

# *Human Anatomy: Dissection of Cat*

*By: Kelsey Peters and Jessica Crozier*

# Anatomical terms

1. **Dorsal:** Towards the back.
2. **Ventral:** Towards the belly.
3. **Cranial:** Towards the head.
4. **Caudal:** Towards the tail.
5. **Anterior:** Head end of the cat.
6. **Posterior:** Tail end of the cat.
7. **Medial:** Toward the midline.
8. **Lateral:** Away from the midline.
9. **Midline:** Line down the middle of dorsal/ventral.
10. **Proximal:** Nearest to point of Origin.
11. **Distal:** Furthest from point of origin.

# Directional terms

1. **Sagittal:** Section parallel to midline.
2. **Mid-Sagittal:** Directly on midline.
3. **Transverse:** Horizontal cross section.
4. **Frontal:** Parallel to dorsal/ventral surface.

# Cat External

1. **External Nares (Nostrils):** Takes in air and scent.
2. **Pinnae (External Ears):** Trap sound waves.
3. **Nictitating Membrane (Third eyelid):** Lubricates and protects the eye.
4. **Vibrissae (Whiskers):** Sensory touch.
5. **Teats or Nipples:** Nourish the young.
6. **Anus:** Digestive system releases solid waste.
7. **Scrotum:** Houses the testes in male.
8. **Urogenital Aperture:** Urinary and Genital opening for female.
9. **Teeth:** used to break up and eat food.
  - **Incisors 3/3:** used to pick at food and make small holes.
  - **Canines 1/1:** Hold and puncture animal.
  - **Premolars (carnasals) 3/2:** Shear and slice food.
  - **Molars 1/1:** Grind up food.

# Terms

1. **Origin:** The “anchored” end of a muscle **NOT** meant to be moved.
2. **Insertion:** Other end of a muscle attached to the bone **MEANT** to be moved.
3. **Belly:** Fleishy central portion of a muscle.
4. **Tendon:** Connective tissue that connects the muscle to bone.
5. **Fascia:** Fine transparent sheet connective tissue that binds or separates muscles.
6. **Aponeurosis:** A fibrous sheet of connective tissue that may surround muscles and connect them to tendons.
7. **Linea alba:** longitudinal white line of connective tissue running along the midline of the abdomen.
8. **Contraction:** Shortening of the muscle fibers.
9. **Action:** Result of muscle contraction.

# Action of Muscles

1. **Flexion:** Decrease the angle of a joint. **Ex.-Bicep**
2. **Extension:** Increase the angle of a joint. **Ex.-Triceps**
3. **Abduction:** Move away from the midline. **(Take away)**
4. **Adduction:** Toward the midline. **(Add back)**
5. **Protraction:** Move a limb anteriorly.
6. **Retraction:** Move a limb posteriorly.
7. **Rotation:** Move about an axis. **Ex.-head, front paws.**
8. **Pronation:** Turn palm down.
9. **Supination:** turn palm up.
10. **Circumduction:** To move a limb in a circle. **Ex.-paw.**

Pectoantebrachialis

Pectoralis Major

Pectoralis Minor

Xiphihumeralis



*Chest muscles*

1. Pectoantebrachialis:

- **Origin:** Manubrium of Sternum.
- **Insertion:** On humerus above the elbow.
- **Function:** Draws the forelimb toward the midline.

1. Pectoralis Major:

- **Origin:** Manubrium.
- **Insertion:** Shaft of humerus.
- **Function:** Draws the forelimb toward the midline.

1. Pectoralis Minor:

- **Origin:** Xiphoid process.
- **Insertion:** Middle of humerus.
- **Function:** Draws the forelimb toward the midline.

1. Xiphihumeralis:

- **Origin:** Xiphoid Process
- **Insertion:** Bicipital groove of humerus.
- **Function:** Draws the forelimb toward the midline.



External  
Oblique

Transverse  
Abdominis

Internal  
Oblique

# Abdominal Muscles

Linea  
Alba



Rectus  
Abdominis

External  
Oblique

# Abdomen Continued

1. External Oblique:

- **Origin:** Last 9 or 10 ribs
- **Insertion:** End of sternum to ribs area.
- **Function:** Compress the abdominal region.

1. Internal Oblique:

- **Origin:** External Oblique and Iliac Crest.
- **Insertion:** Lies in between the External Oblique and Transverse Abdominis.
- **Function:** Compress the abdominal region.

1. Transverse Abdominis:

- **Origin:** Ribs, Lumbar Region and Ilium.
- **Insertion:** Lies in common with the other 2 obloquies.
- **Function:** Compress the abdominal region.

1. Rectus Abdominis:

- **Origin:** Top of Pubis.
- **Insertion:** On cartilage at the end of the sternum.
- **Function:** Compress the abdominal region, pulls sternum and ribs caudally causing flexion of the trunk.

# Neck Muscles



Digastric

Transverse Jugular Vein

Lymph Node

Anterior Facial Vein

Masseter

Sublingual gland

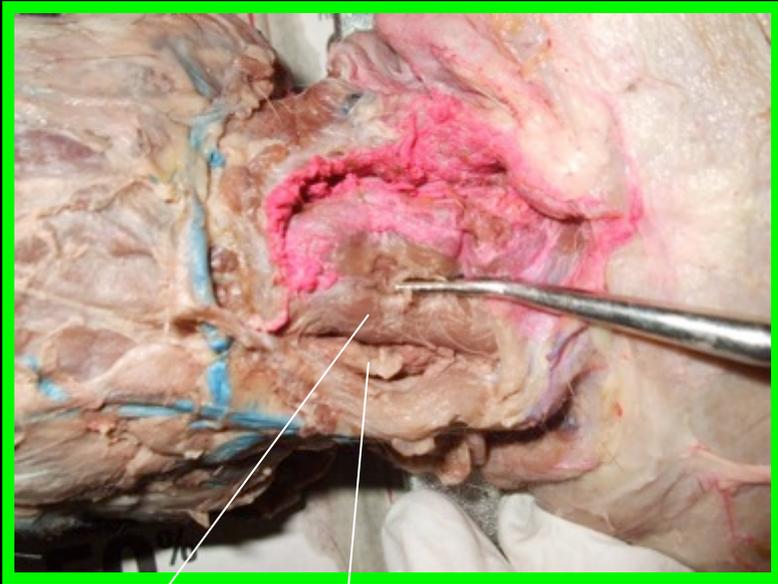
Submaxillary Gland

Mandibular Gland

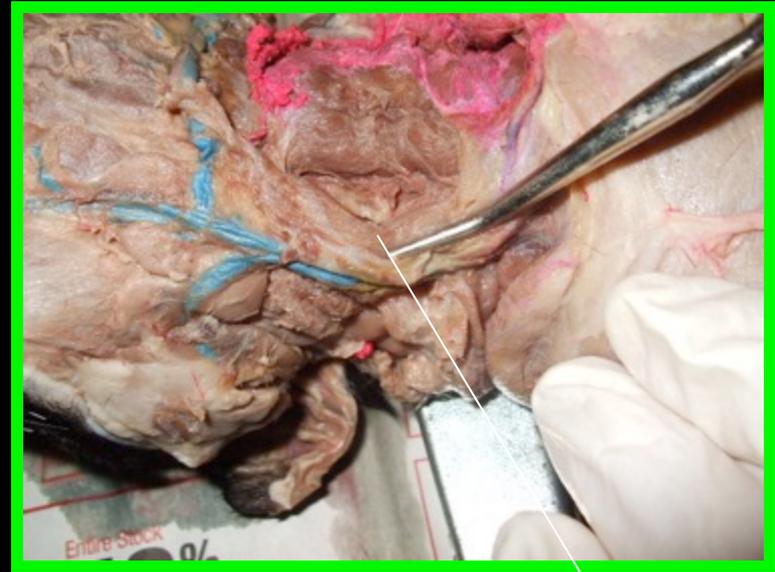
External Jugular Vein

Posterior Facial Gland

# Neck Muscles Cont.



Sternohyoid



Sternomastoid



Sternothyroid

Cleidomastoid

Lymph Gland



sublingual

Submaxillary  
Gland

# Neck Glands



Masseter

Temporalis

*Neck Muscles Cont.*



Incisors

Canines

Molars

Premolars

# Teeth

1. Sternohyoid:

- **Origin:** First costal cartilage.
- **Insertion:** Hyoid Bone.
- **Function:** Retracts the Hyoid.

1. Sternothyroid:

- **Origin:** First costal cartilage.
- **Insertion:** Thyroid cartilage of larynx.
- **Function:** Retracts the larynx.

1. Sternomastoid:

- **Origin:** First cranial end of manubrium.
- **Insertion:** Temporal bone.
- **Function:** As a pair-Flexion of the head, Separate-Turns the head.

1. Cleidmastoid:

- **Origin:** Mastoid process and temporal bone.
- **Insertion:** Clavicle.
- **Function:** Clavicle stationary-turns head, head stationary-life shoulders anteriorly.

1. Digastric:

- **Origin:** Mastoid and jugular process.
- **Insertion:** Medial border of mandible.
- **Function:** Depress the mandible.

1. Masseter:

- **Origin:** Zygomatic Arch.
- **Insertion:** mandible.
- **Function:** Elevates the mandible.

1. Temporalis:

- **Origin:** Mostly from Temporal bone and some from zygomatic arch..
- **Insertion:** mandible..
- **Function:** Elevates the mandible.

# Arm Muscles (Ventral View)



Epitrochlearis



Brachioradialis



Flexor Digitorum Profundus



Flexor Digitorum Superficialis



Flexor Carpi Radialis



Pronator Teres



### 1. Epitochlearis:

- **Origin:** Lateral border of latissimus dorsi.
- **Insertion:** Top of the Ulna.
- **Function:** Extending the forearm.

### 1. Flexor Carpi Ulnaris:

- **Origin:** Humeral head, lateral ulna.
- **Insertion:** Carpal Bones.
- **Function:** Flexes the wrist.

### 1. Flexor Digitorum Superficialis:

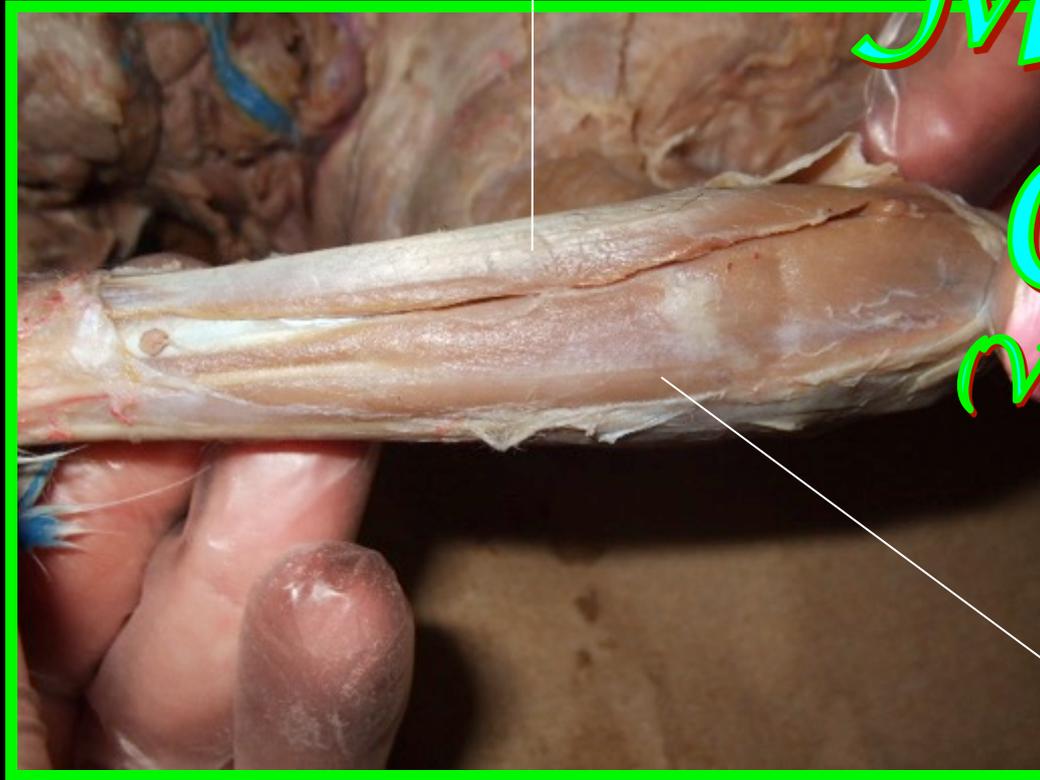
- **Origin:** superficial head of humerus.
- **Insertion:** middle of the digits.
- **Function:** Flexes the digits.

