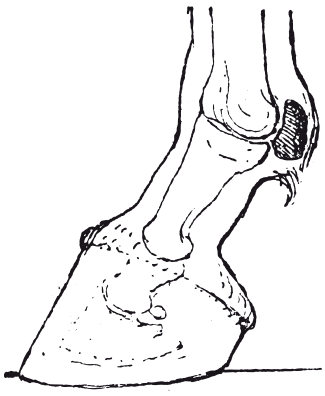
NEIGHS + NOTES

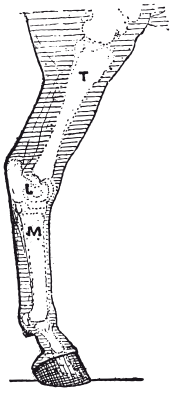
EQUINE STUDY NOTES, WORKBOOKS + GUIDES

LABELLED & INFORMATIVE

EQUINE DIAGRAMS

STUDY RESOURCE





NEIGHS & NOTES: EQUINE DIAGRAMS

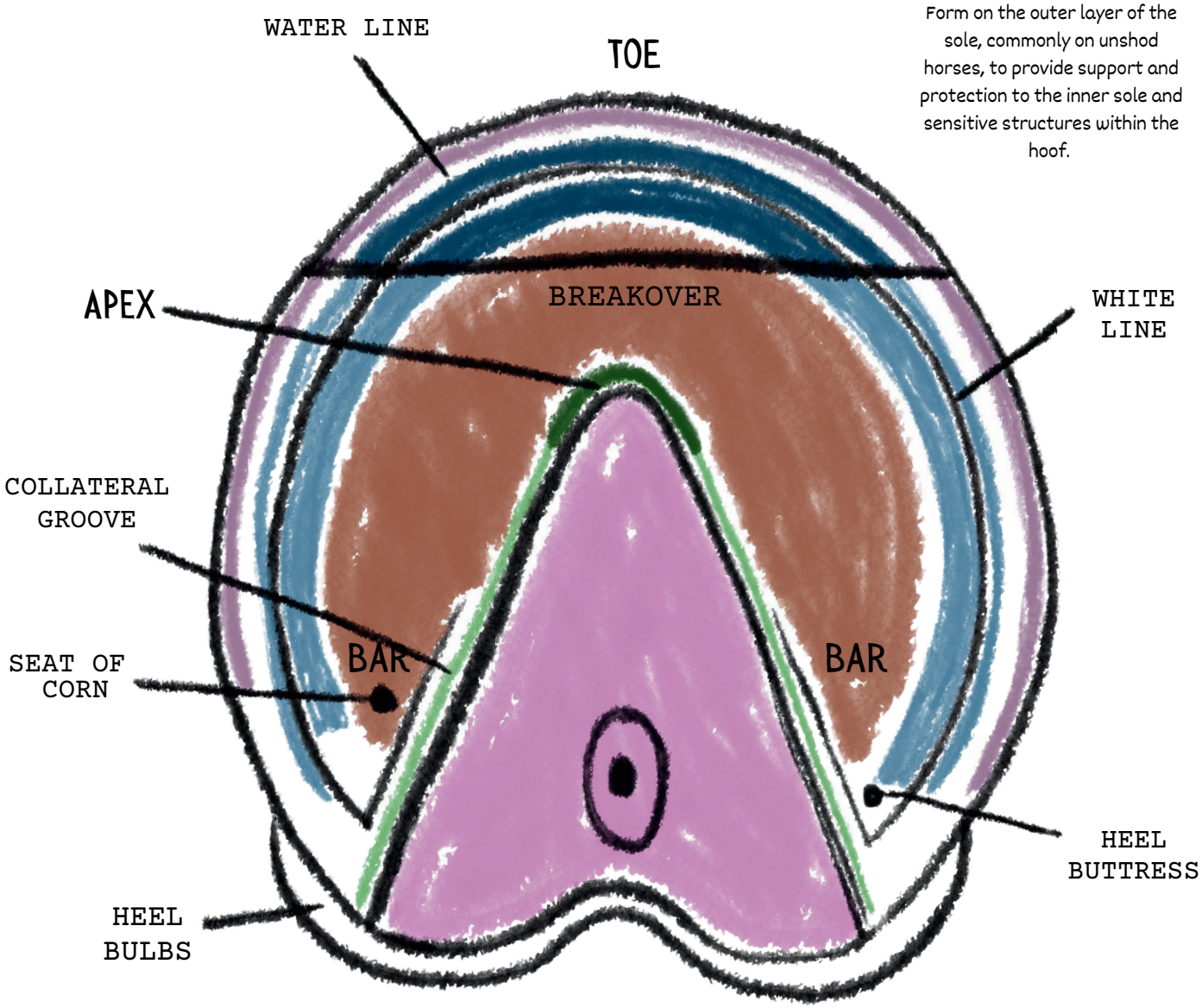
Cover and design: Neighs & Notes

THE HOOF

The equine hoof functions primarily to support the horse, but also plays a major role in shock absorption and blood circulation. The hoof expands and contracts with each step.

