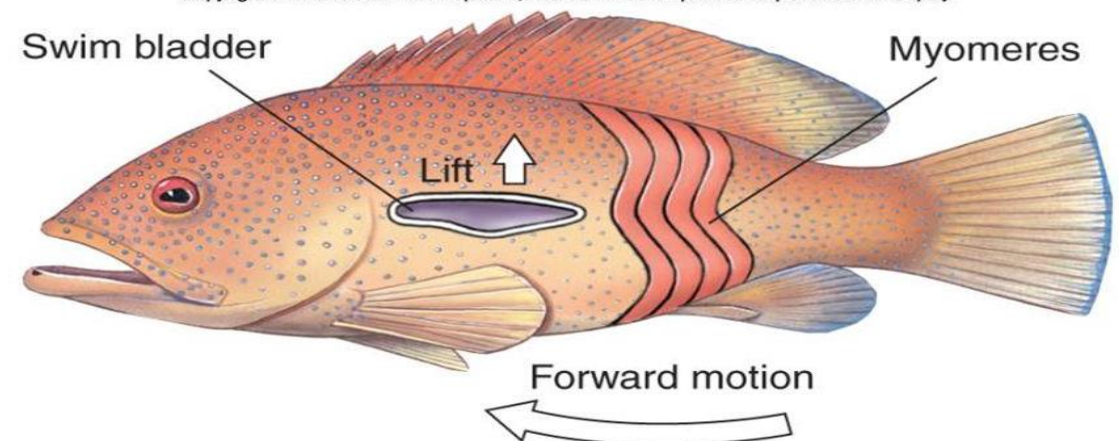
MUSCULAR SYSTEM IN BONY FISH

- ▶ . The muscular system of bony fishes aids them in locomotion. Muscles are made up of myomeres and myosepta, which are collectively called myotomes. Fishes swim using combinations of movements by their paired and unpaired fins and undulations of their segmental myotomal muscles. Fish muscles are actually more specialized than the muscles of terrestrial animals because the energy expenditure of locomotion in water is more compared to the locomotion in land

Myomers are attached to backbond for support

-- Muscle made up large percentage of body weight

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REPTILES



- ▶ Reptile jaws designed for crushing prey
- ▶ Fish, amphibian jaws designed for quick closure, but little force after
- ▶ Reptile jaw muscles larger, longer, arranged for better mechanical advantage