### 1. Flexor Digitorum Profundus:

- **Origin:** Ulna head, middle third of radius.
- **Insertion:** 1-5 digits on the wrist.
- **Function:** Flexes all digits.

Flexor  
Digitorum  
Superficialis

# Arm Muscles Cont. (Ventral View)



Flexor Carpi Ulnaris

1. Flexor Carpi Radialis:

- **Origin:** middle of Humerus.
- **Insertion:** Base of second and third metacarpal.
- **Function:** Flexes the wrist.

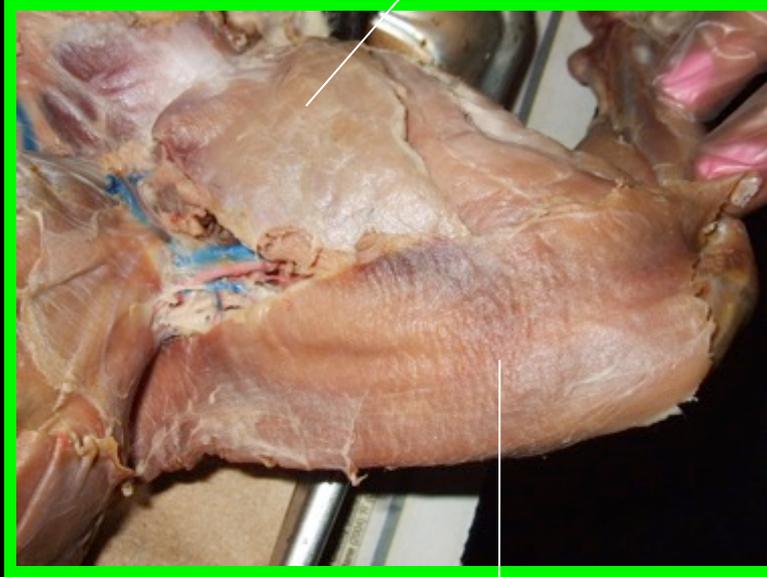
1. Pronator Teres:

- **Origin:** Middle of humerus.
- **Insertion:** Middle of Radius.
- **Function:** Pronates the Radius.

1. Brachioradialis:

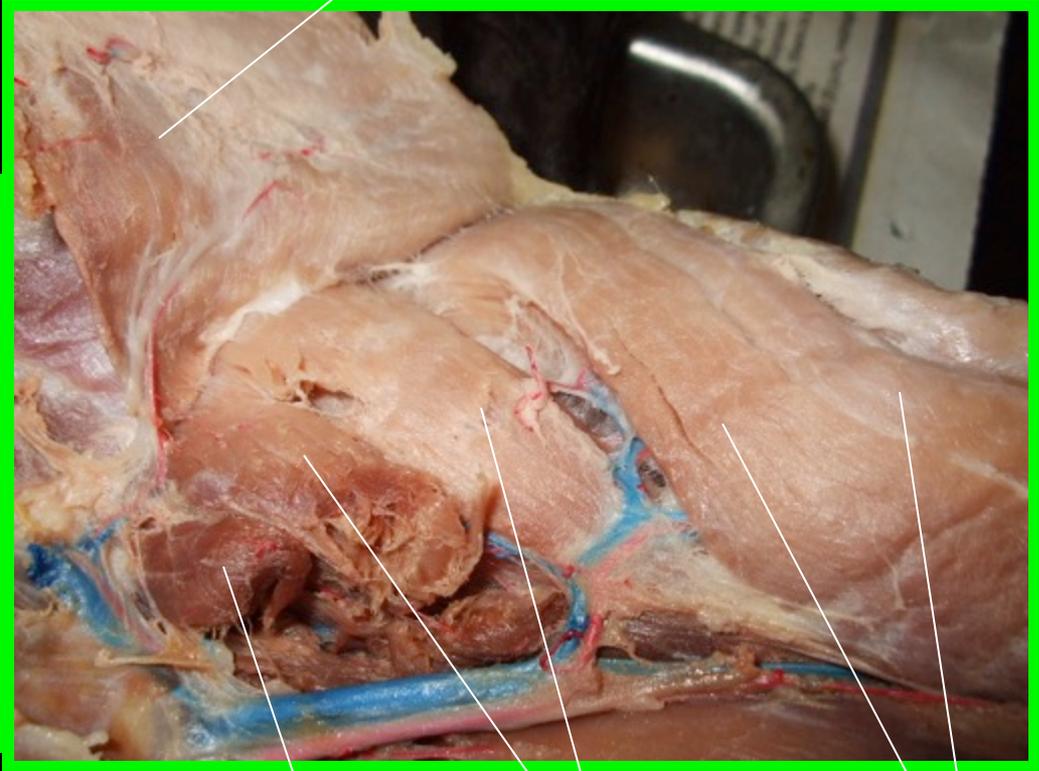
- **Origin:** Middle-shaft of Humerus.
- **Insertion:** Styloid Process of Radius.
- **Function:** Supinates the manus.

Gracilis



Sartorius

Gracilis



Adductor Longus

Adductor Femoris (2heads)

Semimembranosus (2heads)

# Hindlimb

# *Hindlimb cont.*



Tensor Fascia Latae

Vastus Lateralis

Rectus Femoris

Vastus Medialis

1. Sartorius:

- **Origin:** Crest and ventral border of Ilium.
- **Insertion:** Patella, tibia and fascia of knee.
- **Function:** Adducts the femur and extends the shank.

1. Gracilis:

- **Origin:** Ischium and pubis.
- **Insertion:** Medial surface of tibia.
- **Function:** Adducts and retracts the leg.

1. Adductor Longus:

- **Origin:** Pubis.
- **Insertion:** Middle of Femur.
- **Function:** Adducts Thigh.

1. Adductor Femoris (2heads):

- **Origin:** Ischium and pubis.
- **Insertion:** Shaft of Femur.
- **Function:** Adducts the Thigh.

1. Semimembranosus:

- **Origin:** Ischium.
- **Insertion:** Medial femur and adjacent medial surface of tibia.
- **Function:** Extends the Thigh.

1. Tensor Fascia Latae:

- **Origin:** Ilium and hip muscles.
- **Insertion:** Surface of patella and surrounding muscles.
- **Function:** Extends the shank.

1. Vastus Lateralis:

- **Origin:** Shaft of Femur.
- **Insertion:** Rectus Femoris.
- **Function:** Extends the Shank.

1. Rectus Femoris:

- **Origin:** Ilium.
- **Insertion:** Vastus Medialis and Vastus Lateralis.
- **Function:** Extends the Shank.

1. **Vastus Medialis:**

- **Origin:** Shaft of Femur.
- **Insertion:** Patella.
- **Function:** Extends the Shank.

Gastrocnemius

*Shank*

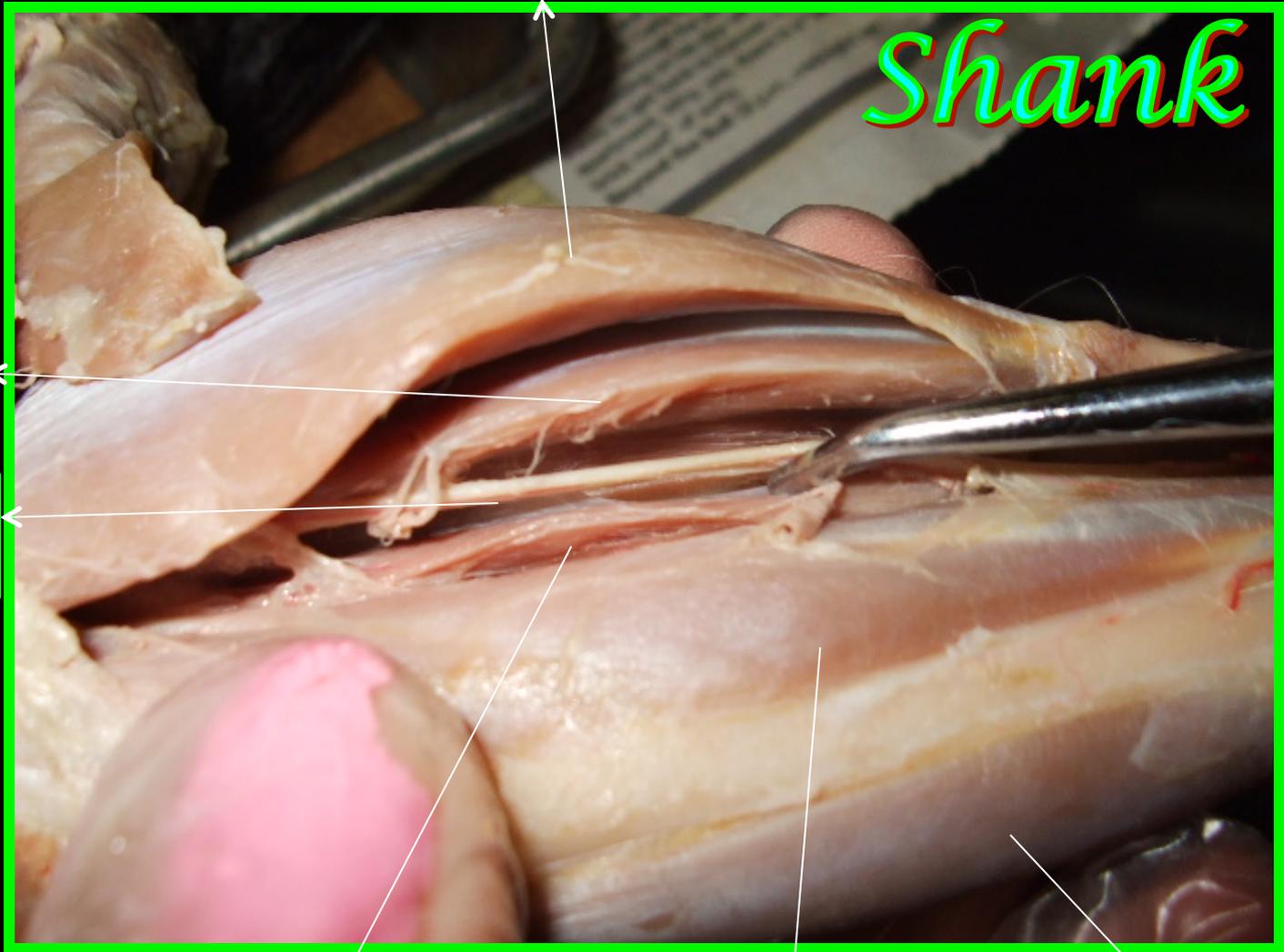
Plantaris

Sciatic  
Nerve

Flexor Digitorum Longus

Tibialis Caudalis

Tibialis Cranialis



1. **Gastrocnemius:**

- **Origin:** Patellar, femur, tibia.
- **Insertion:** Achilles Tendon, Calcaneous.
- **Function:** Extends the Pes.