Callouses

Form on the outer layer of the sole, commonly on unshod horses, to provide support and protection to the inner sole and sensitive structures within the hoof.



Keratin

The toughest biological tissue and has a very low moisture content. Bird beaks, human fingernails and animal's claws are also made of keratin.

SOLE

Made up of 33% water and acts to protect the sensitive structures within the hoof.

SOLE CALLUS

Thick sole material.

FROG

The shock absorber and concussion distributor, minimising the impact of each step on the horses legs.

TOE CALLUS

Thick sole material.

COLLATERAL GROOVE

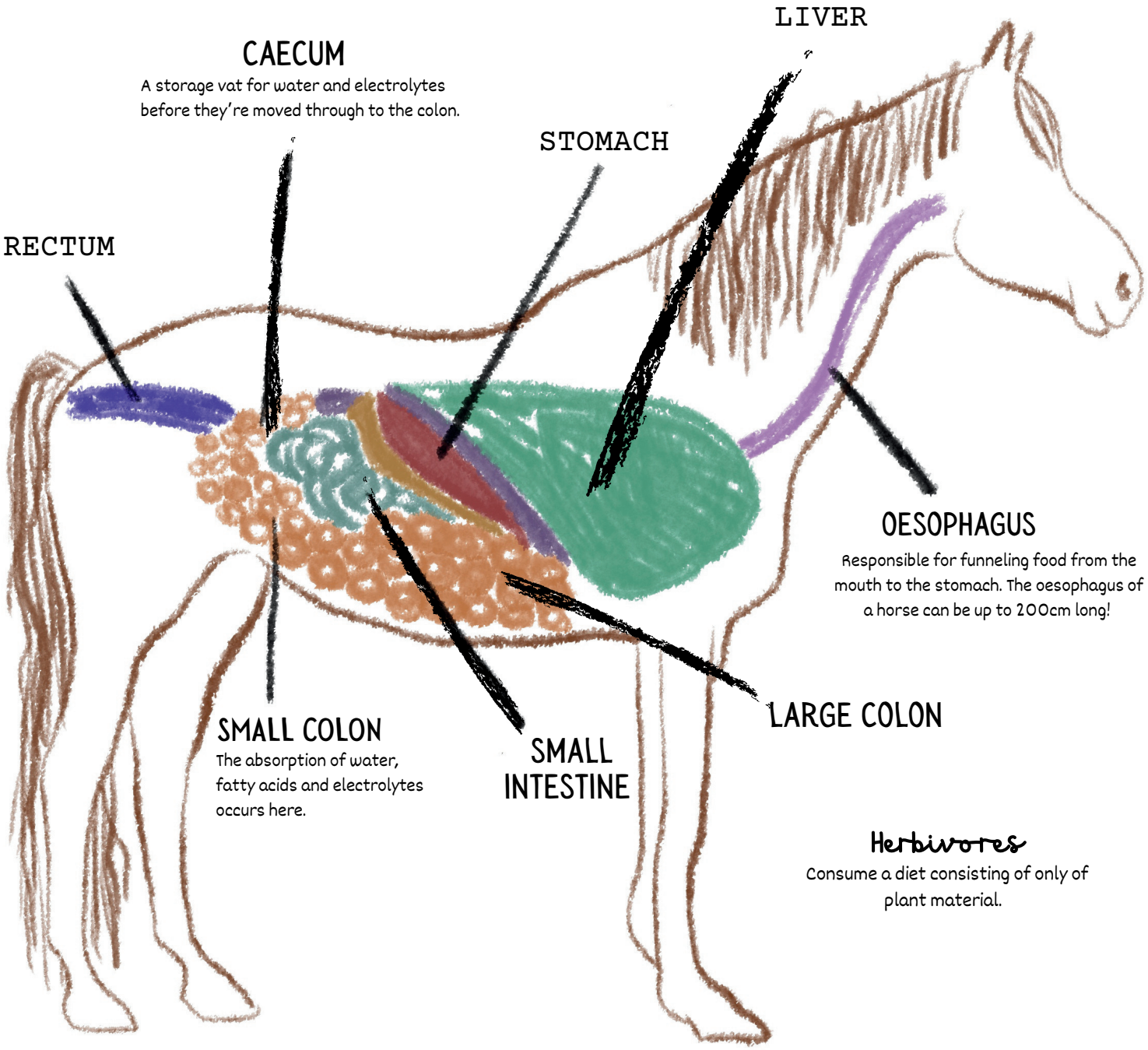
Deep channels on either side of the frog.

