

# Introduction to the digestive system and abdominal cavity

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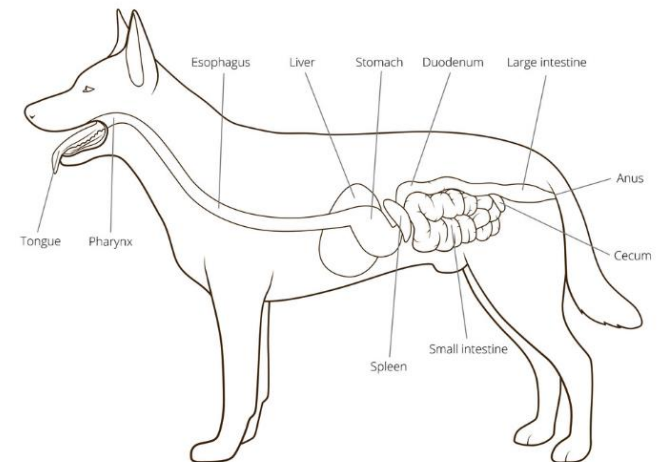
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VETS30016 / VETS90120

# Intended learning outcomes

- Describe the general design of the digestive system
- Identify the regions of the abdomen
- Describe the external and internal surface features of the abdomen
- Describe the structure and function of the peritoneum

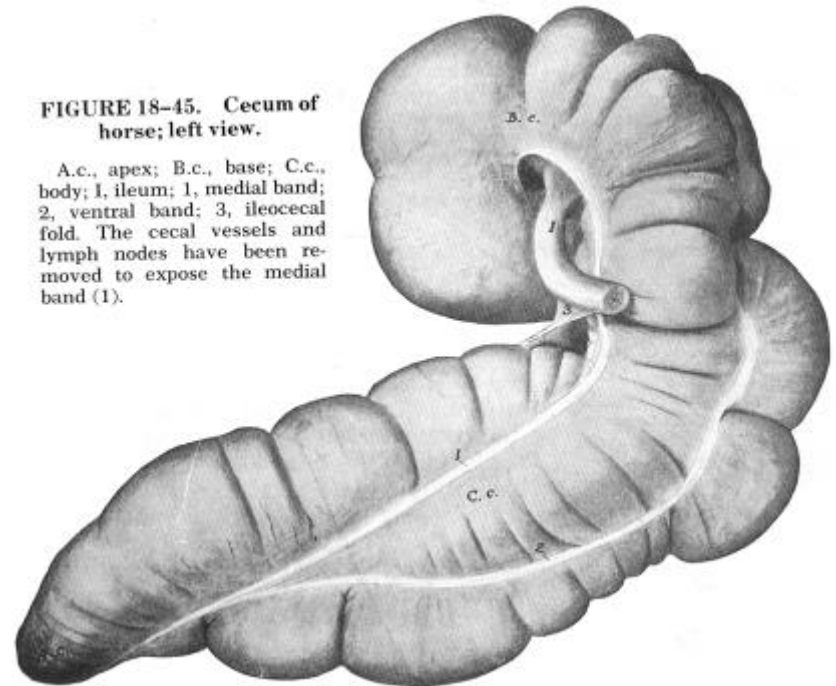


# Why is anatomy important?

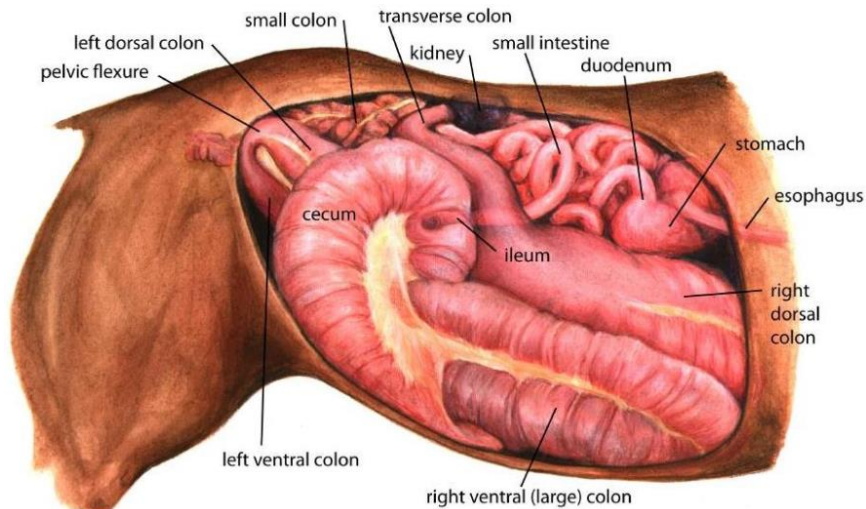
- Surface anatomy
- Gross anatomy
- Microscopic anatomy (histology)
- Example: equine caecum

FIGURE 18-45. Cecum of horse; left view.

A.c., apex; B.c., base; C.c., body; I, ileum; 1, medial band; 2, ventral band; 3, ileocecal fold. The cecal vessels and lymph nodes have been removed to expose the medial band (1).



# Equine caecum: surface anatomy

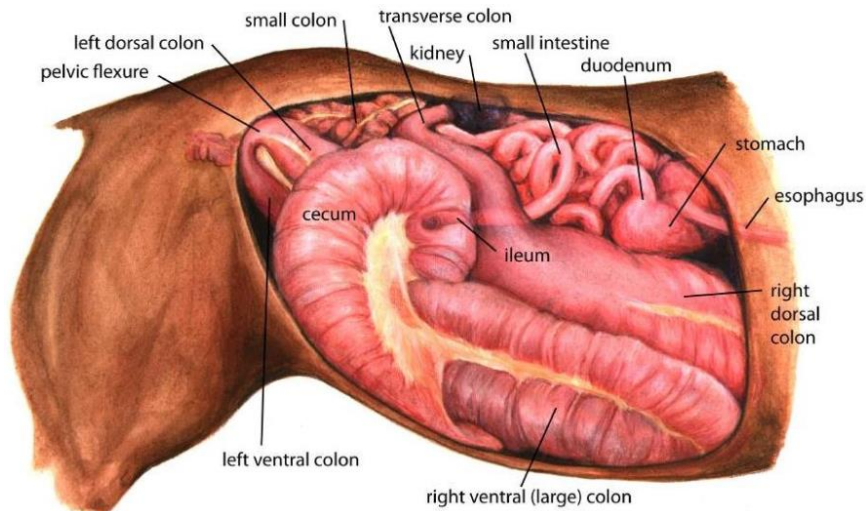


## Landmarks

Where would you place a stethoscope to listen to ileocaecal valve?



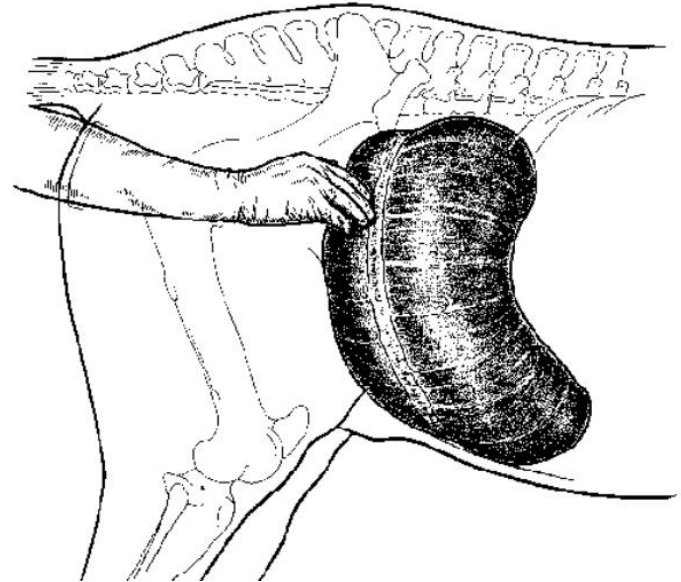
# Equine caecum: gross anatomy



## Relationships

How would you know if the caecum was in the correct position?