1. **Plantaris:**

- **Origin:** Femur and Patella.
- **Insertion:** Achilles tendon and Calcaneous.
- **Function:** Extends the Pes.

1. **Flexor Digitorum Longus:**

- **Origin:** Fibula and Tibia.
- **Insertion:** Over the foot and each toe.
- **Function:** Flexes the toes and Pes.

1. **Tibialis Caudalis:**

- **Origin:** Fibula and Tibia.
- **Insertion:** Navicular and cunciform.
- **Function:** Extensor of the Pes..

## 1. Tibialis Cranialis:

- **Origin:** Proximal end of tibia and Fibula.
- **Insertion:** First Metatarsal.
- **Function:** Flexes the Pes.

# Back and Shoulder

Spinotrapezius

Latissimus Dorsi

Clavotrapezius

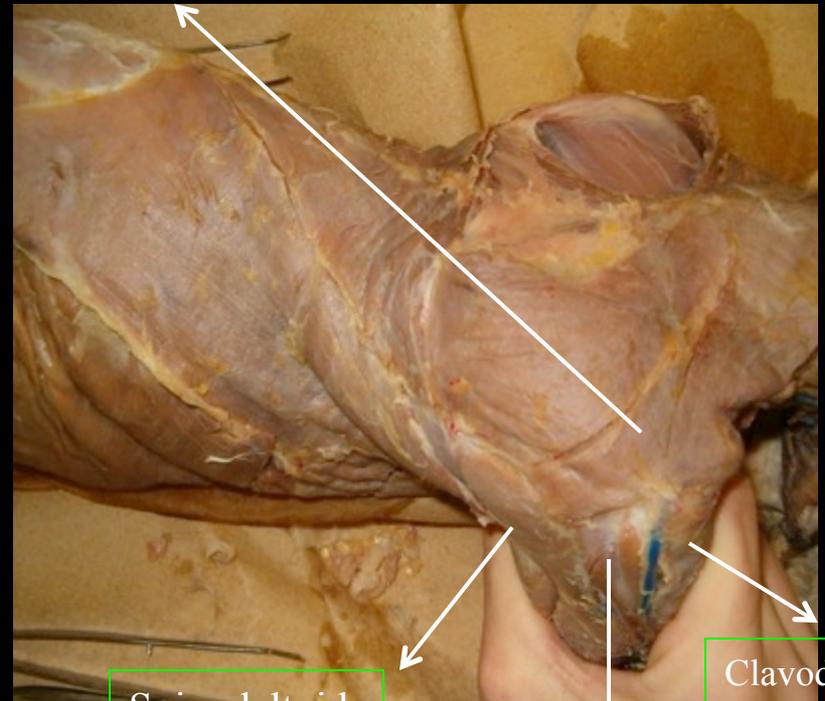
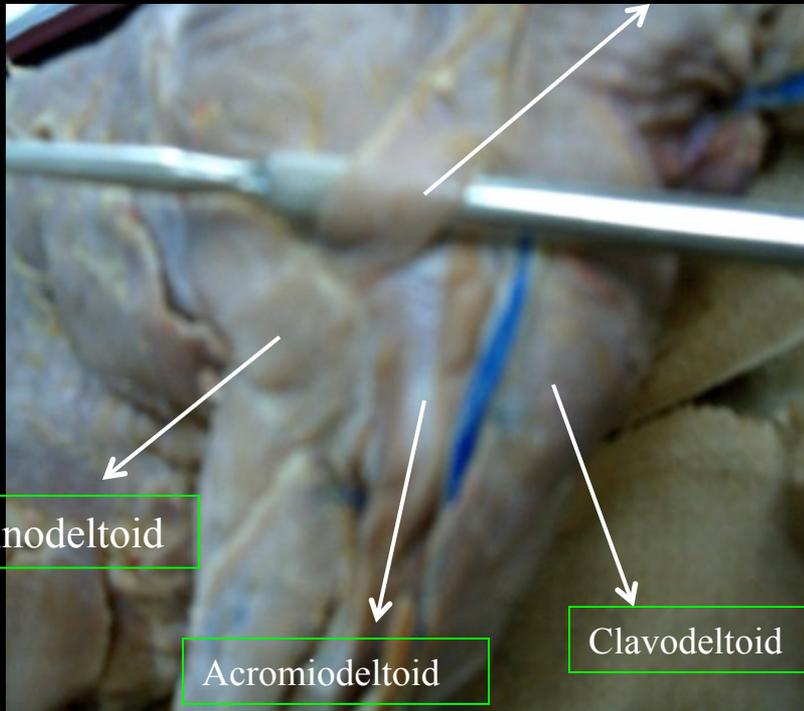
Acromiotrapezius

Levator Scapulae Ventralis



# Back and Shoulder cont.

Levator Scapulae Ventralis



Spinodeltoid

Acromiodeltoid

Clavodeltoid

Spinodeltoid

Acromiodeltoid

Clavodeltoid

## 1. Clavotrapezius

- **Origin:** Middorsal over axis.
- **Insertion:** Clavicle.
- **Function:** Forward extension of humerus.

## 1. Acromiotrapezius

- **Origin:** Axis, 4<sup>th</sup> thoracic vertebrae.
- **Insertion:** Metacromion process and spine of the scapulae.
- **Function:** Adduct and stabilize the position of scapulae.

## 1. Spinotrapezius

- **Origin:** Most thoracic vertebrae.
- **Insertion:** Fascia on either side of spine.
- **Function:** Pulls scapula dorsally and caudally.

## 1. Latissimus Dorsi

- **Origin:** 4<sup>th</sup> and 5<sup>th</sup> thoracic vertebrae to the 6<sup>th</sup> lumbar vertebrae.
- **Insertion:** Proximal end of humerus.
- **Function:** Pulls forelimb dorsocaudally.

## 1. Clavodeltoid

- **Origin:** Clavicle.
- **Insertion:** Medial surface of ulna.
- **Function:** Flexes the forearm.

## 1. Acromiodeltoid

- **Origin:** Acromion of deltoid.
- **Insertion:** Surface of spinodeltoid muscle.
- **Function:** Lateral extension of forelimb

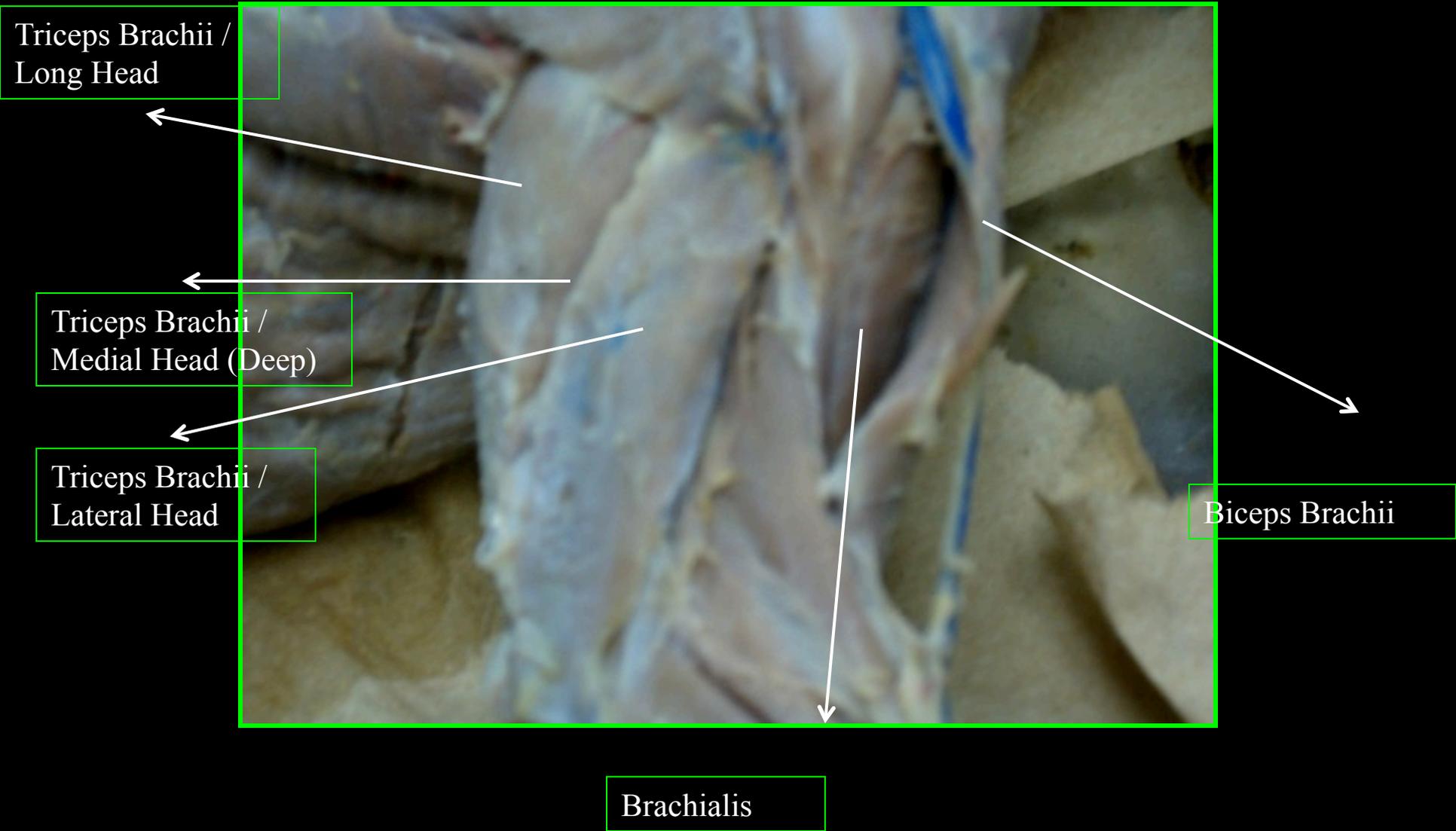
## 1. Spinodeltoid

- **Origin:** Spine of scapula.
- **Insertion:** Deltoid ridge of humerus.
- **Function:** Posterior extension of forelimb.

## 1. Levator Scapulae Ventralis

- **Origin:** Transverse process of the atlas
- **Insertion:** Ventral border of the metacromion of the scapula
- **Function:** Pulls scapula cranially.

# Brachium / Antibrachium



# Brachium / Antibrachium cont.



Extensor Carpi Radialis Longus

Extensor Digitorum Communis

Extensor Digitorum Lateralis

Extensor Carpi Ulnaris



## 1. Biceps Brachii

- **Origin:** Tendon above the scapula.
- **Insertion:** Tendon on the radial tuberosity.
- **Function:** Flexes the forearm, supinates the manus, and stabilizes the shoulder.

## 1. Brachialis

- **Origin:** Lateral surface of humerus.
- **Insertion:** Lateral surface of ulna.
- **Function:** Flexes the forearm of antibrachium

## 1. Triceps Brachii

### 1. Lateral head

- **Origin:** Deltoid ridge of humerus.

### 2. Long Head

- **Origin:** Scapula.

### 3. Medial Head

- **Origin:** Humerus.

- **All**

- **Insertion:** Ulna.

- **Function:** Extends the forearm.

## 1. Extensor Carpi Ulnaris

- **Origin:** Lateral epicondyle of the humerus.
- **Insertion:** Base of the 5<sup>th</sup> metacarpal
- **Function:** Extension of the carpals.

