


The Anatomy of Domesticated Animals



Objective: Identify the major bones, muscles and internal organs of livestock.

By :
ARJ WIBOWO, S.Pt.,M.Si
&
SUHARDI, S.Pt.,MP

The Skeletal System

- # Bony tissue
- # Framework for the animals body
- # The size and shape of animals is determined by the skeleton

The Skeletal System

Functions:

- # Protection for vital organs
- # Serves as levers for movement
- # Storage site for minerals
- # Site for blood formation

The Skeletal System

Parts or layers of bone:

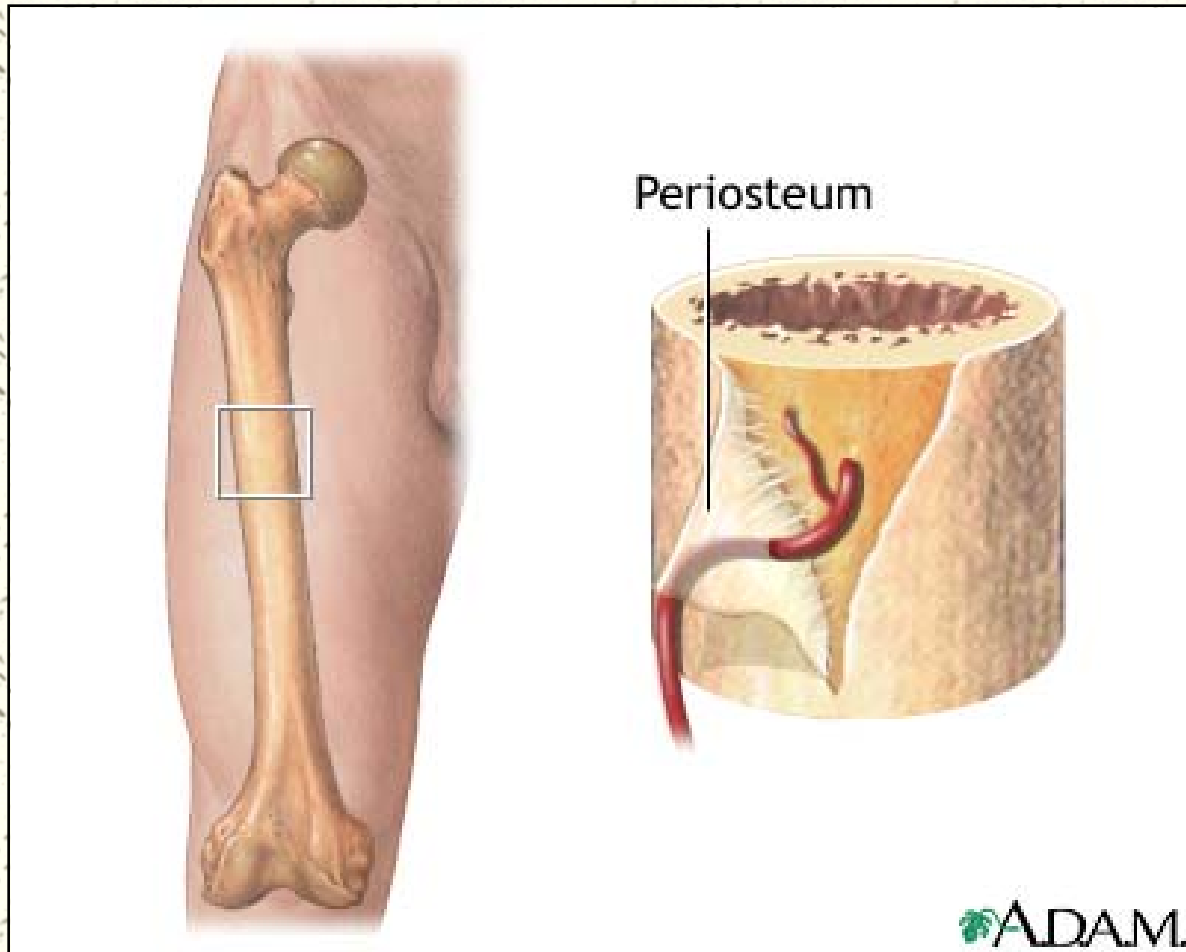
- Periosteum
- Compact bone
- Bone Marrow
- Cartilage

The Skeletal System

Periosteum

- The fibrous sheath that covers bones. It contains the blood vessels and nerves that provide nourishment and sensation to the bone.