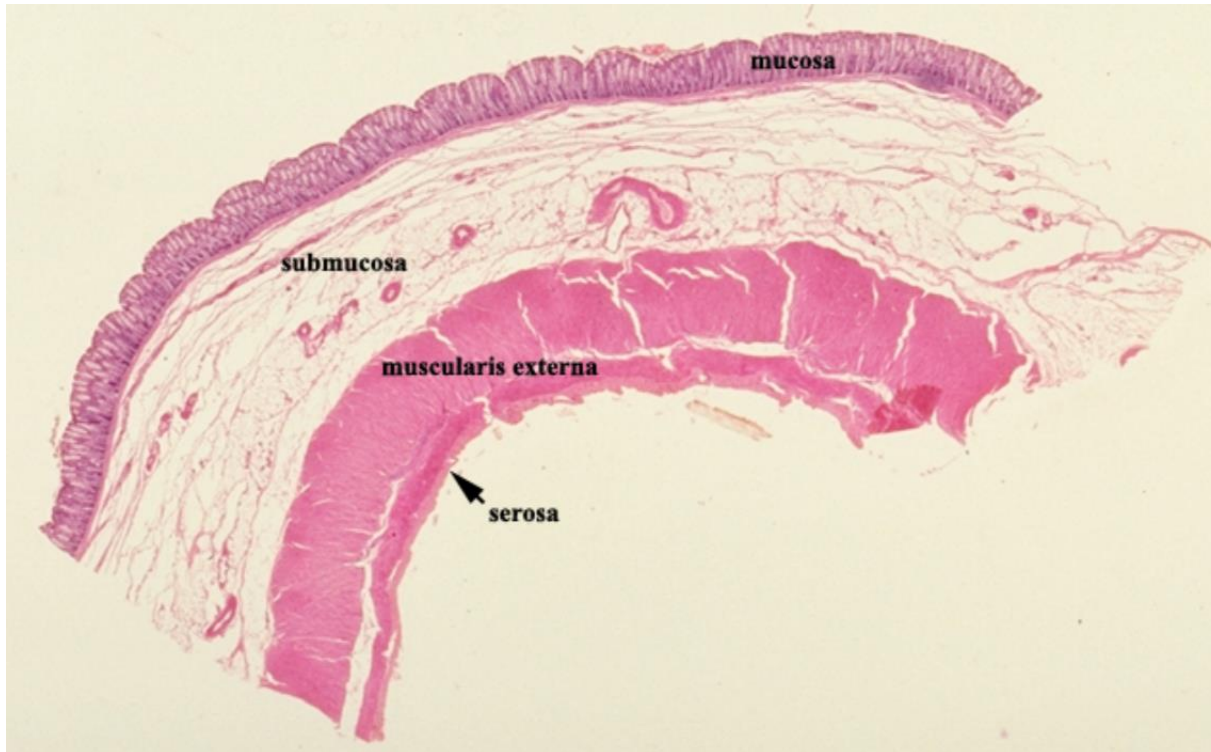
# Equine caecum: gross anatomy



## Relationships

How could you tell if the caecum was distended through rectal palpation?

# Equine caecum: histology



## Microscopic architecture

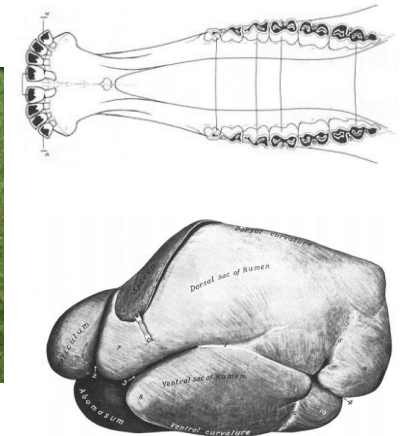
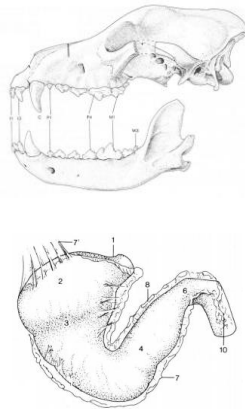
What is the function of the caecum at the cellular level?

# Digestive system functions

- Securing food
- Conducting and storing food
- Mechanical and chemical digestion
- Absorption of food
- Storage and disposal of wastes



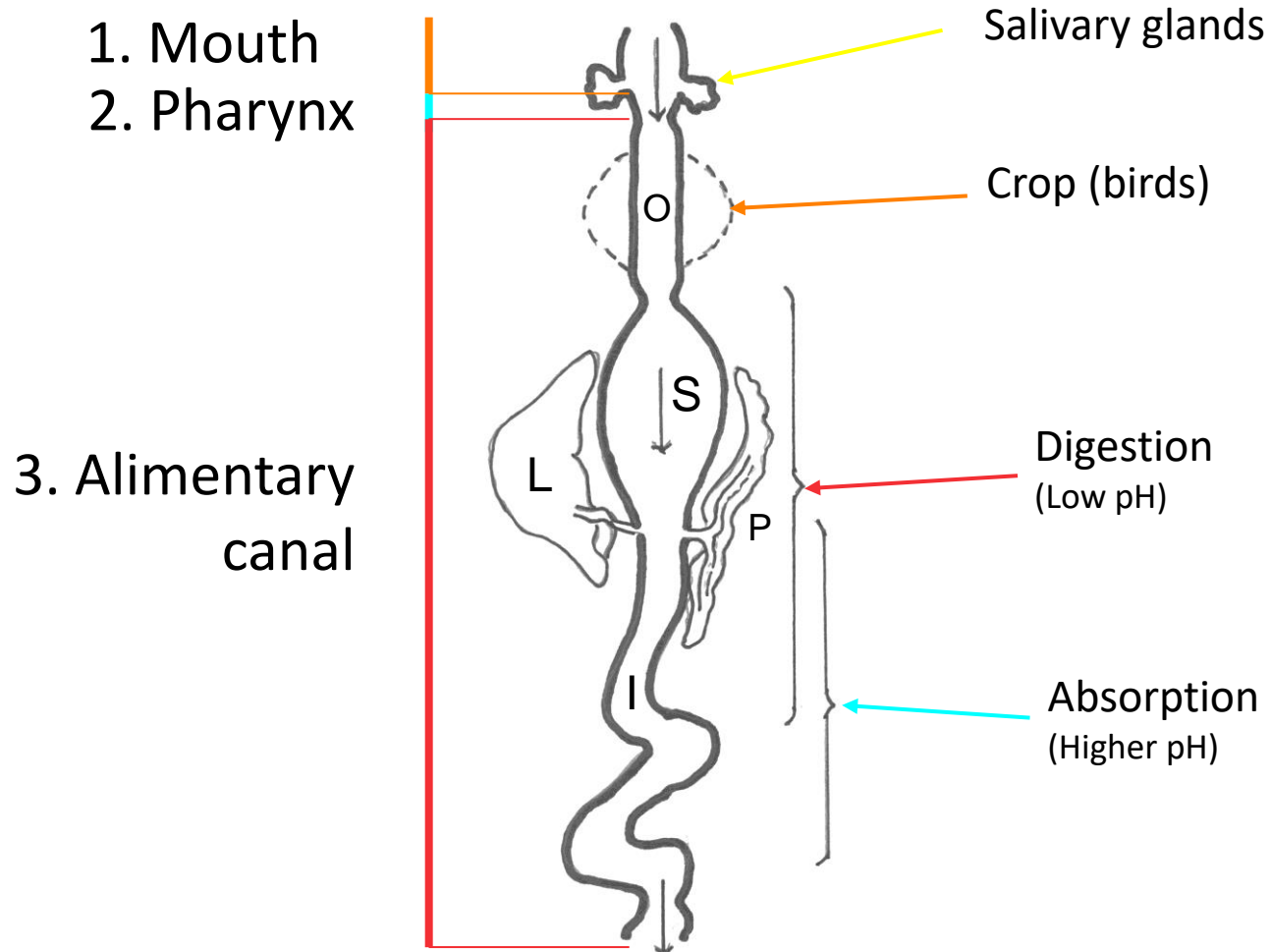
Design in different species is adapted to suit the diet





# Digestive tract

Three regions:



# Mouth

Outer vestibule & inner mouth cavity proper

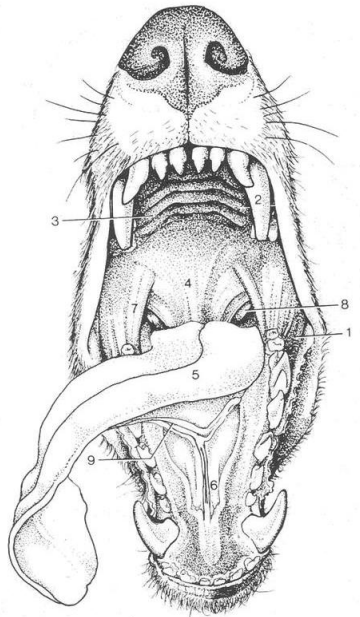
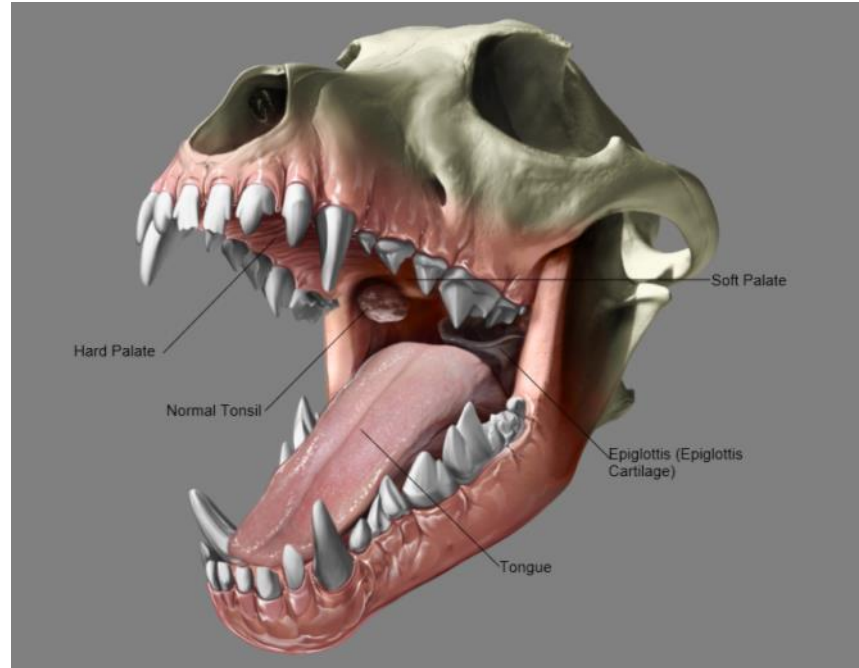


FIGURE 3-3. General view of the oral cavity of the dog.