## 1. Extensor Digitorum Lateralis

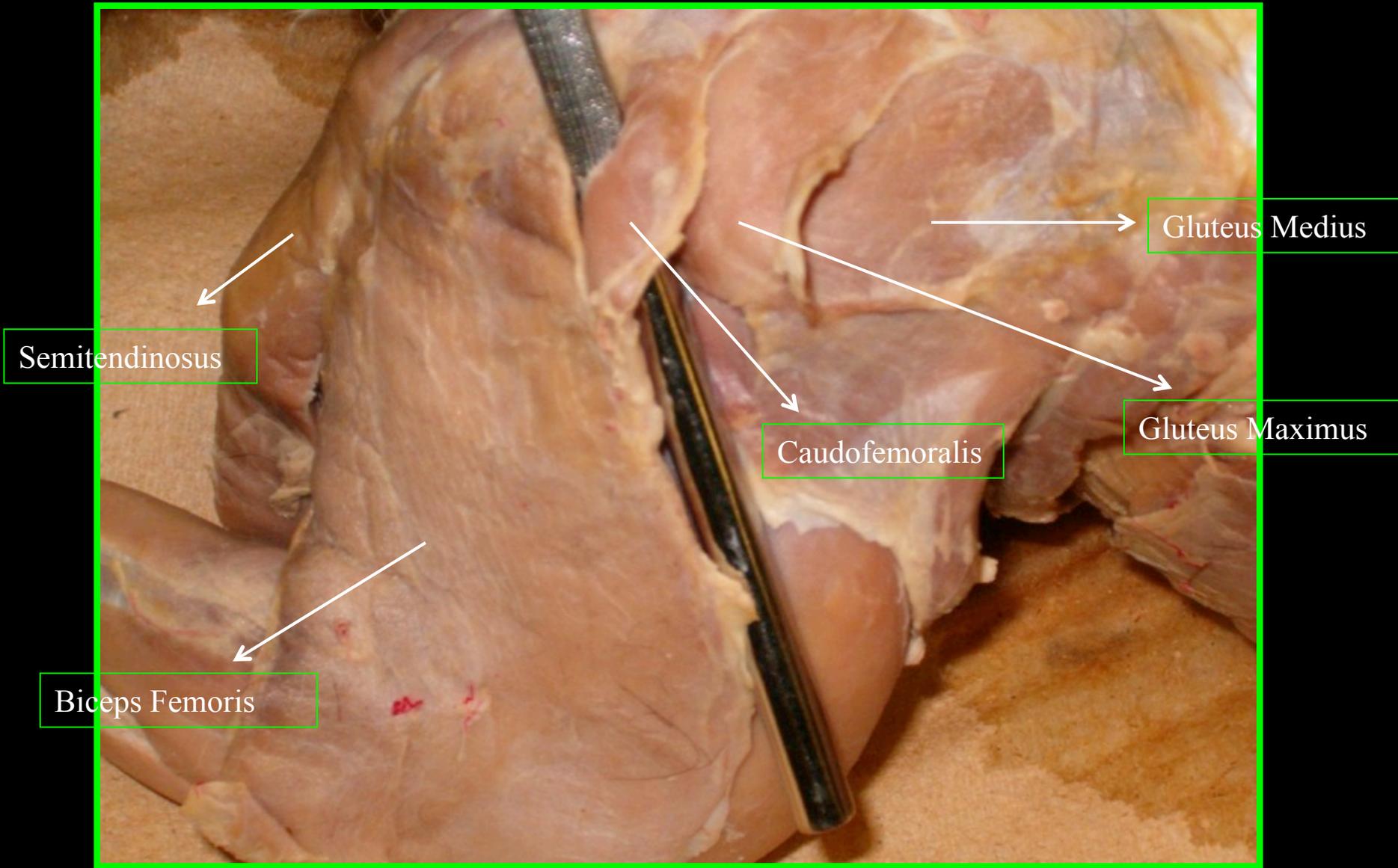
- **Origin:** Lateral supracondyloid of the humerus.
- **Insertion:** Digits 2-5.
- **Function:** Extends the digits.

## 1. Extensor Digitorum Communis

- **Origin:** Lateral supracondyloid ridge of humerus.
- **Insertion:** Digits 2-5.
- **Function:** Extends the digits.

## 1. Extensor Carpi Radialis Longus

- **Origin:** Lateral supracondyloid ridge of the humerus.
- **Insertion:** 2<sup>nd</sup> metacarpal
- **Function:** Extends the manus.



## 1. Gluteus Medius

- **Origin:** Crest of ilium, 1<sup>st</sup> caudal vertebrae.
- **Insertion:** Proximal end of femur.
- **Function:** Abducts the thigh

## 1. Gluteus Maximus

- **Origin:** Last sacral, 1<sup>st</sup> caudal vertebrae.
- **Insertion:** Femur.
- **Function:** Abducts the thigh

## 1. Caudofemoralis

- **Origin:** 2<sup>nd</sup> and 3<sup>rd</sup> caudal vertebrae.
- **Insertion:** Lateral border of patella.
- **Function:** Abducts the thigh, and extends the shank

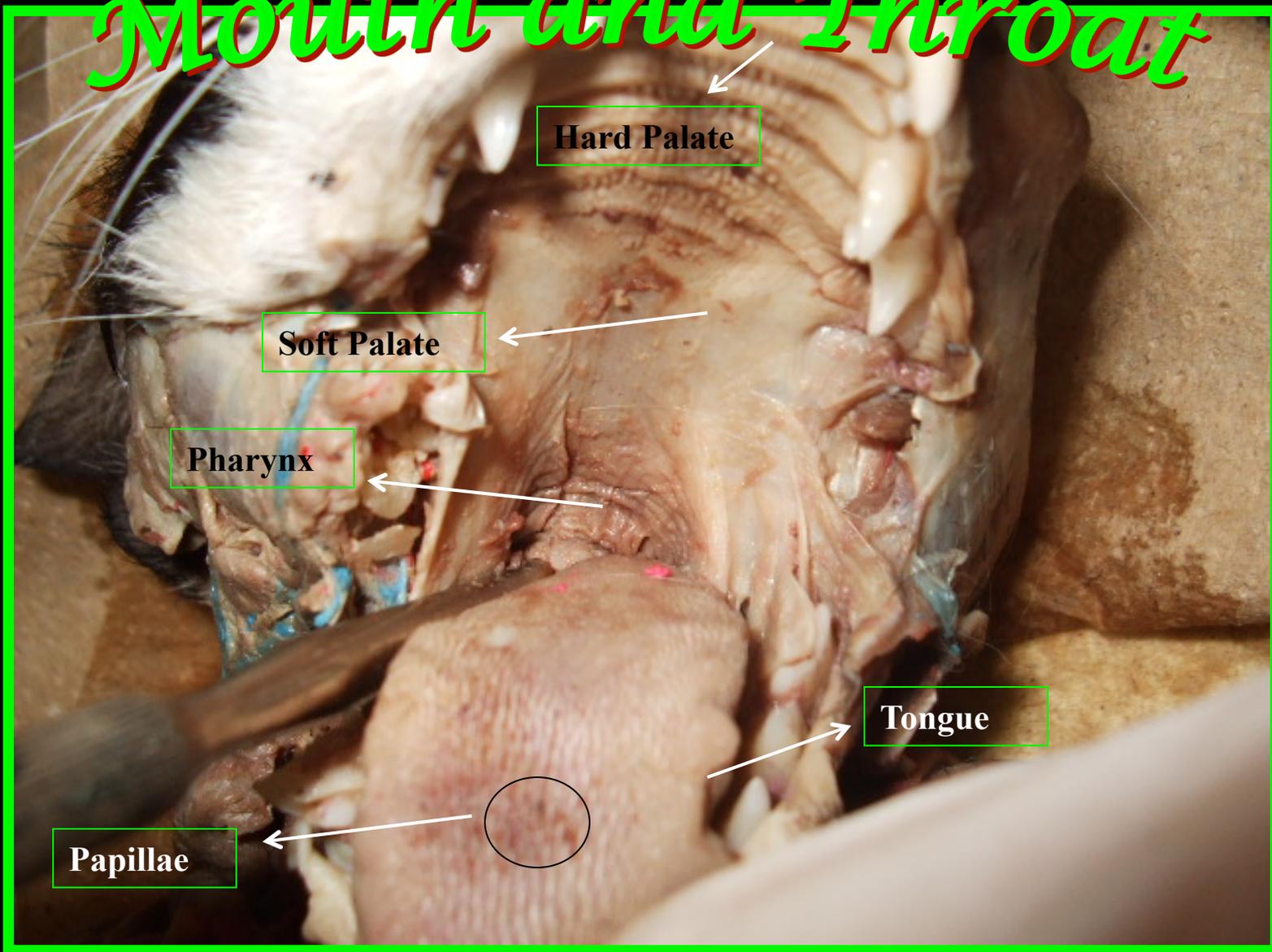
## 1. Biceps Femoris

- **Origin:** Ischial tuberosity.
- **Insertion:** Proximal end of tibia, lateral patella
- **Function:** Abducts the thigh, and flexes the shank.

## 1. Semitendinosus

- **Origin:** Ischial tuberosity.
- **Insertion:** Medial surface of the tibia.
- **Function:** Flexes the shank.

# Mouth and Throat



Hard Palate

Soft Palate

Pharynx

Tongue

Papillae

# Mouth and Throat Cont.

Frenulum



## 1. Salivary Glands

- small glands associated with the cheek muscles, under the tongue, and medial to the molars that secrete digestive enzymes and also lubricate food for swallowing

## 1. Tongue

- Muscular structure in the mouth that aids in speech, taste, and swallowing

## 1. Frenulum

- Connective tissue that anchors the tongue to the floor of the mouth

## 1. Lingual Papillae

- Small projections on the tongue used for taste, grooming, and cleaning meat off bones
- Filiform – spike like projections on the anterior portion of tongue, used primarily for grooming fur and cleaning bones – NO TASTE BUDS
- Fungiform – mushroom shaped projections on the middle portion of the tongue – TASTE BUDS PRESENT
- Foliate – leaf shaped projections on the posterolateral edges of the tongue. NO TASTE BUDS.
- Vallate – larger, fleshy projections on the most posterior portion of tongue, TASTE BUDS PRESENT

## 1. Hard Palate

- Bony, anterior roof of the mouth

## 1. Soft Palate

- Non-boney, posterior roof of the mouth

## 1. Pharynx

- “Area” in which the sinuses, mouth, trachea, and esophagus meet in the most posterior aspect of the oral cavity and top of the throat. Can be distinguished into the three following categories:
- Nasopharynx – where the sinuses drain into the posterior portion of the oral cavity
- Laryngopharynx – where trachea meets the posterior portion of the oral cavity
- Oropharynx – where the oral cavity meets the top of the esophagus

## 1. Epiglottis

- The “flap” that covers the glottis when swallowing, prevents food from going into the larynx and respiratory tract