The Skeletal System



The Skeletal System

Compact bone

- honeycombed
- passages for blood vessels and nerves
- bony tissue
 - calcium
 - phosphorus

The Skeletal System

Bone marrow

- gelatinous

- Yellow marrow

 - mostly fat

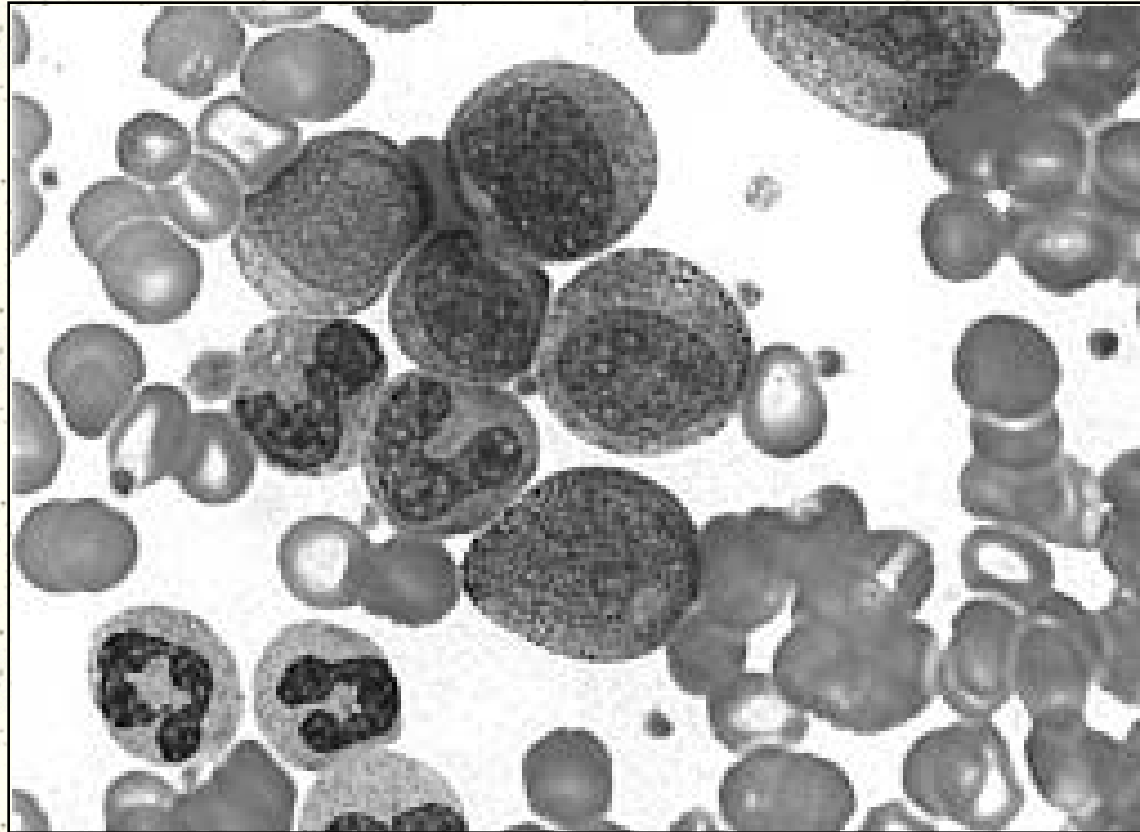
- Red marrow

 - red blood cells

 - white blood cells

 - platelets

The Skeletal System



Bone Marrow Cells

The Skeletal System

Types of bone

- Long bone- leg, arm, fingers
- Short bone- knee
- Flat bone (blade bones)- skull, jaw bone, scapula (shoulder blade)
- Irregular bone- backbone or vertebrae

The Skeletal System

Joints

- # Hinge- elbow
- # Gliding- joints in the wrist
- # Ball and socket- hip joint
- # Pivotal- base of the skull