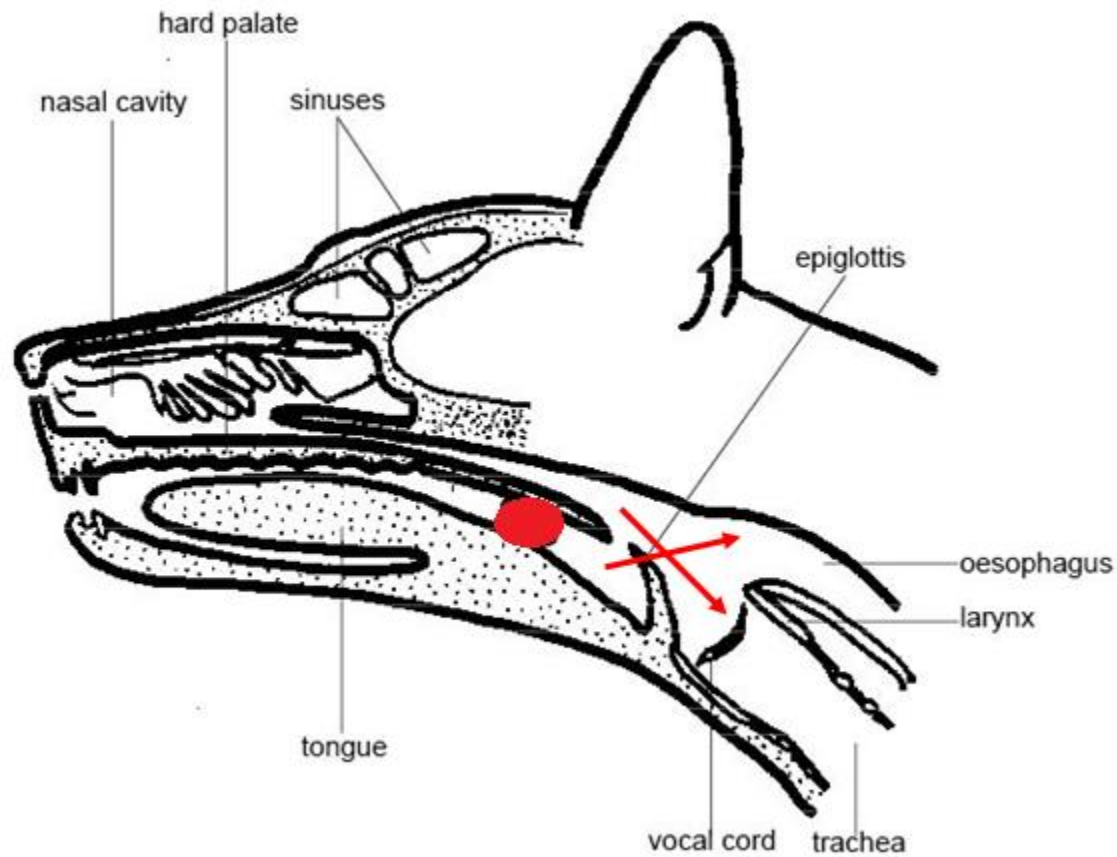
Dyce, Sack and Wensing; Textbook of Veterinary Anatomy



Diagnostic Imaging Atlas; Webster Veterinary

# Pharynx

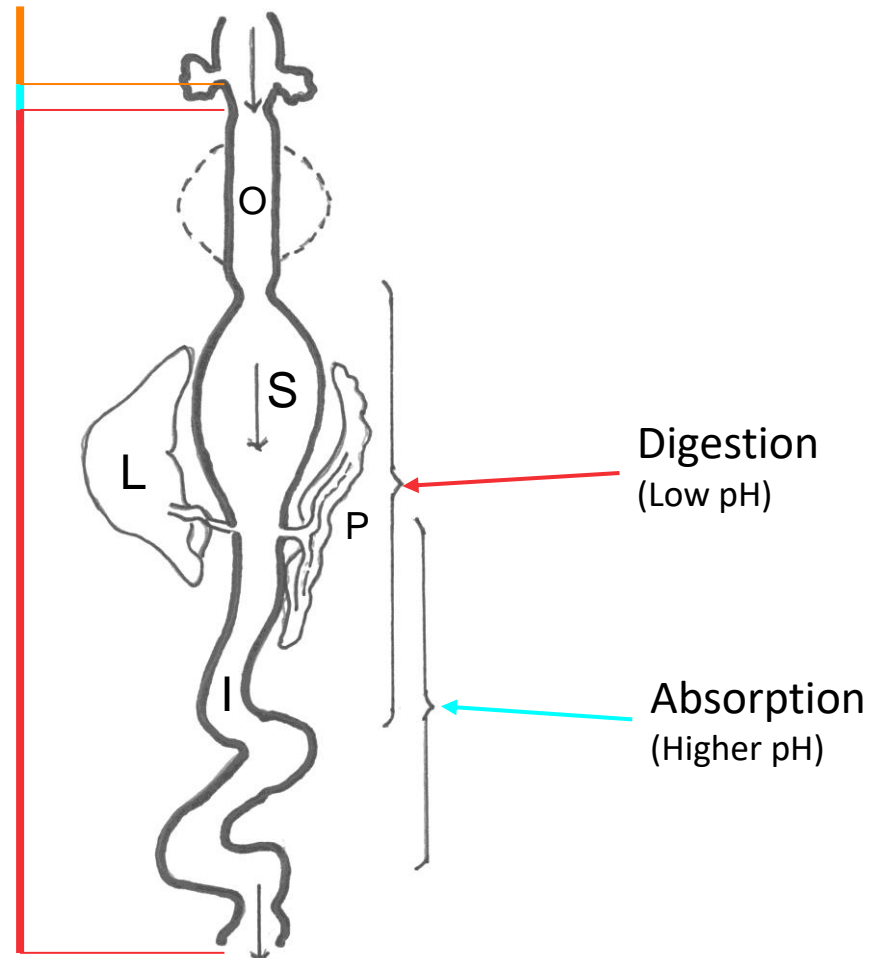
Funnel-shaped muscular tube



# Alimentary canal

Four regions:

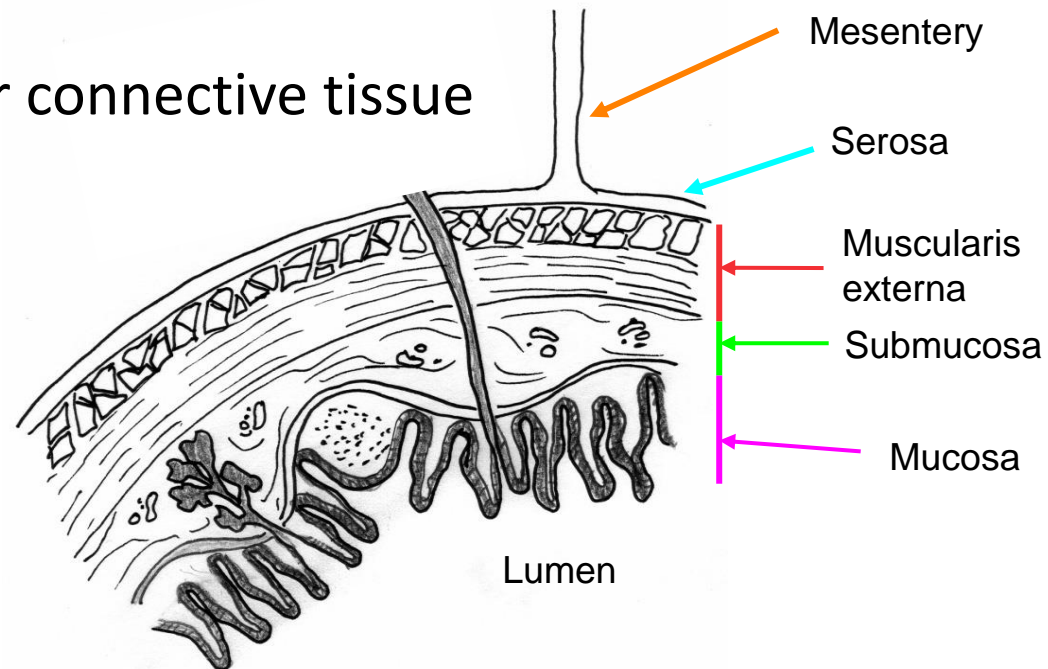
1. Oesophagus
2. Stomach
3. Small intestine
4. Large intestine
  - Rectum & anus