## 1. Glottis

- Opening to the larynx

# Larynx/Esophagus/Trachea

Esophagus

Epiglottis



Larynx

Trachea

Larynx

Esophagus

Glottis



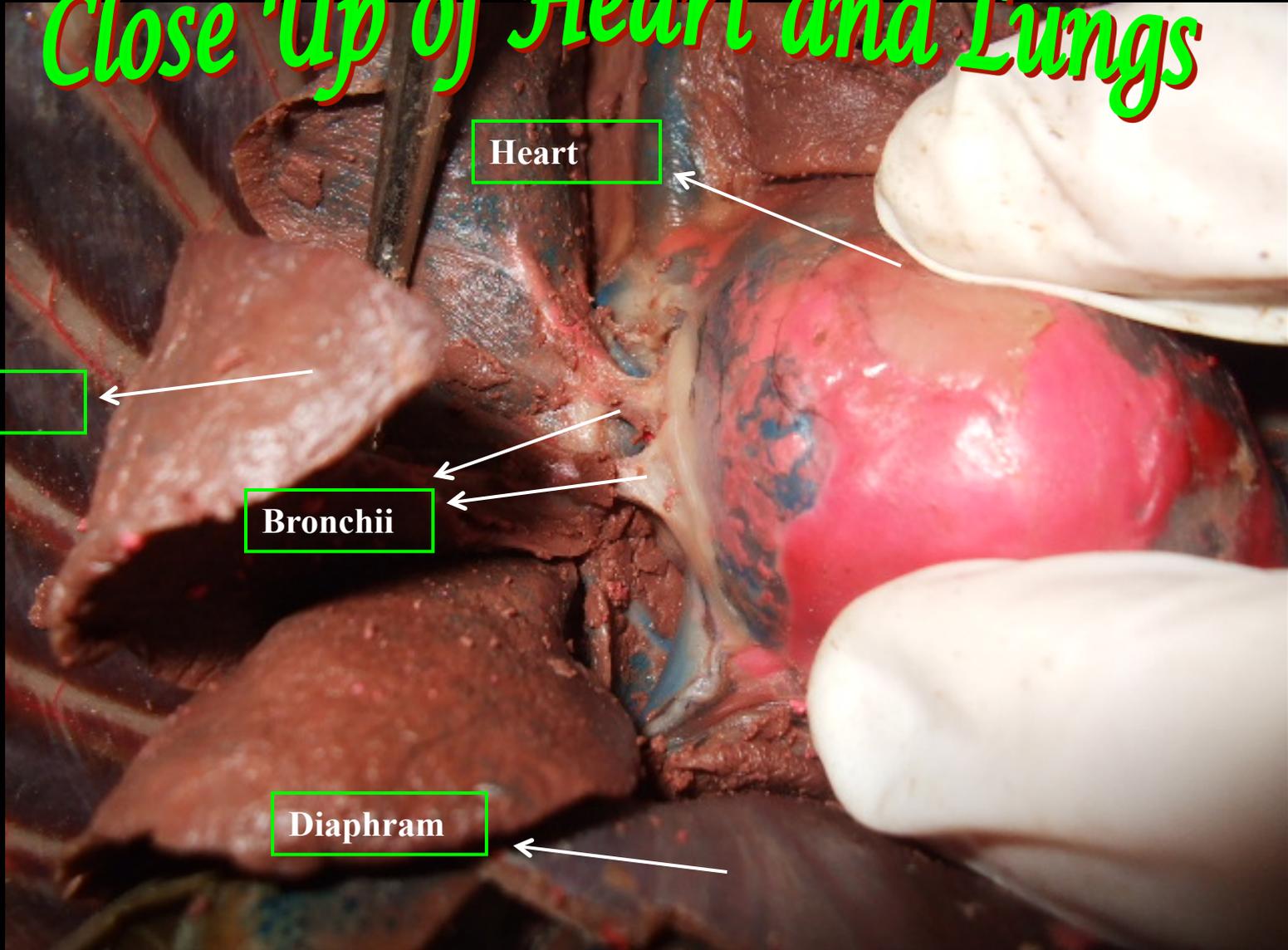
# Close Up of Heart and Lungs

Heart

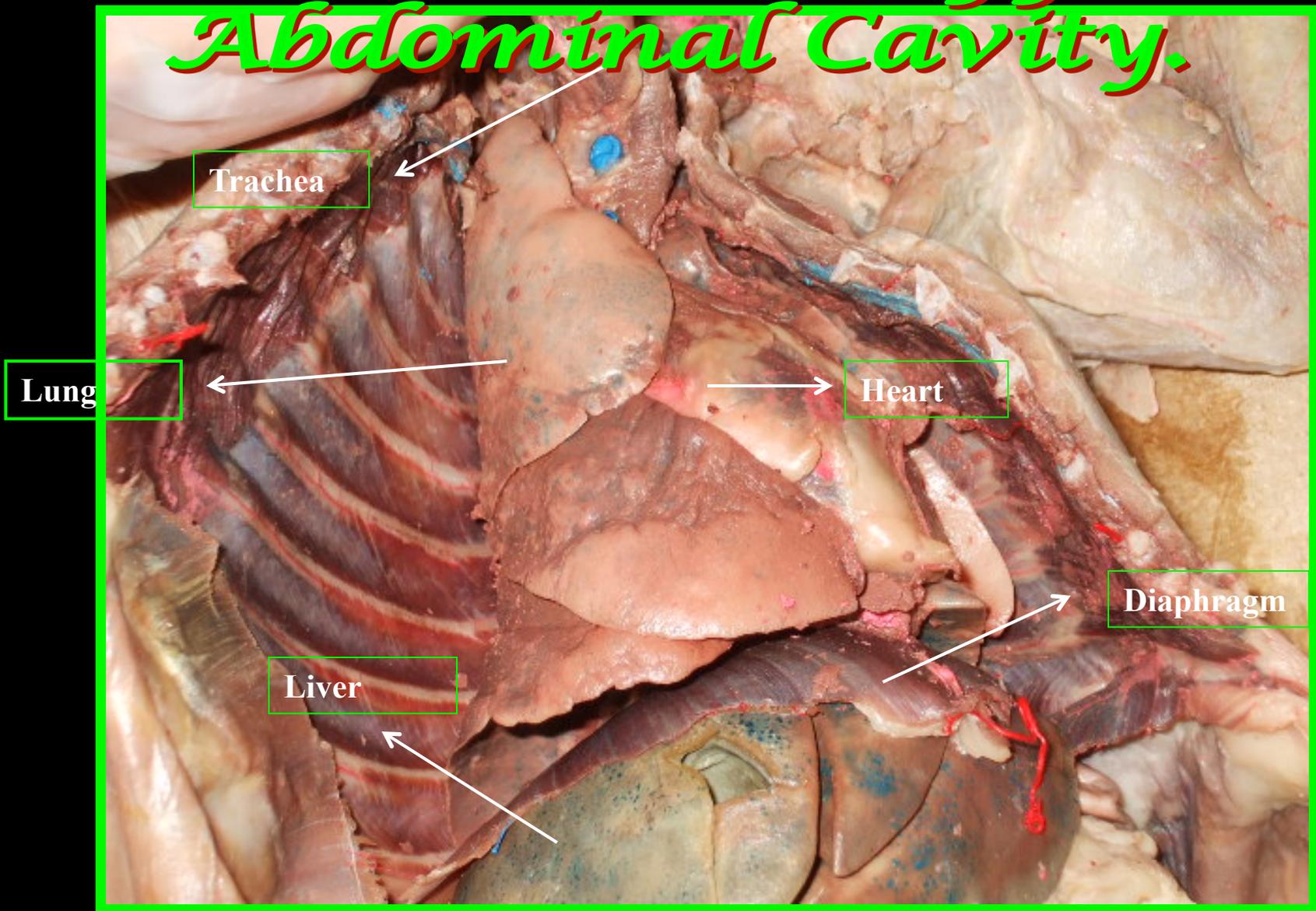
Lung

Bronchii

Diaphragm



# *Thoracic and Upper Abdominal Cavity.*



Trachea

Lung

Heart

Liver

Diaphragm

## 1. Larynx (Voice Box)

- Cartilaginous, swollen area at top of trachea
- Houses vocal cords and produces sound as air exits

## 1. Trachea (wind pipe)

- Tube supported by cartilage rings
- Carries air from mouth and sinuses to bronchii

## 1. Bronchii

- Small tube divisions off the trachea
- Carries air from trachea to lungs

## 1. Lungs

- Paired air sacs in the thoracic cavity (5 lobes)
- Exchange oxygen and carbon dioxide with blood

## 1. Diaphragm

- Muscle that separates the thoracic and abdominal cavities
- Controls the inhalation and exhalation of air from lungs

## 1. Heart

- 4 chambered muscular organ sitting directly deep to the sternum in the thoracic cavity
- Pumps to circulate blood throughout the body

## 1. Aorta

- The largest blood vessel in the body, it leaves the left ventricle and branches out to supply oxygenated blood to the entire body

## 1. Dorsal Aorta

- Large branch from the aorta that runs dorsally through the thoracic and abdominal cavities, supplying oxygenated blood to the abdominal organs and lower limbs

## 1. Anterior Vena Cava

- Large vein that enters the right atrium of the heart on the superior end, it brings deoxygenated blood from the upper extremities and head back to the heart

## 1. Posterior Vena Cava

- Large vein that enters the right atrium of the heart coming from the inferior portion of the body, it brings deoxygenated blood from the lower extremities and abdominal organs back to the heart

## 1. Esophagus

- Muscular tube found on the dorsal side of trachea
- Carries food from mouth to stomach

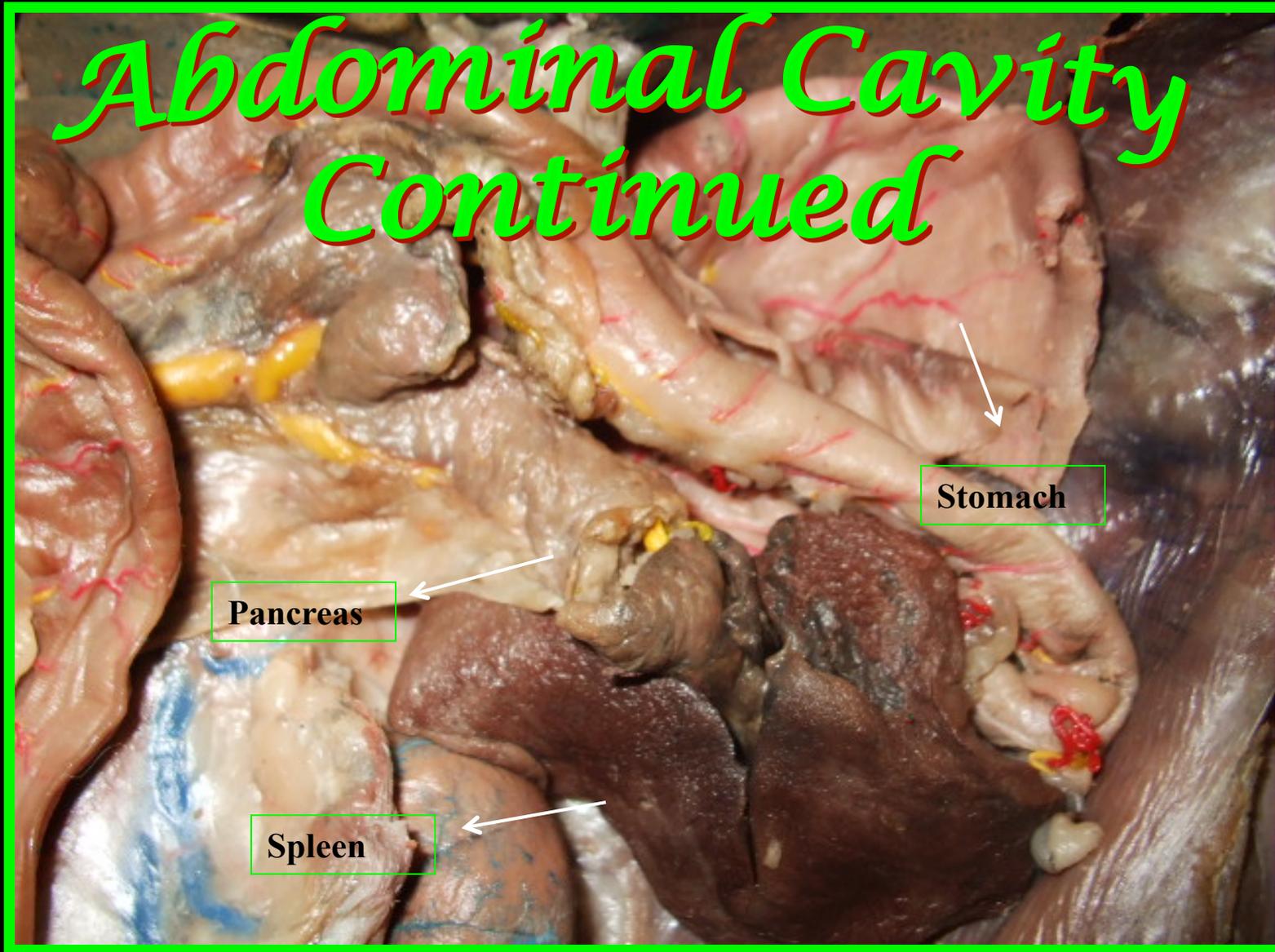
## 1. Stomach

- Storage sac for food at distal end of esophagus
- Continues the physical break down of food
- Initiates the chemical break down of proteins
- **Cardiac Valve** – valve at the top of the stomach that regulates the movement of food from the esophagus into the stomach
- **Pyloric Valve** - valve at the bottom of the stomach that regulates the movement of food from the stomach into the small intestine