The Skeletal System

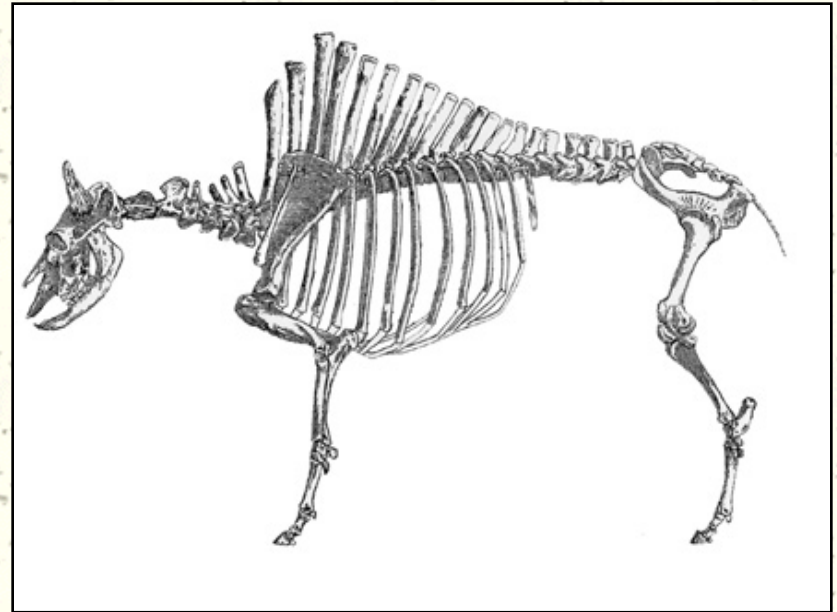
Parts of the skeletal system

- Axial Skeleton
- Pectoral Limb
- Pelvic Limb

The Skeletal System

Axial Skeleton

- ▣ vertebral column
- ▣ ribs
- ▣ sternum
- ▣ skull



Bison Axial Skeleton



The Skeletal System

Pectoral Limb

- front limbs including shoulder
- front legs and feet (cows, pigs, goats, horses)
 - scapula- shoulder blade
 - humerus- arm
 - radius and ulna- fore arm
 - carpals, metacarpals, phalanges- toes

The Skeletal System

Pelvic Limb

- rear legs and hooks
- pinbones
- femer (upper leg bone)
- tibia and fibula (lower leg bones)
- tarsals (hocks)
- metatarsals and phalanges (feet and toes)

The Muscular System

Function:

- # locomotion or movement
- # life support
 - gathering food
 - reproduction
 - simple body functions

The Muscular System

Structure of muscles:

- consist of mostly protein
- found in bundles or sheets
- connected to bones by tendons

The Muscular System

Classification of muscles:

- Voluntary
 - Involuntary
- # The lean portion of animals carcass is what is used for food (muscles)

The Muscular System

Voluntary

- Under control of the animals will
- All are striated (striped)
- Flexor- decreases the angle between two bones (biceps)
- Extensor- opposite side and increases the angle of two bones (triceps)

The Muscular System

Involuntary

- Not under the control of the animals free will
- Heart
- Secretory organs- force out secretions
- Digestive system- movement of food
- Respiratory system
- Smoothed or straited

The Circulatory System

Parts:

- ▣ heart
- ▣ veins
- ▣ capillaries
- ▣ arteries
- ▣ lymph vessels
- ▣ lymph glands

The Circulatory System

- # Heart- pumps blood to all body parts
- # Vascular system:
 - arteries carry oxygen rich blood to all parts of the body
 - capillaries connect arteries to veins
 - tiny thin walled passageways
 - semipermeable membrane
 - veins bring blood back to the heart and lungs

The Circulatory System

The Lymphatic System

- accessory system
- lymph vessels pick up fluids and gasses in body tissue
- lymph glands filter foreign substances from entering the bloodstream
 - scattered throughout the body

The Circulatory System

Lymph Glands

- produce antibodies and lymphocytes
 - fights disease and infection
- become enlarged or swollen when infection is present
- named for their specific area of the body
 - mandibular gland located under the mandible

The Circulatory System

- # Functions of the circulatory system:
 - ▣ distribution of nutrients
 - ▣ transportation and exchange of oxygen and carbon dioxide
 - ▣ removal of waste materials
 - ▣ distribution of endocrine secretions
 - ▣ prevent infection
 - ▣ regulate body temperature

The Circulatory System

Functions of the circulatory system continued:

- distribution of endocrine secretions
- prevent infection
- regulation of body temperature

The Respiratory System

Parts:

- ▣ lungs
- ▣ nostrils
- ▣ nasal cavity
- ▣ pharynx
- ▣ larynx
- ▣ trachea

The Respiratory System

Functions:

- ▣ Provides Oxygen to tissue
- ▣ Removes Carbon Dioxide
- ▣ Controls temperature
 - ▣ why does a dog's tongue hang out
- ▣ Noise production

The Nervous System

Parts:

- Central Nervous System
 - brain
 - spinal cord
- Peripheral Nervous System
 - somatic nerves
 - autonomic nerves

The Nervous System

Functions:

- Coordinates the physical movement of the body
- Responds to hearing, sight, touch, smell, and taste