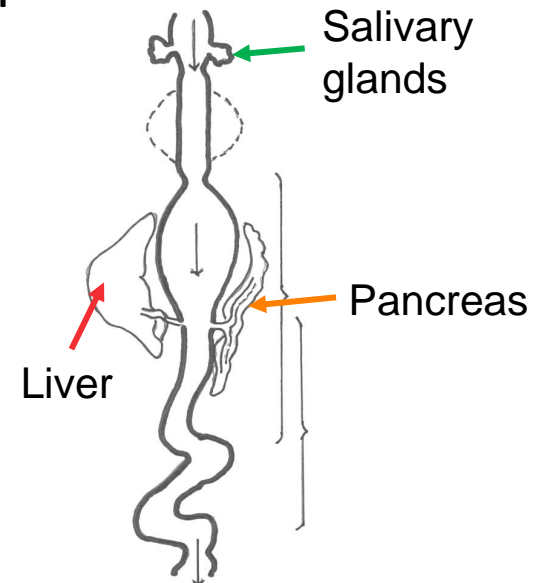
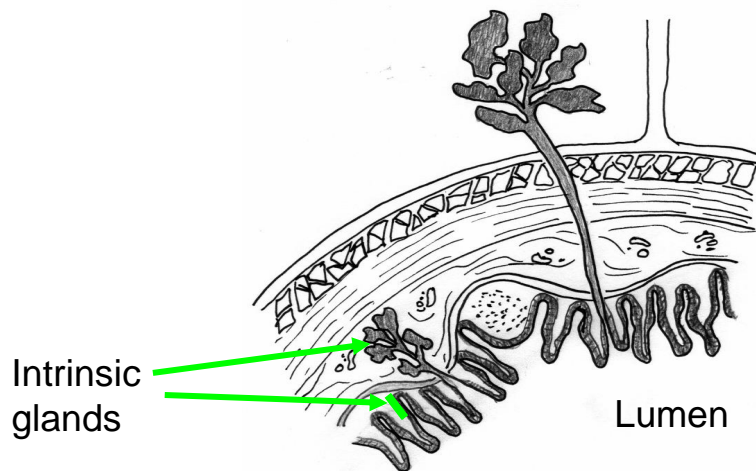
# Alimentary canal: wall structure

- Mucosa – inner lining layer
  - Transports nutrient, barrier function
- Submucosa – underlying connective tissue layer
  - Contains blood vessels and nerves
- Muscularis externa – major muscle layer
  - Mixing and peristalsis
- Serosa/adventitia – outer connective tissue
  - Visceral peritoneum



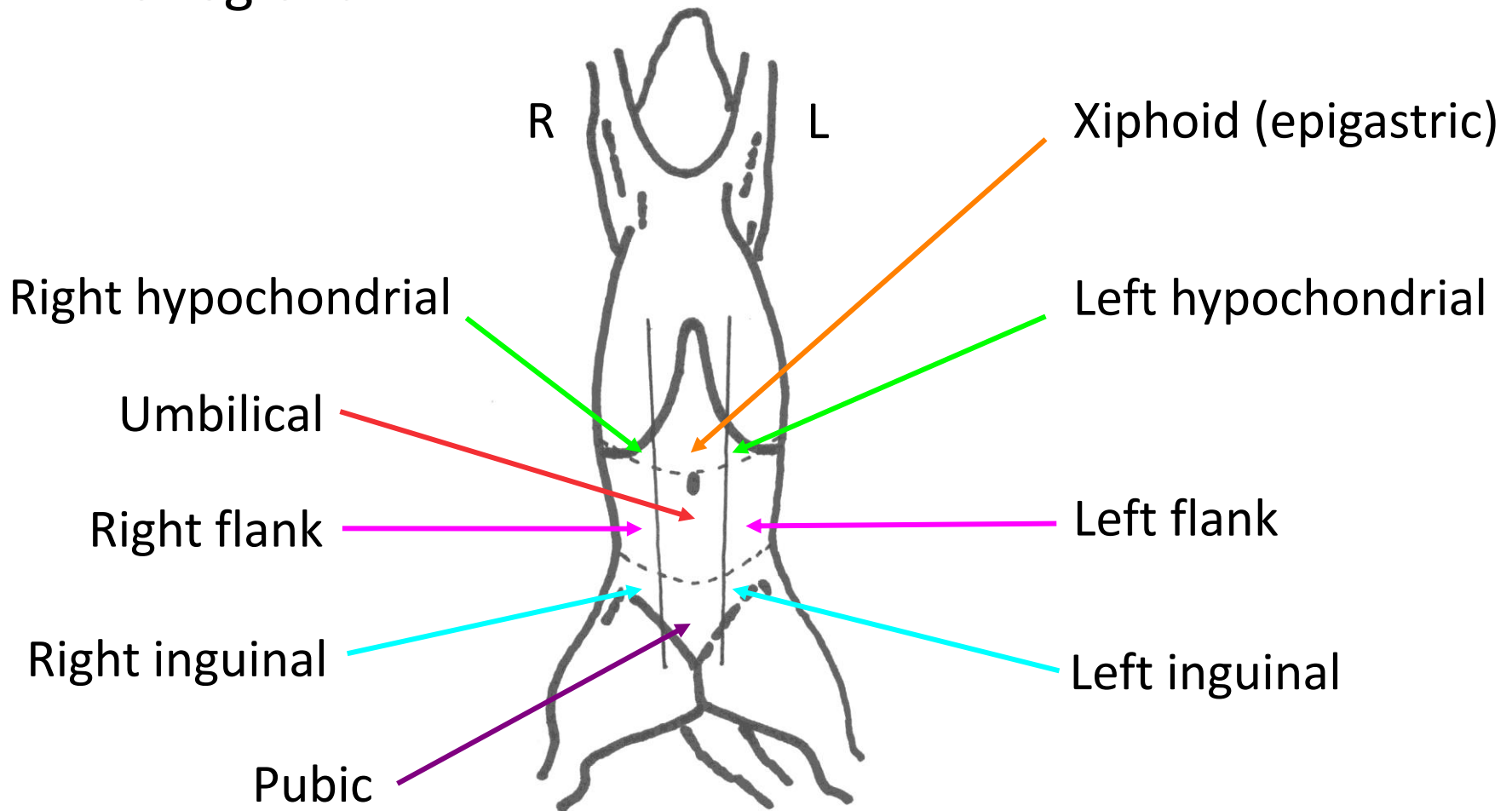
# Accessory organs & glands

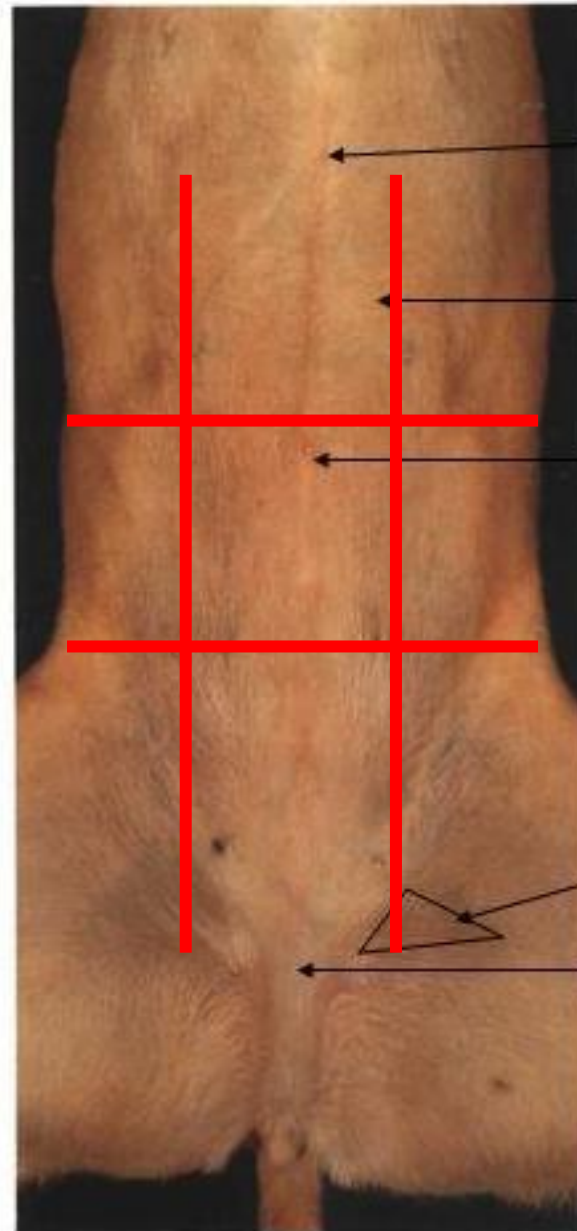
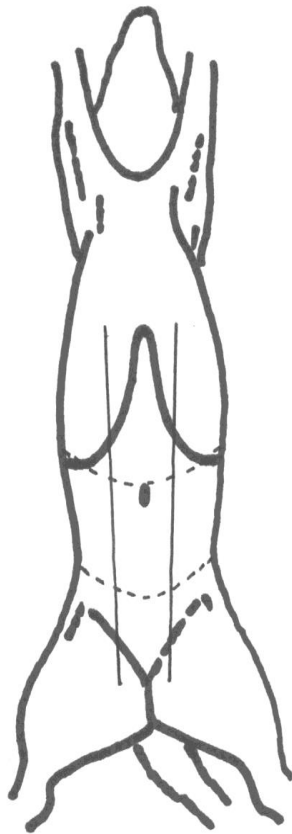
- Intrinsic glands
  - Within walls, release secretions into lumen
  - e.g. mucus, enzymes
- Extrinsic glands
  - Outside the walls, deliver secretions to lumen via ducts
  - e.g. salivary glands, pancreas, liver