## 1. Liver

- Largest internal organ, found directly inferior to the diaphragm
- Secrets digestive enzymes
- Aids in fat digestion
- Filters and stores blood
- Detoxifies drugs and alcohol

# Abdominal Cavity Continued

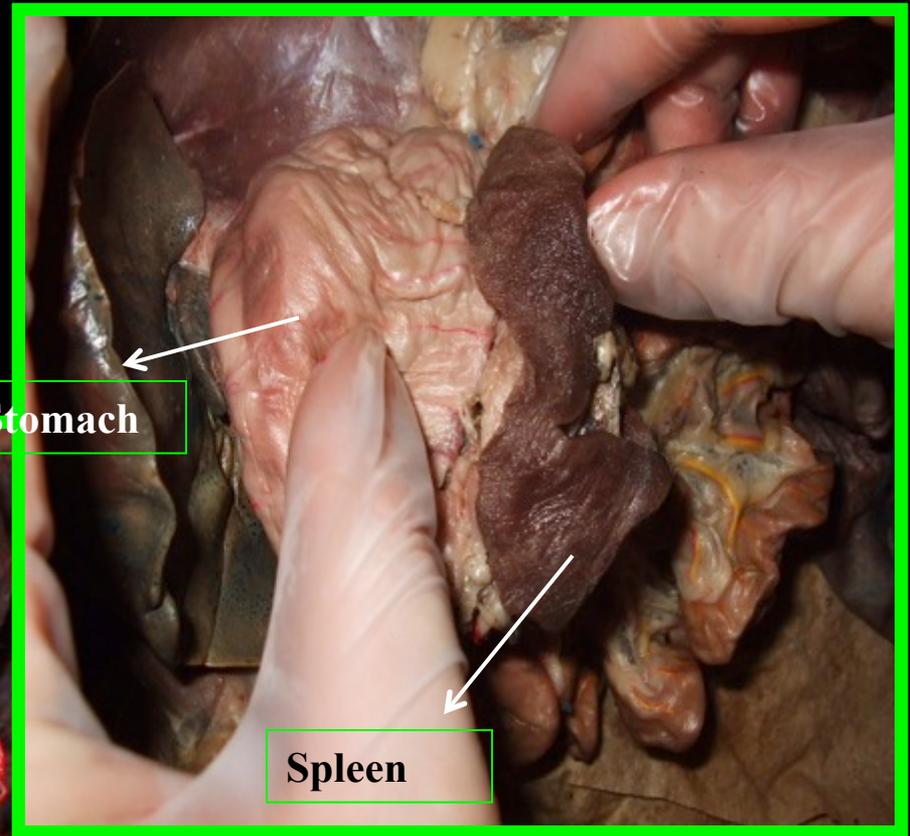
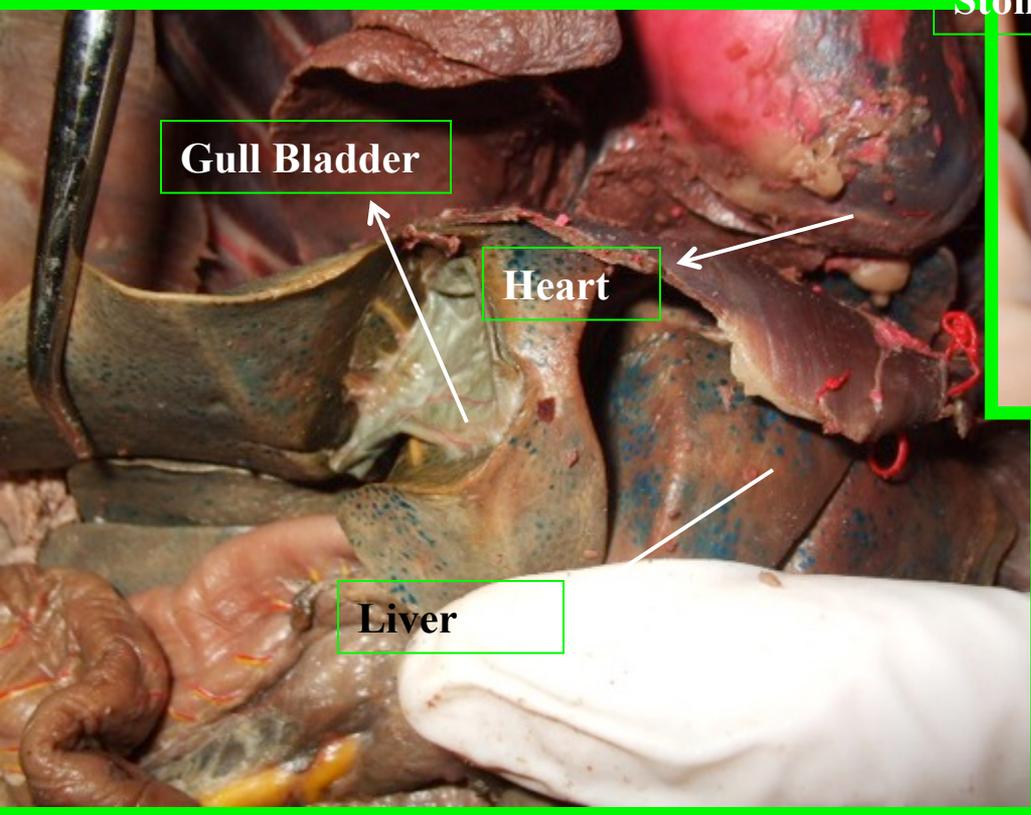


Stomach

Pancreas

Spleen

# Abdominal Cavity Cont.



## 1. Pancreas

- Lymph like gland located along the duodenum and the lower stomach
- Produces insulin to help control body sugar
- Secret various digestive enzymes
- Helps neutralize stomach acid

## 1. Spleen

- Large glandular organ hanging on the left side of the abdominal cavity
- Helps filter blood, store platelets, and produce white blood cells

## 1. Gall Bladder

- Sac located within liver
- Stores bile

# Small Intestines

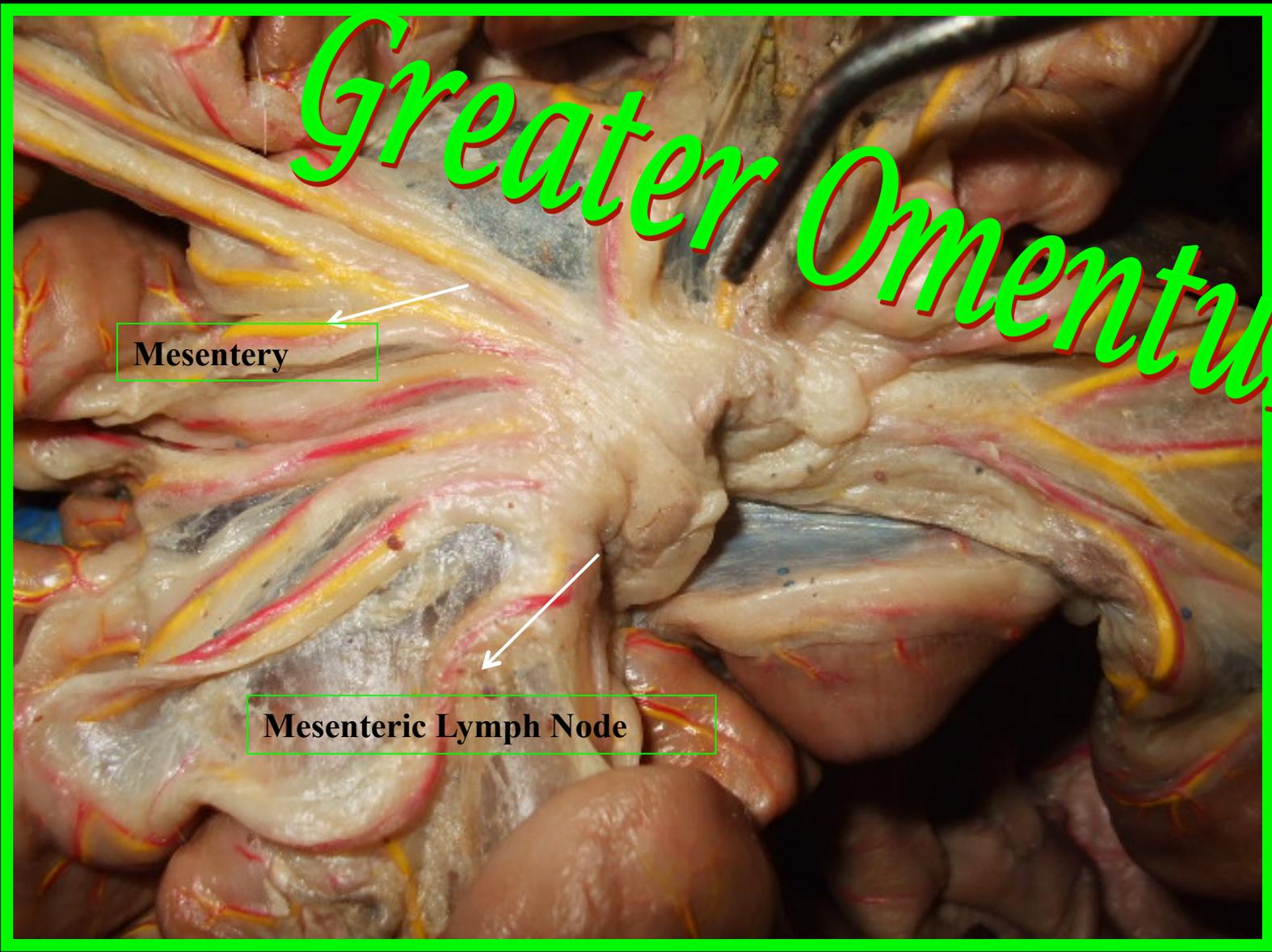
Small Intestines



# Greater Omentum

Mesentery

Mesenteric Lymph Node



## 1. Small Intestines

- Comprised of the duodenum (1<sup>st</sup> third), the jejunum (middle third), and the ileum (last third)
- Initiate the digestion of fats
- Function is to absorb nutrients from food
- **Mesentery** – loops of connective tissue that anchor the small intestine in place, they contain the hepatic portal vessels and numerous lymph nodes
- **Iliocecal valve** – valve that controls the flow of food from the small into the large intestine