The Nervous System

Somatic nerves

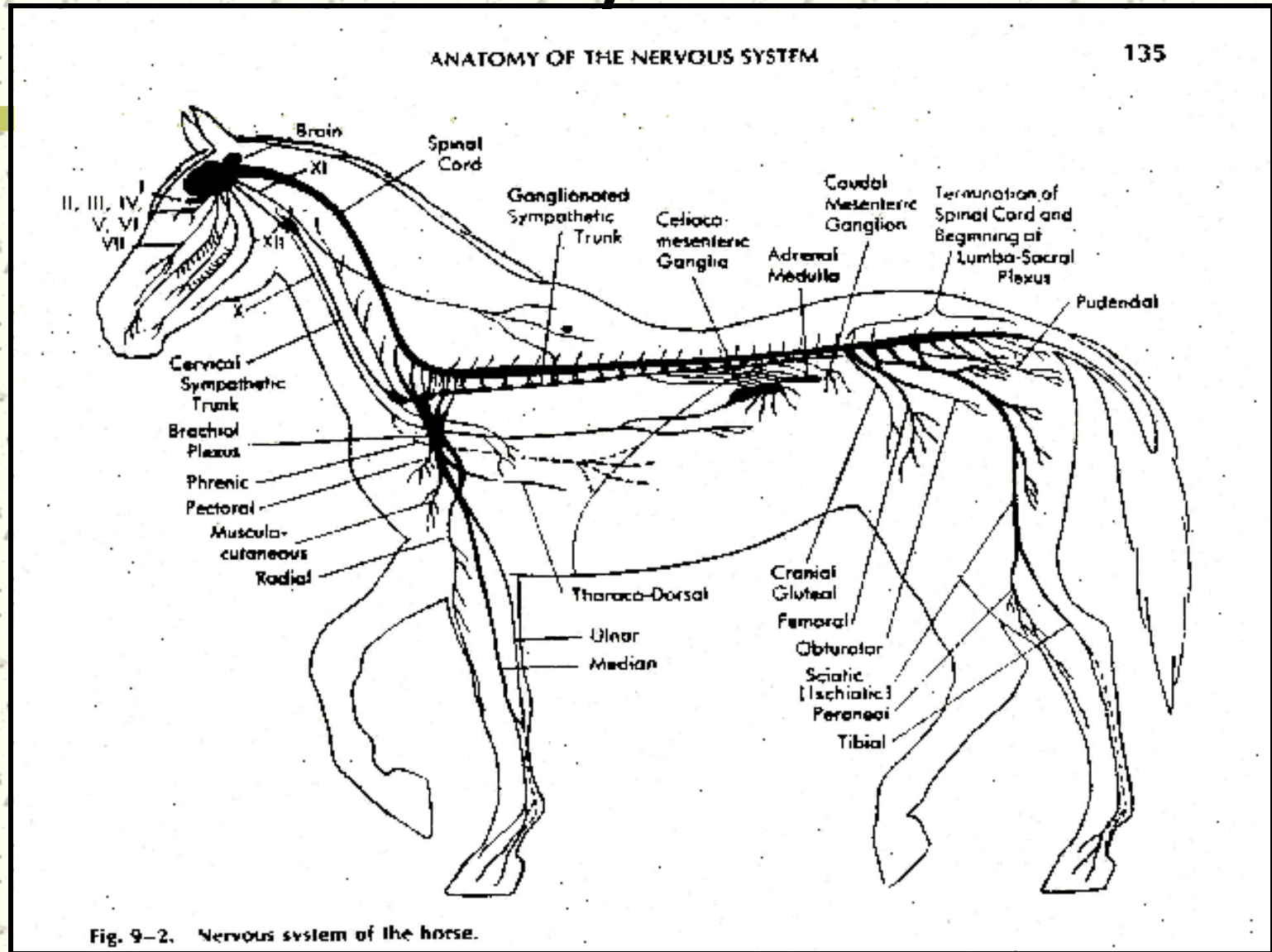
- located outside of the central nervous system
- controls the function of body tissue other than organs

The Nervous System

Autonomic nerves

- outside of the central nervous system
- controls and regulates involuntary organs inside internal organs