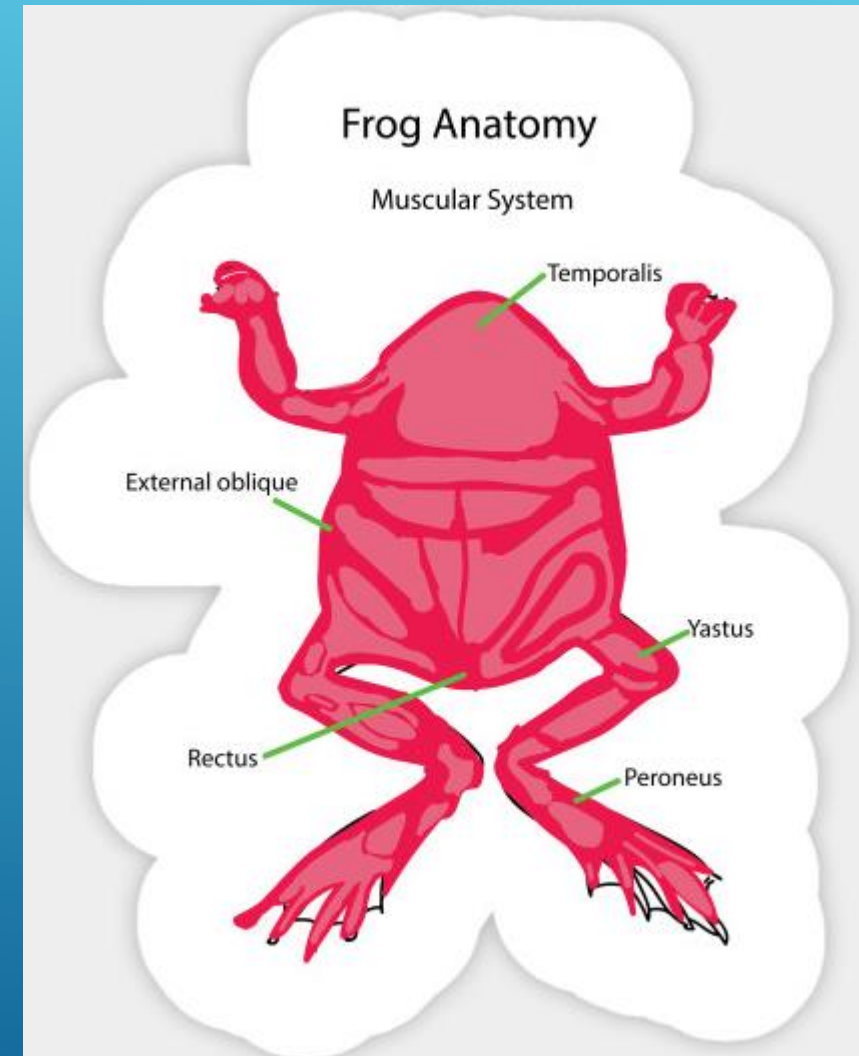
AMPHIBIAN MUSCULAR SYSTEM

The muscular system provides movement and protection for organs

Muscles are attached to the bones by tendons

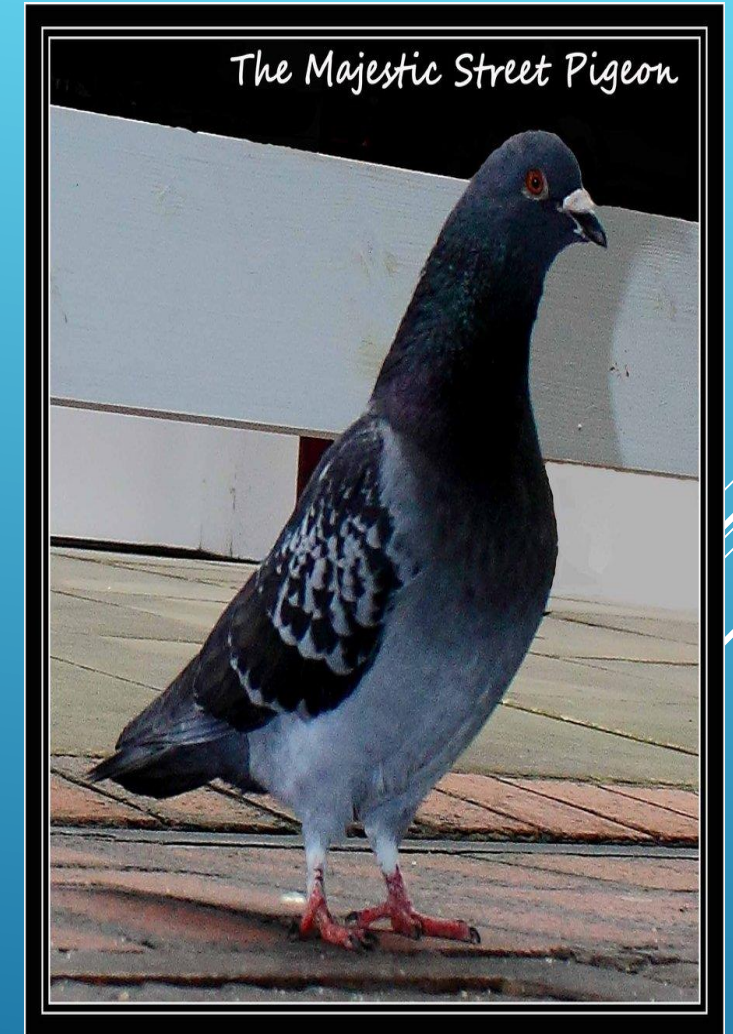
Muscle cells can expand and contract in a frog