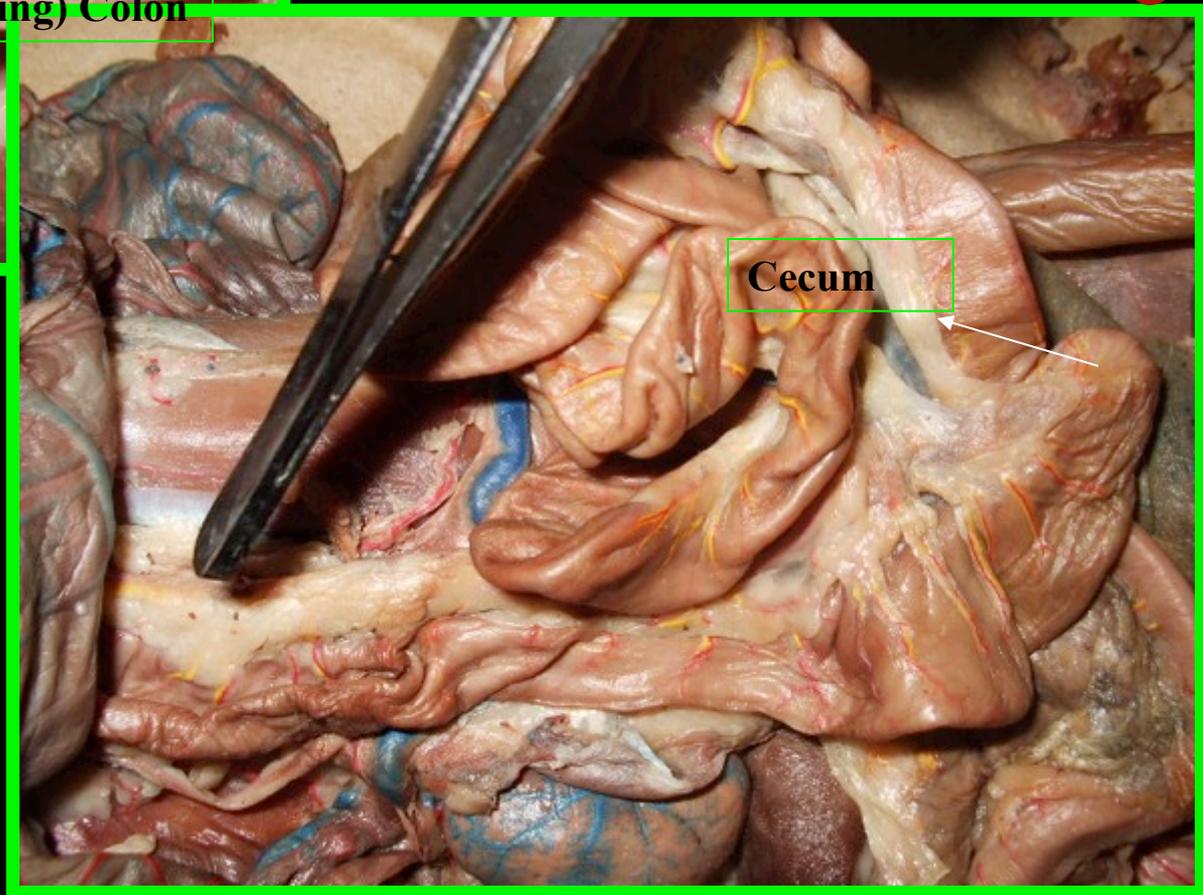
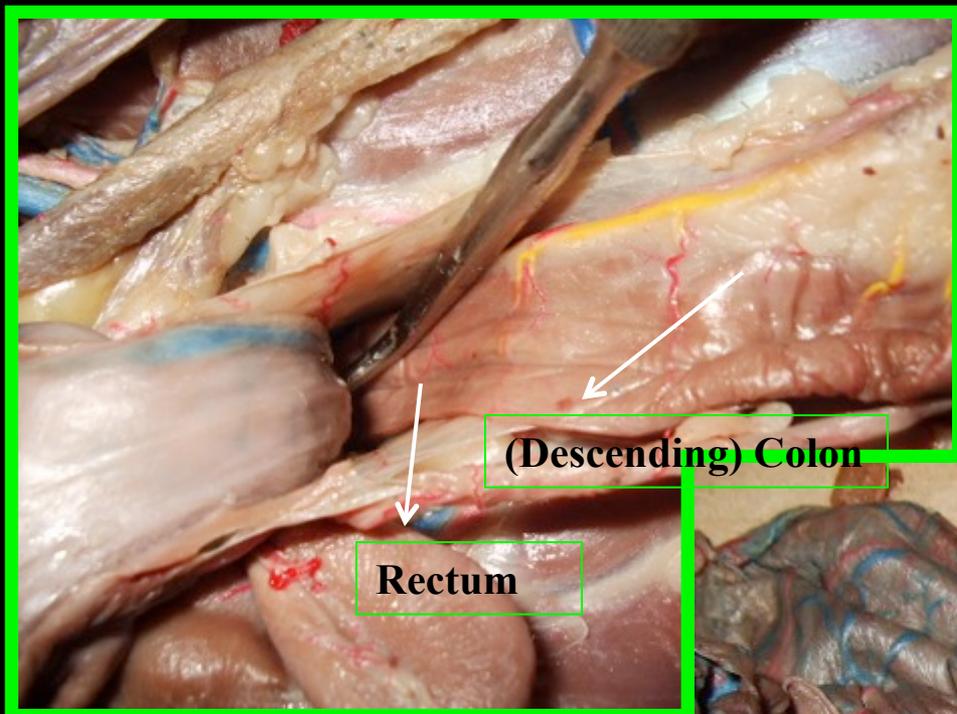
## 1. Greater Omentum

- Double layered sheet of connective tissue and adipose enclosing abdominal organs
- Protects and insulates abdominal organs

## 1. Mesenteric Lymph Node

- Filters leaked body fluid, viruses, bacteria, and debris

# Large Intestines



## 1. Large Intestine

- Comprised of: cecum, ascending, transverse, and descending colon, rectum, and anus
- Absorbs excess water from food

## 1. Rectum

- Last couple inches of the large intestines
- Storage and elimination of solid waste
- **Anal sphincter** – muscular valve that controls the flow of solid waste from the body