# Abdominal regions

Nine regions:





Xiphoid process

Costal arch

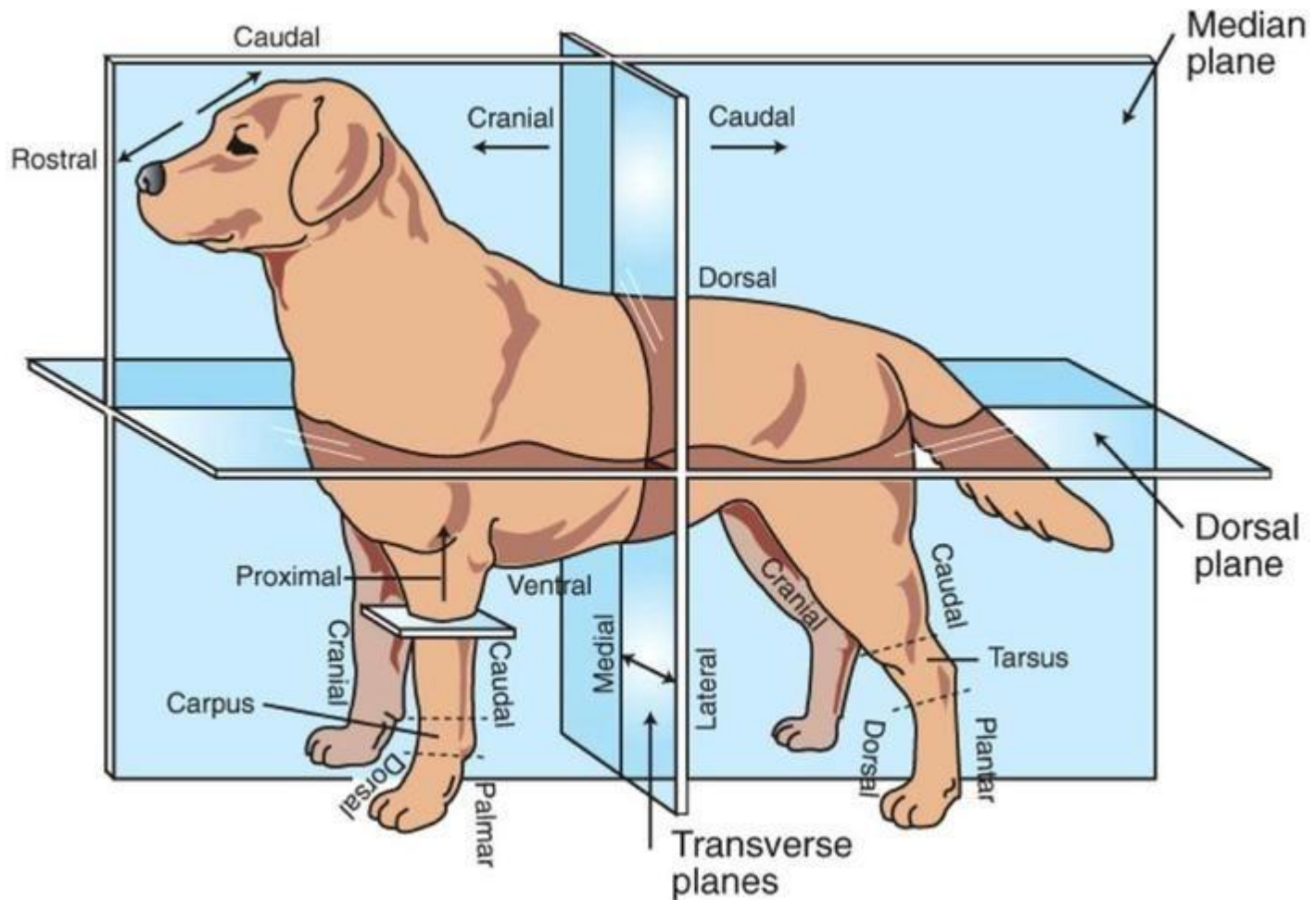
Umbilicus

Femoral triangle

Pubic brim

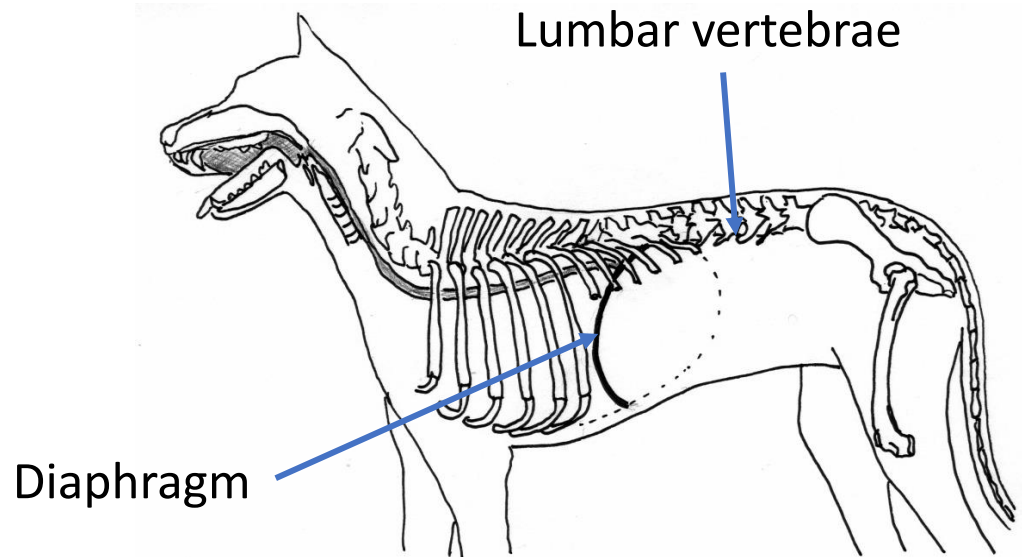


# Terminology



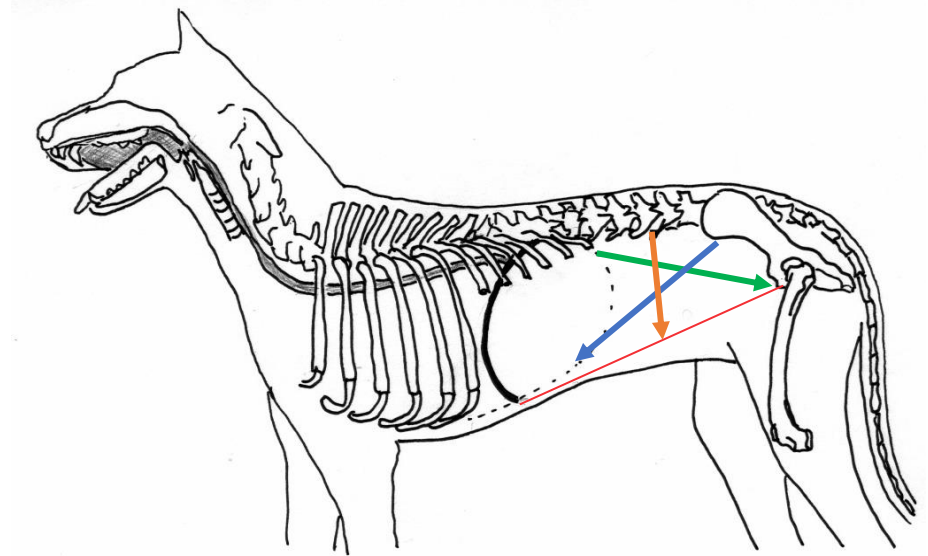
# Abdominal cavity: boundaries

- Cranial
  - Diaphragm
- Dorsal
  - Lumbar vertebrae and sublumbar muscles
  - Arms (crura) of diaphragm