Muscles work in antagonistic pairs

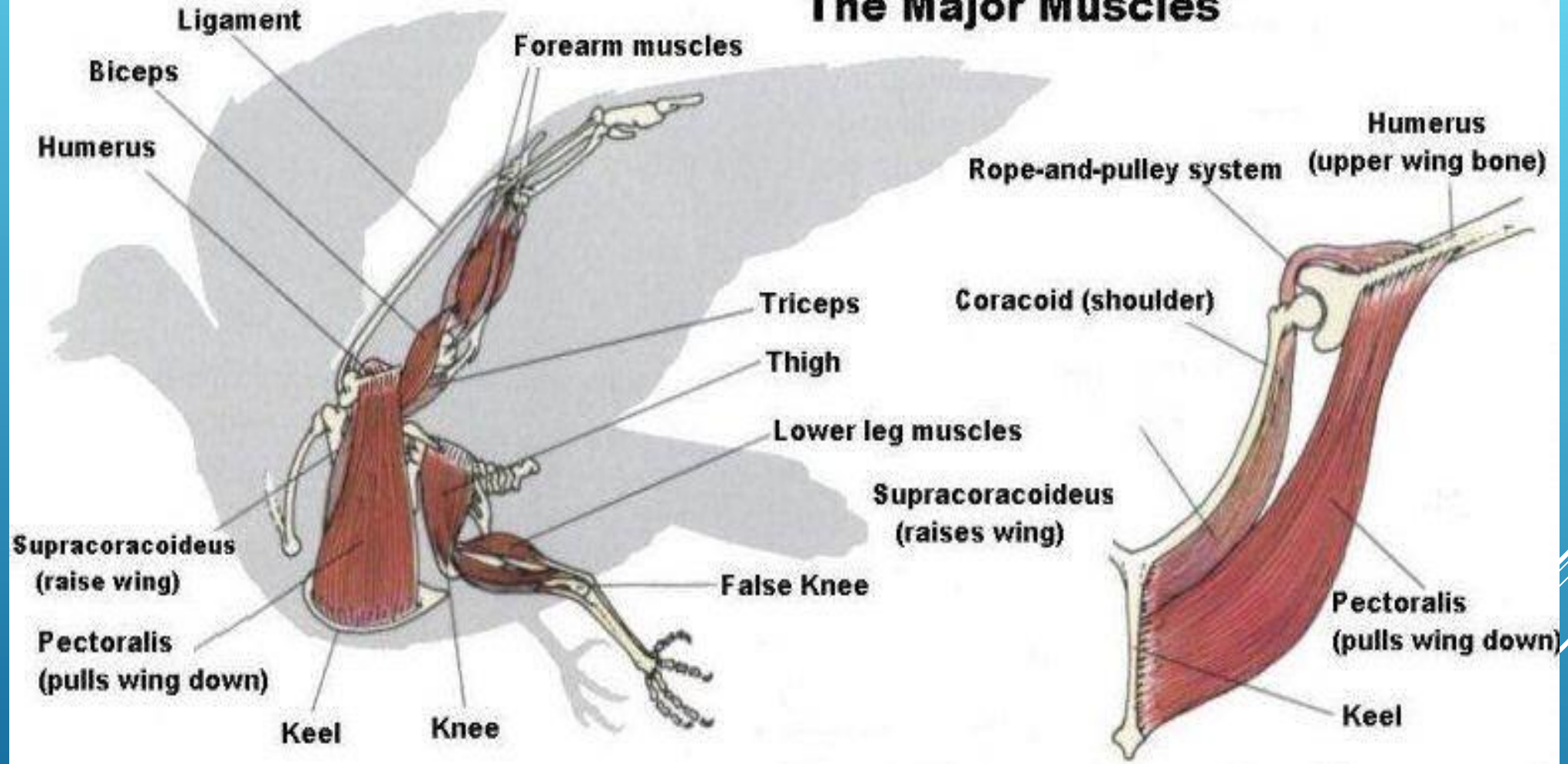


AVIAN MUSCULAR SYSTEM

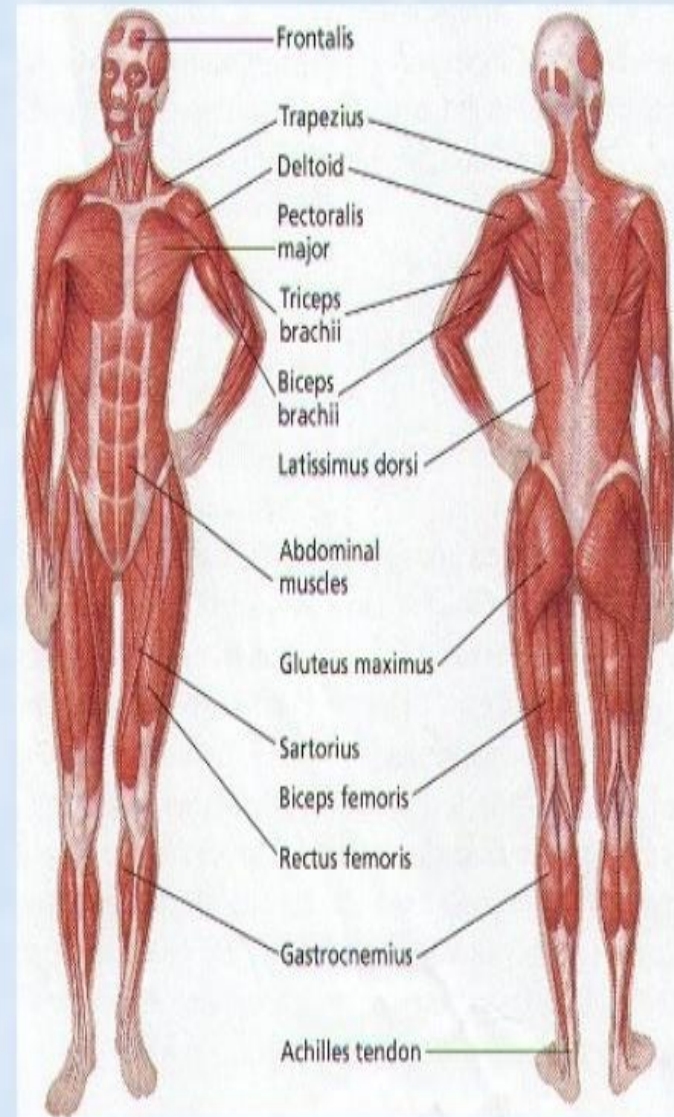
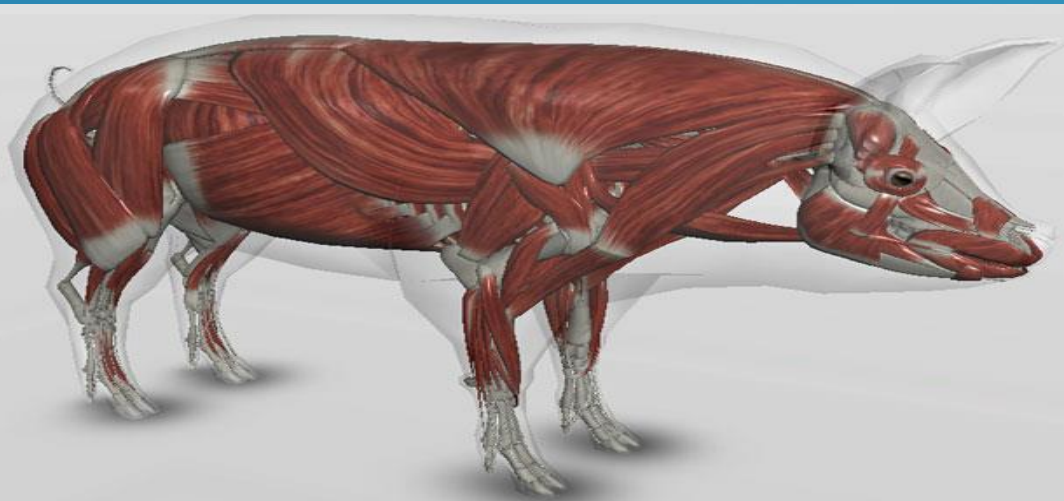
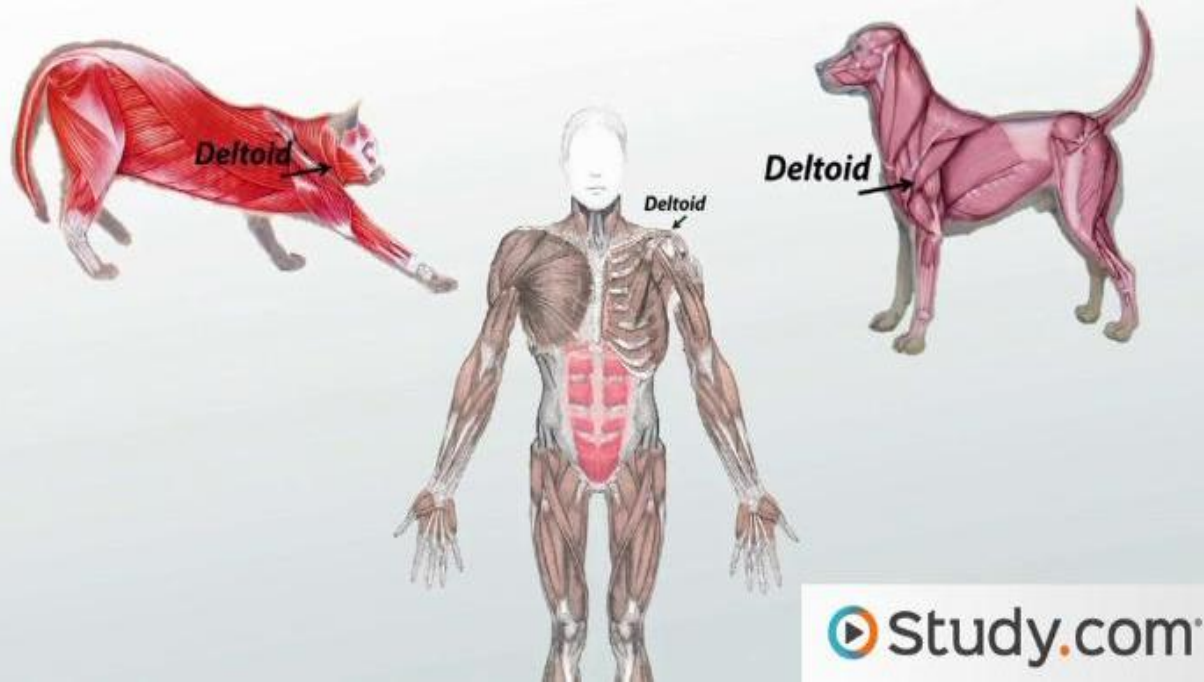
- ▶ most *birds* have approximately 175 different muscles, mainly controlling the wings, skin, and legs. The largest muscles in the bird are the pectorals, or the breast muscles, which control the wings and make up about 15–25% of a flighted bird's body weight. They provide the powerful wing stroke essential for flight. The muscle medial to (underneath) the pectorals is the supracoracoideus. It raises the wing between wingbeats. Both muscle groups attach to the keel of the sternum. This is remarkable, because other vertebrates have the muscles to raise the upper limbs generally attached to areas on the back of the spine. The supracoracoideus and the pectorals together make up about 25–35% of the bird's full body weight
- ▶ **Birds have a light skeletal system and light but powerful musculature**



The Major Muscles



MAMMALIAN MUSCULAR SYSTEM



The Complex System that is responsible for movement and protection of internal organs

THANK YOU FOR YOUR ATTENTION 😊

ANY QUESTION ??????????

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