# Abdominopelvic Cavity Overview

Liver

Small Intestines

Large Intestine

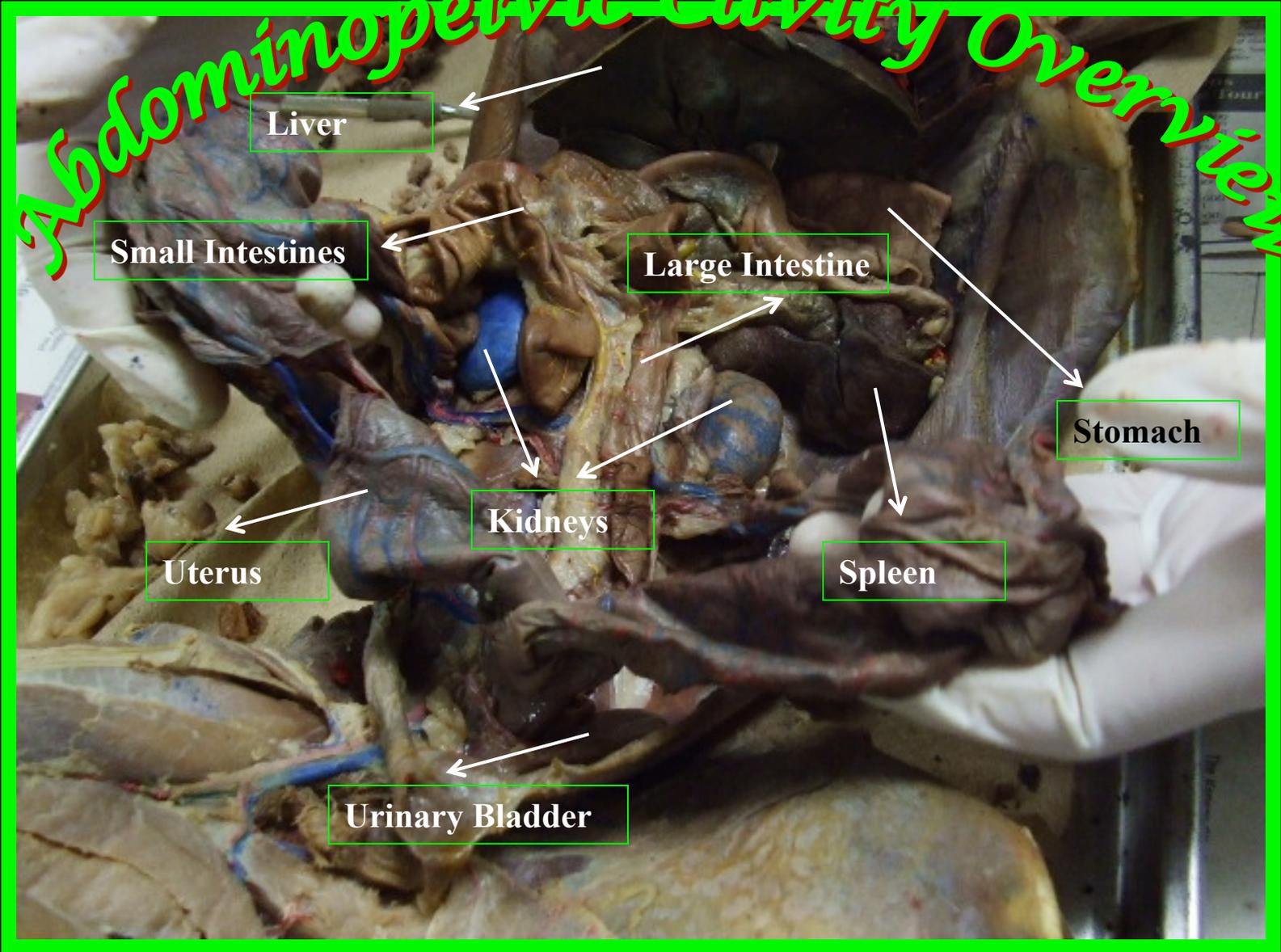
Stomach

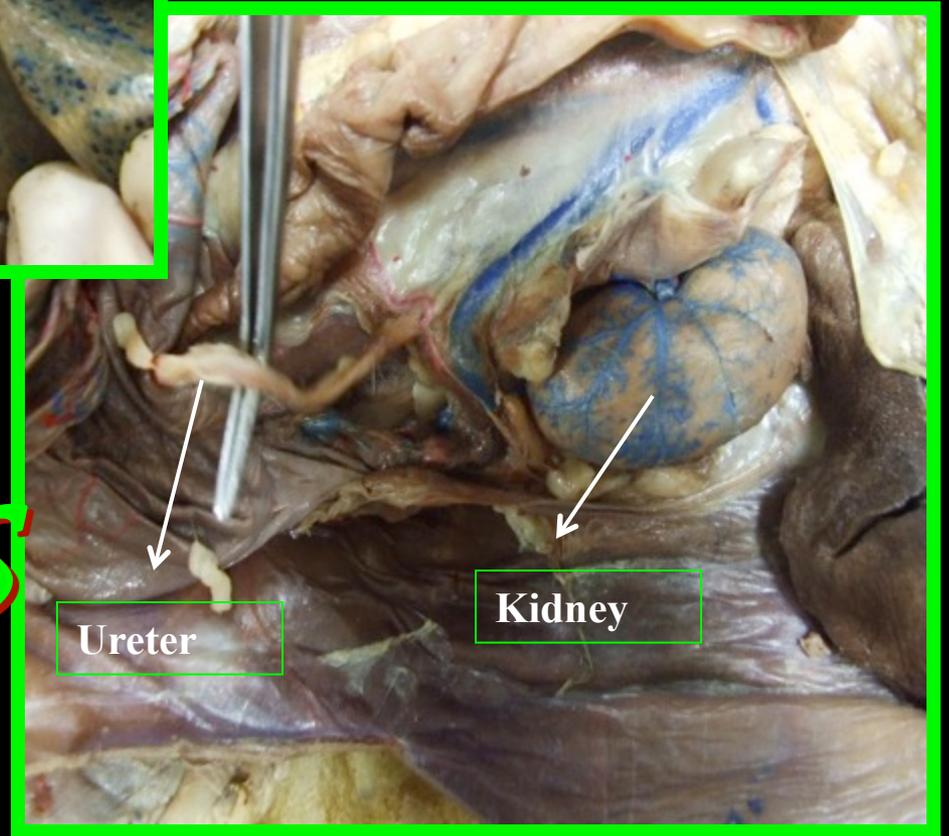
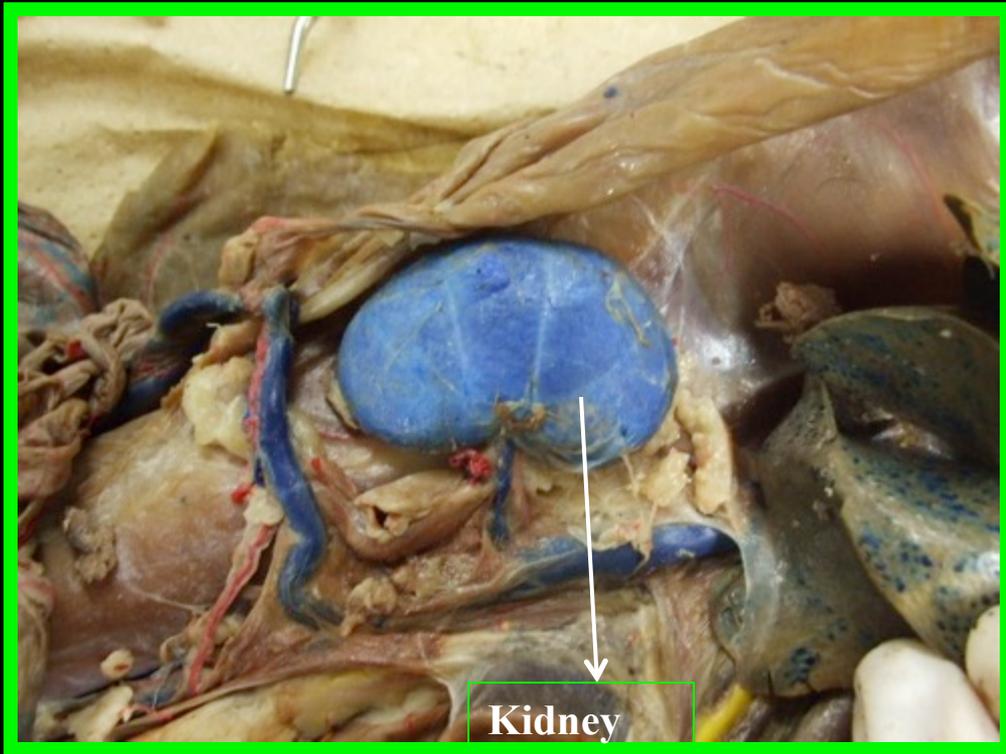
Kidneys

Uterus

Spleen

Urinary Bladder





# *Kidneys*

# Reproductive and Urinary Systems



Uterus

Ureter

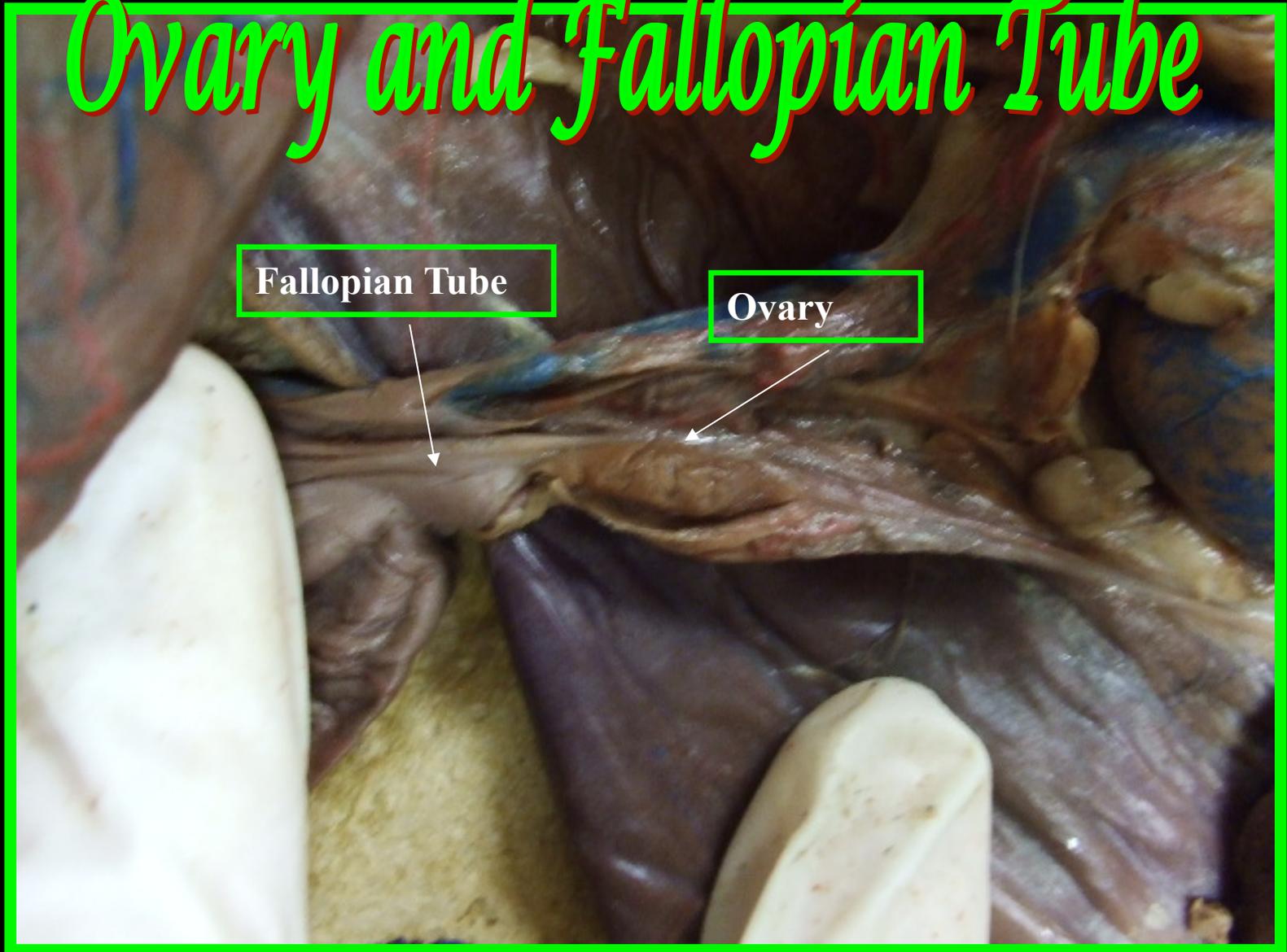
Urethra

Urinary Bladder

# Ovary and Fallopian Tube

Fallopian Tube

Ovary



## 1. Kidney

- Large bean shaped organ along dorsal surface of abdominal cavity
- Filters blood and produces urine

## 1. Ureter

- Tube carrying urine from the kidney to the bladder

## 1. Urinary Bladder

- Muscular sac like organ that stores urine

## 1. Urethra

- Tube carrying urine from the urinary bladder to outside the body, in males it also carries sperm

## 1. Uterus

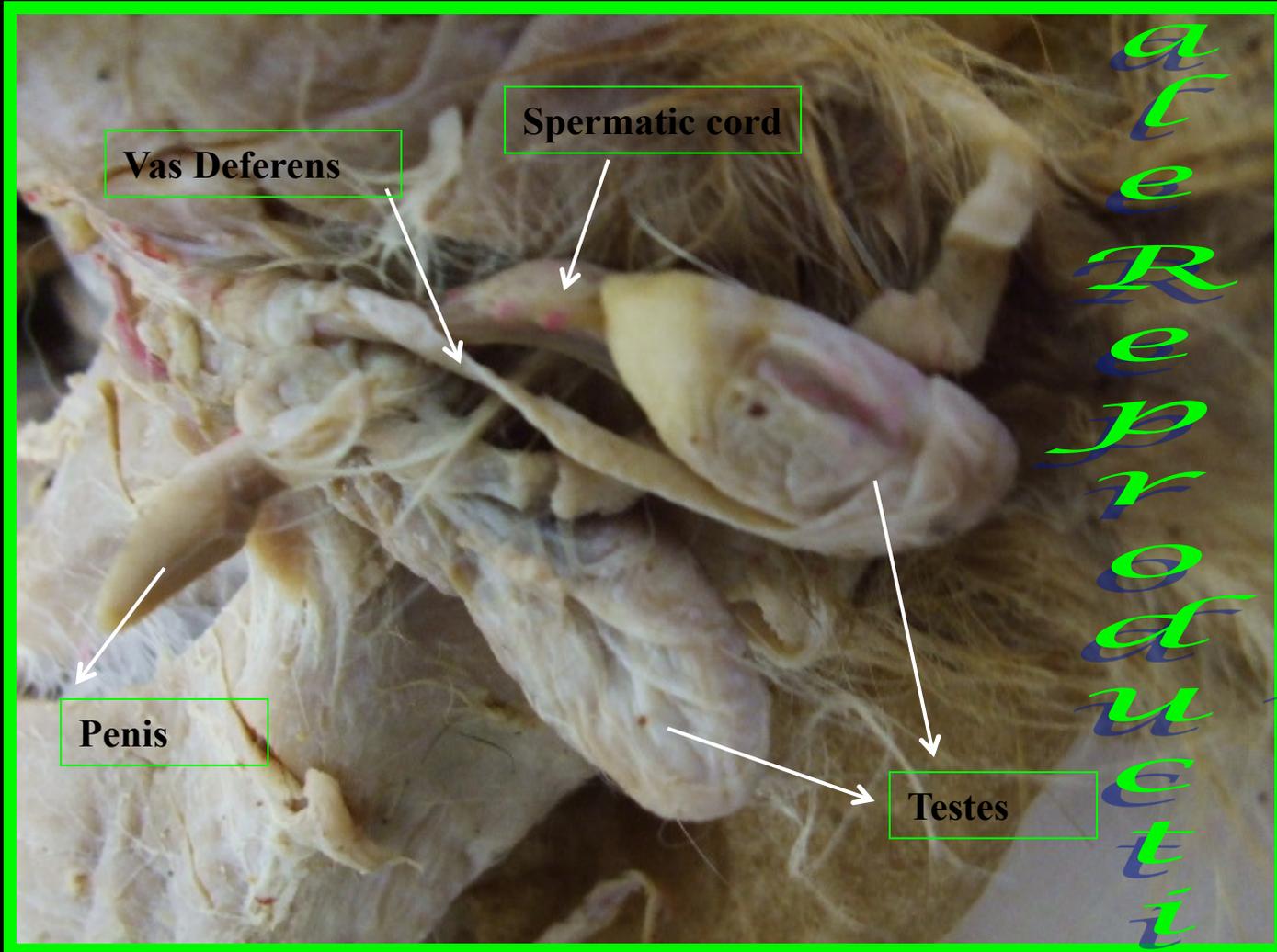
- Muscular Organ that receives, houses, and nourishes a fertilized egg, then embryo
- Contracts during child birth
- Starts at the cervix and then branches into the horns of the uterus

## 1. Ovary

- Small bean like organ at the end of the fallopian tube
- Produces egg, and female hormones

## 1. Vagina

- Muscular tube that begins at the external genital opening and ends at the cervix, which is the opening to the uterus
- Accepts the male penis during intercourse



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## 1. Penis

- Delivers sperm to female
- Releases urine from male body

## 1. Testis

- Found within scrotum
- Produces sperm
- Produces testosterone

## 1. Spermatic cord

- Combination of tubing entering the testes from the superior surface
- **Vas Deferens** – tube carrying live sperm to the urethra before ejaculation, this tube is cut in a vasectomy to prevent sperm from reaching the urethra – thereby sterilizing the male

# BABIES