The Nervous System



The Endocrine System

Parts

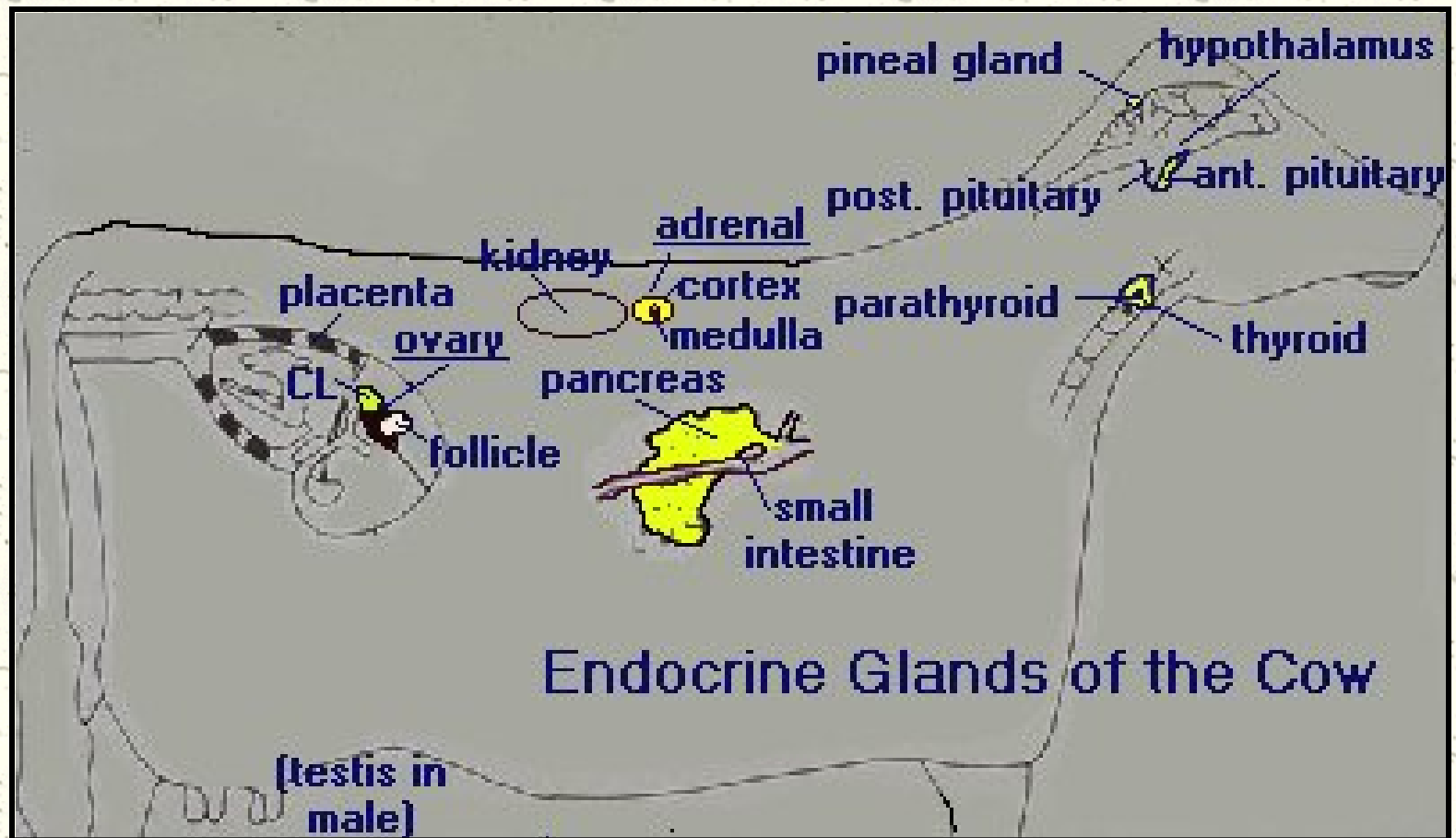
- ▣ pancreas
- ▣ pituitary gland
- ▣ ovaries
- ▣ testicles
- ▣ thyroid gland
- ▣ hypothalamus
- ▣ adrenal gland

The Endocrine System

Functions:

- controls growth
- reproductive functions
 - heat
 - lactation
 - birth
- shape of the animal
- feed efficiency

The Endocrine System



Assignment:

Build a poster that teaches a anatomy and physiology concept

- You will be assigned a group (1-4)
- Project must contain:
 - Picture or graph (30points)
 - Title in large font (15pts)
 - Text teaching your concept(20 pts)
 - Must fill the entire page (10pts)
 - Neat and organized (15pts)
 - Contain 6 colors (10pts)

Assignment:

Using the posters constructed by your classmates, build a 15 question multiple choice test from the information outlined in the posters. You should also keep an answer key for your test. Once you finish your test hold on to it and we will give someone the chance to see how much they know.