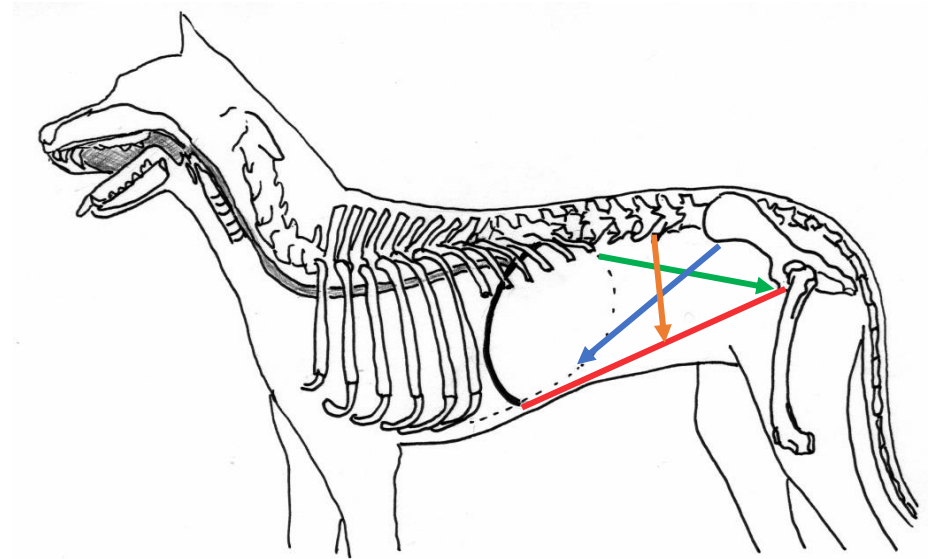
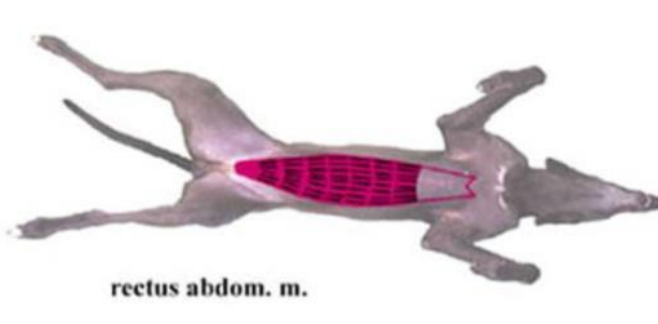
# Abdominal cavity: boundaries

- Lateral (both sides)
  - Diaphragm
  - Three muscle layers of the body wall
    - Internal and external abdominal oblique; transverse abdominal
- Part of the pelvis
  - Left and right ilium



# Abdominal cavity: boundaries

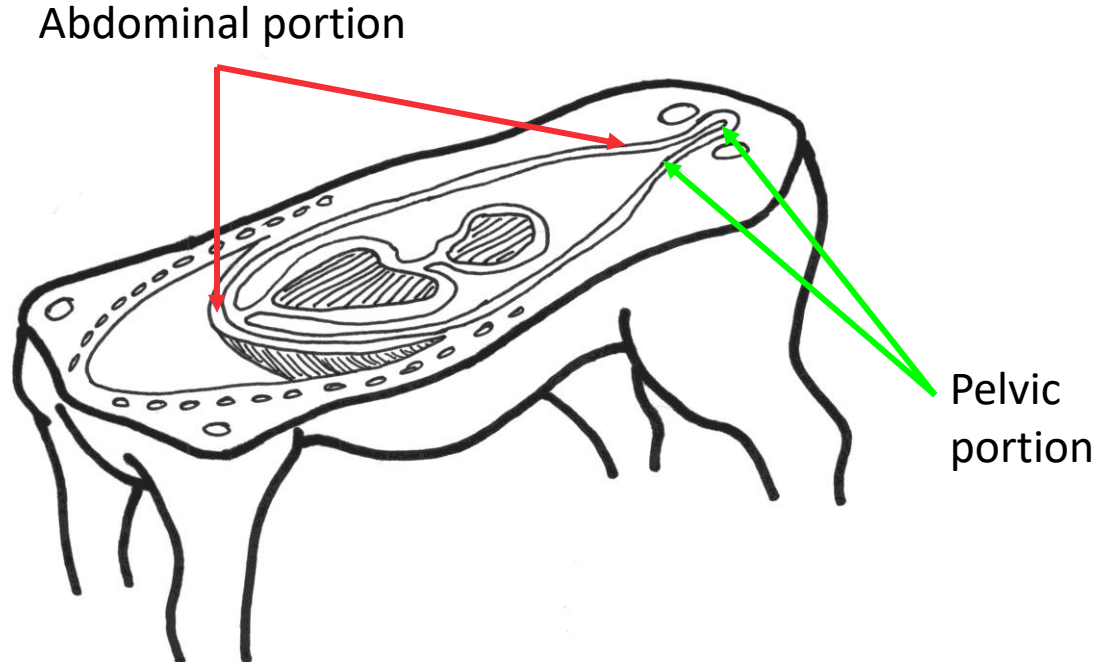
- Ventral
  - Left and right rectus abdominis muscles
- Caudal
  - Pelvic inlet





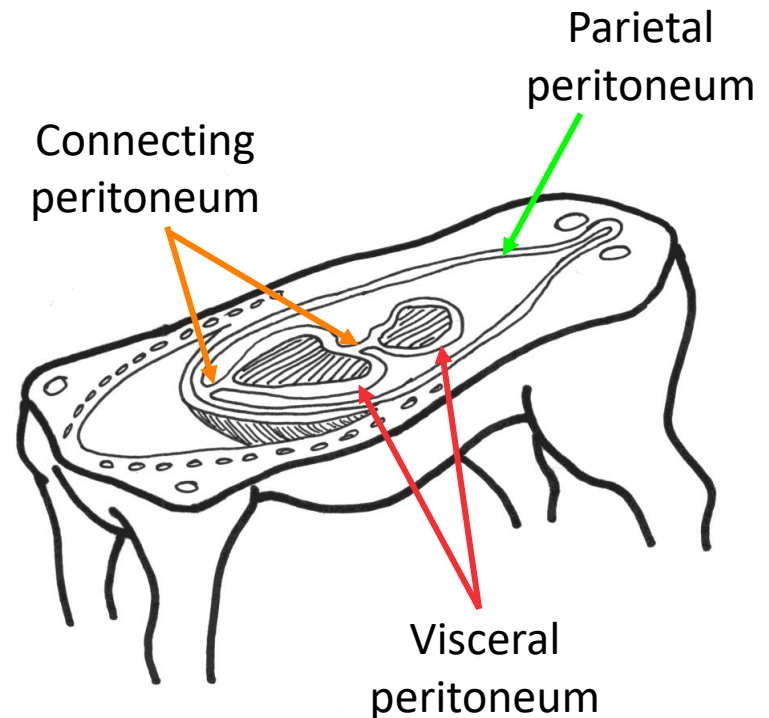
# Peritoneal cavity

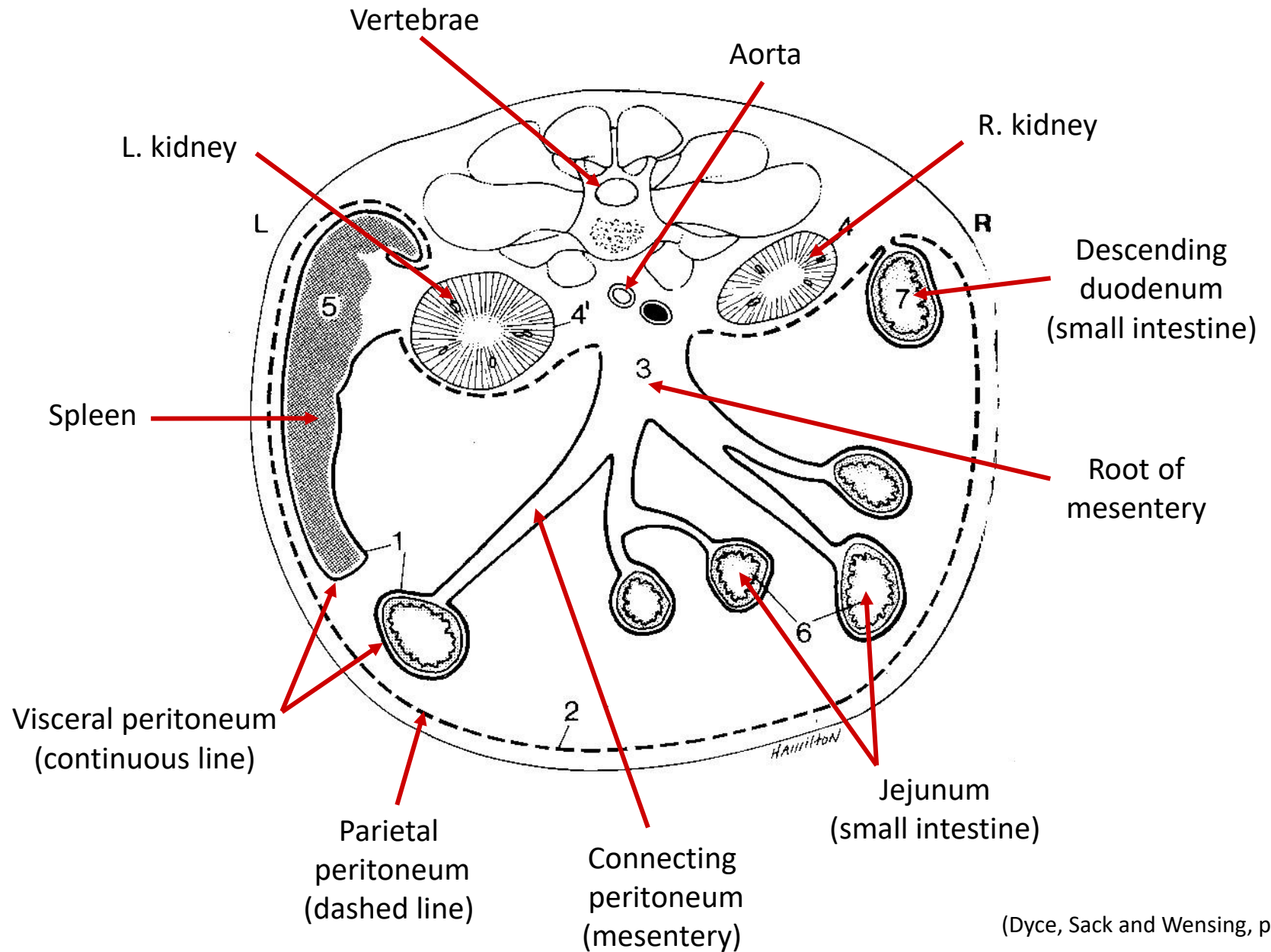
- Portion of abdomen and pelvic canal enclosed by peritoneum
- Surface area of peritoneum >> skin

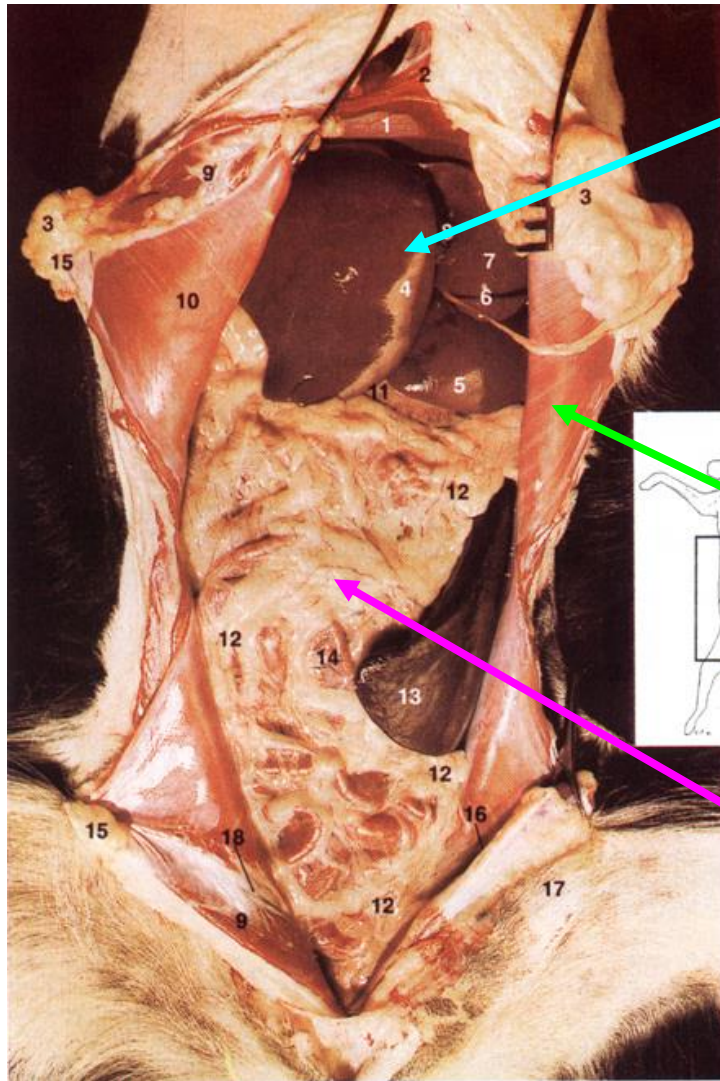


# Peritoneum

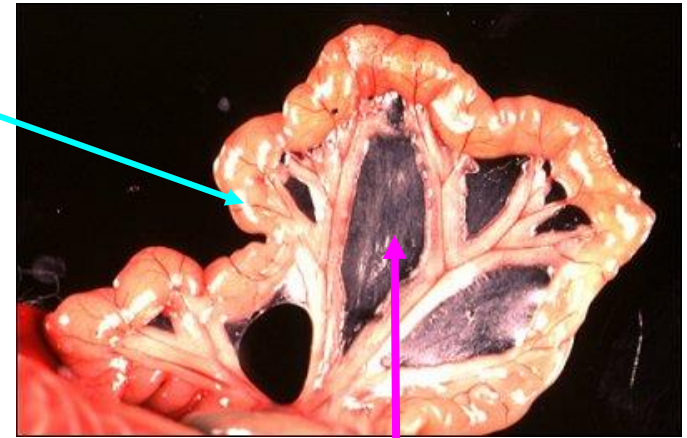
- Parietal
- Visceral
- Connecting (double layers)
  - Mesentery
  - Omentum
  - Ligaments







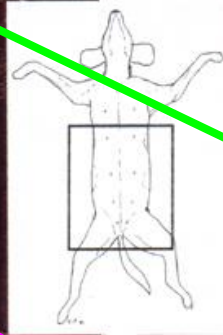
Visceral  
peritoneum



Connecting  
peritoneum  
(mesentery)

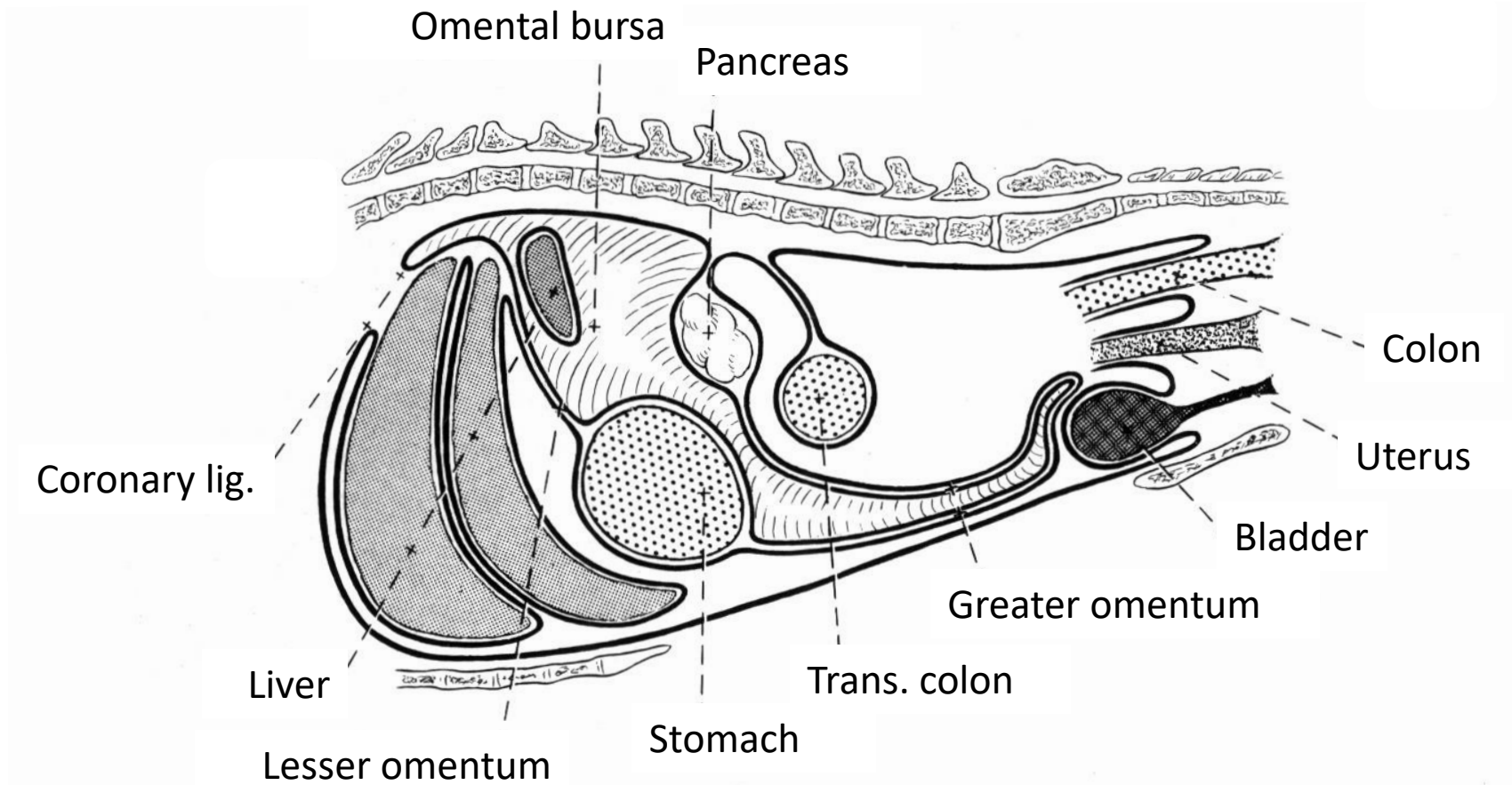
Parietal  
peritoneum

Connecting  
peritoneum  
(omentum)





# Omentum



# Omentum

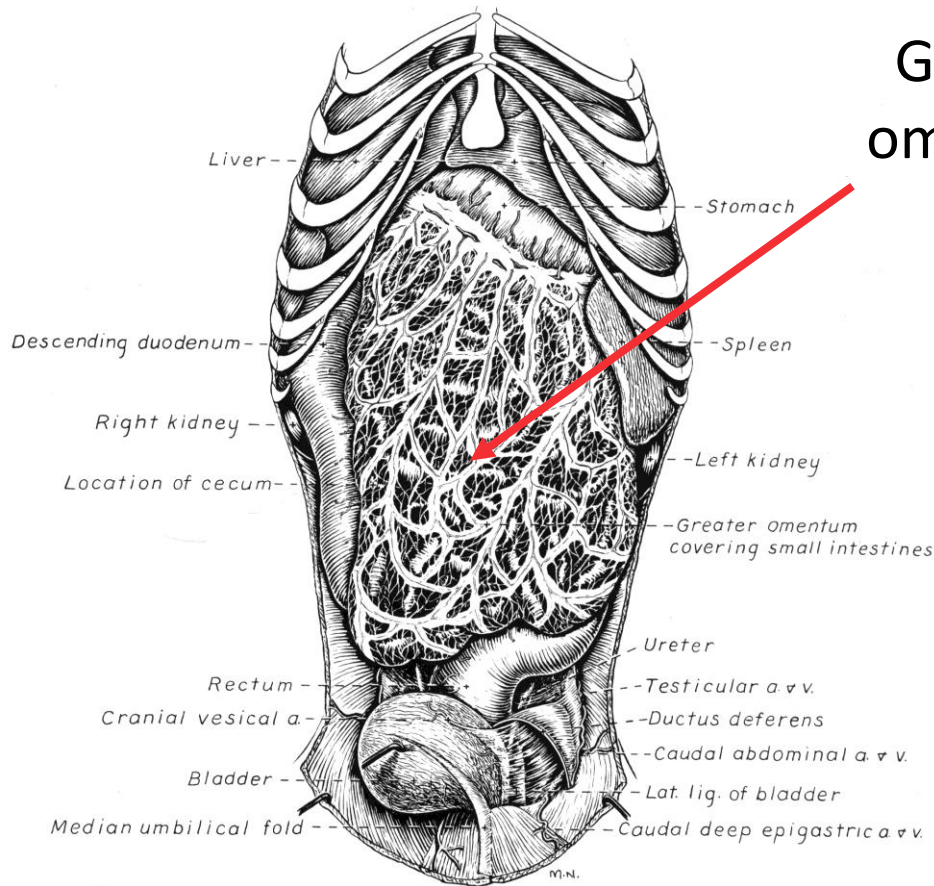
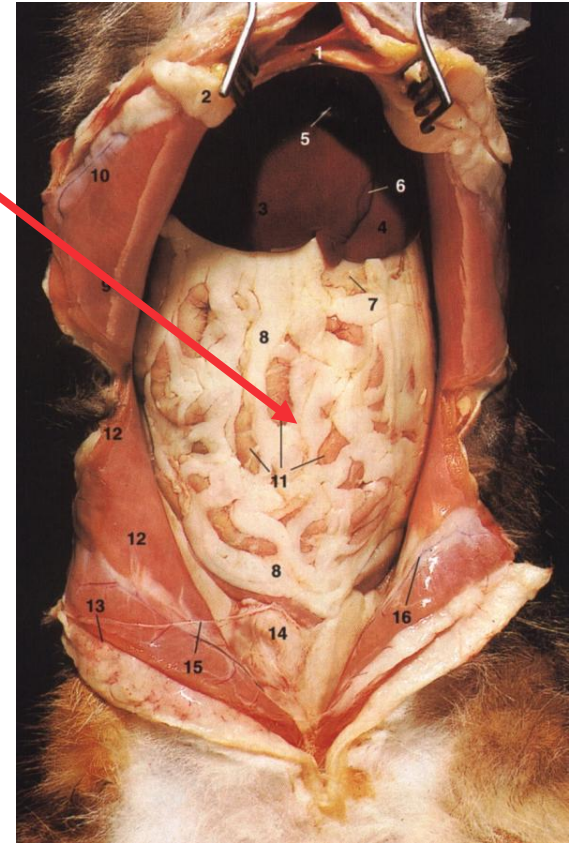


FIG. 13-11. Abdominal viscera of male dog, ventral aspect.

Greater  
omentum

Cranial



Caudal

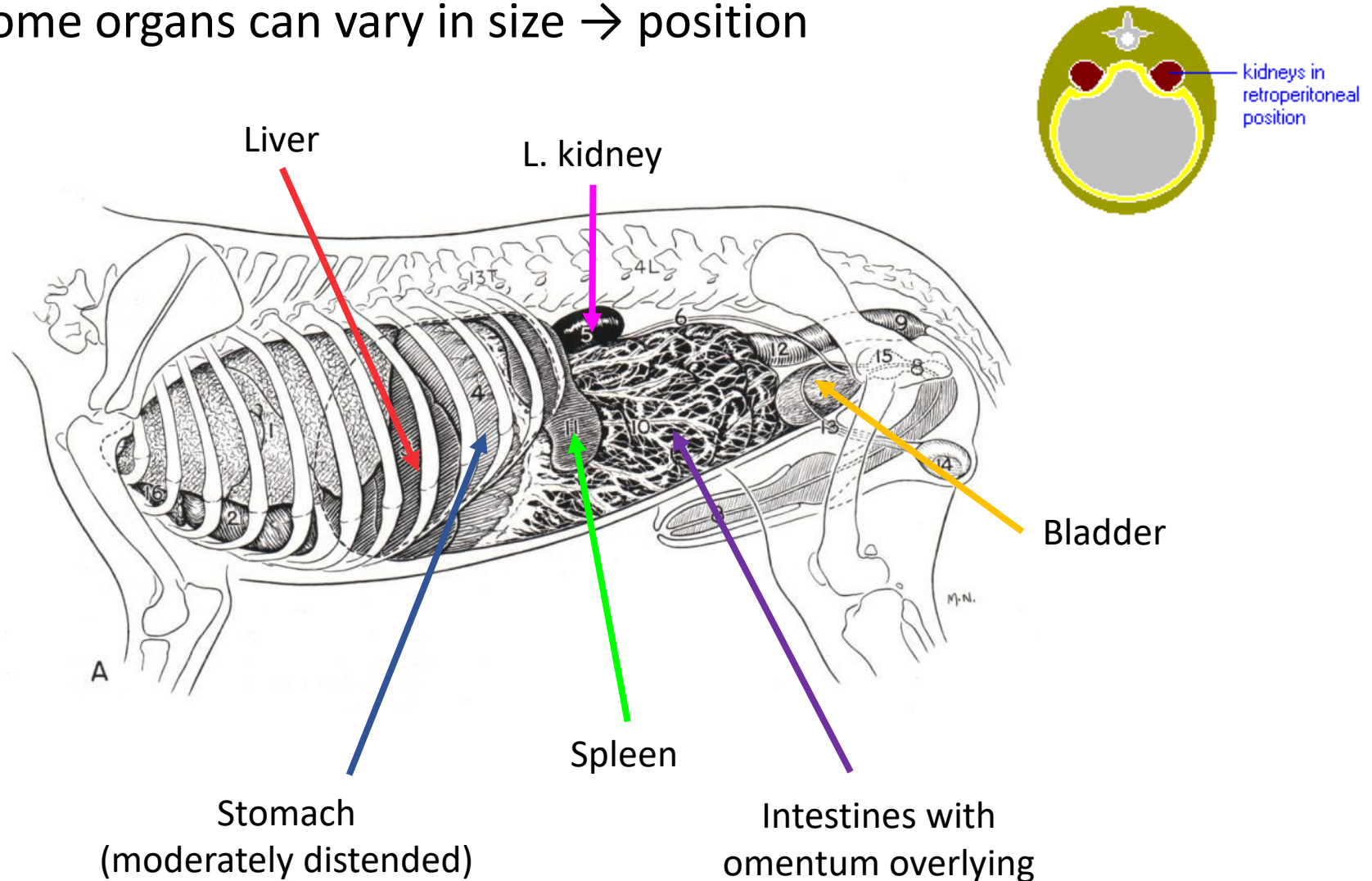
# Peritoneal fluid

- Lubrication of peritoneal cavity contents
  - Small volume: 1-2 ml in dog
- Fluid returned to vascular system via lymphatics
- Role in immune function



# Relative position of abdominal contents

Some organs can vary in size → position



# Abdominal distension





# Summary

- Describe the general design of the digestive system
- Identify the regions of the abdomen
- Describe the external and internal surface features of the abdomen
- Describe the structure and function of the peritoneum