HOOF WALL

Exterior layer made up of horizontal layers of keratin; super tough and strong.

THE DIGESTIVE TRACT

The digestive tract of the horse is responsible for the breakdown, processing and fermentation of food.

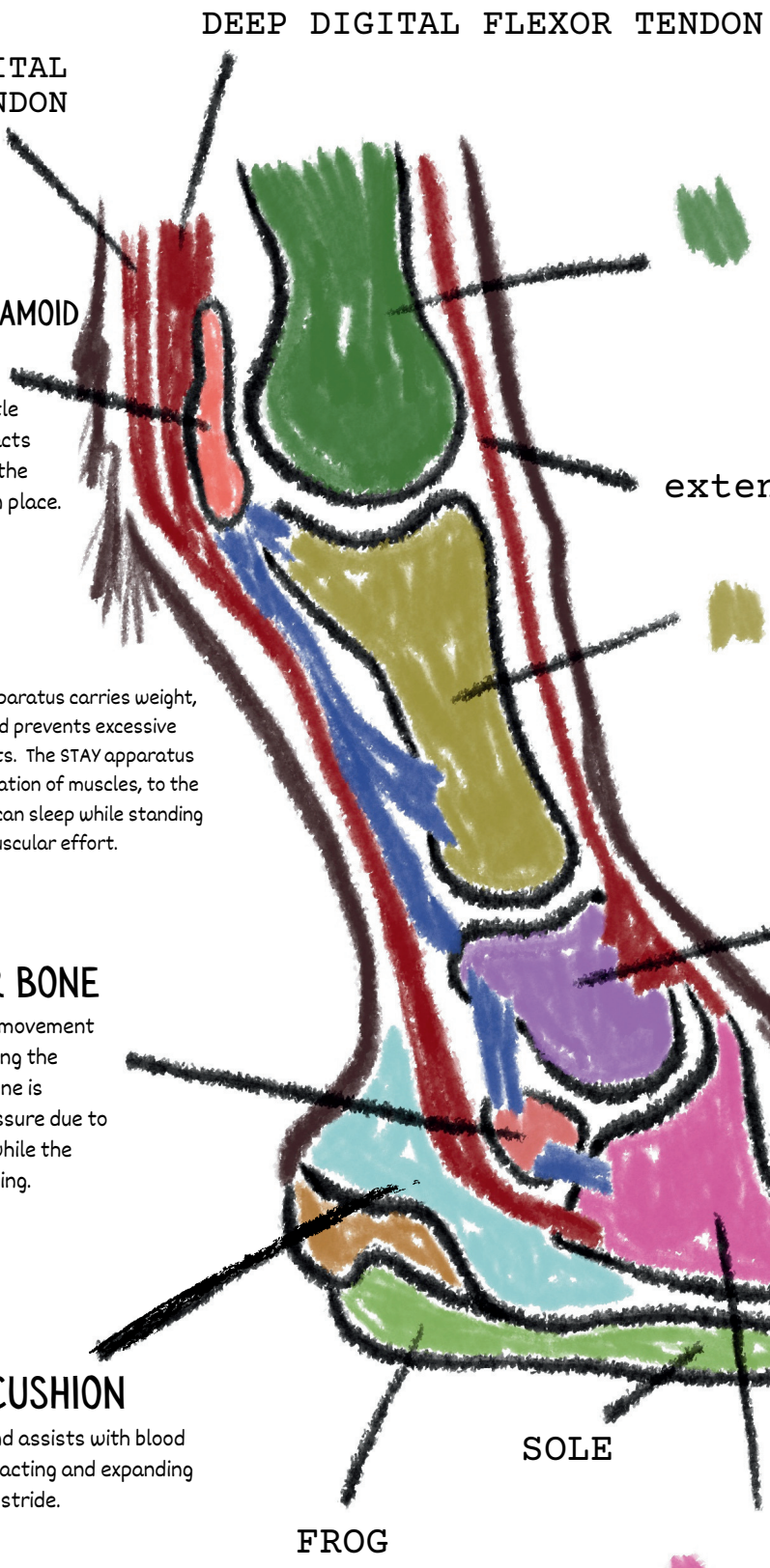


The two sections of the digestive system:

The FOREGUT includes the stomach & functions to add acid to assist with food breakdown, begin protein digestion and regulate movement of food to the small intestine. The HINDGUT is where microbial digestion (or fermentation) of fibre occurs. Horses are hindgut digesters, which means that they have a second shot at processing energy from food that has already passed through the small intestine.

THE EQUINE LIMB

The limbs of the horse are resposible for providing thrust for movement, absorbing shock and bearing the weight of the animal.



CANNON BONE

A weight bearing bone that acts as a lever during movement.

PROXIMAL SESAMOID BONE

A very important little structure - this bone acts as an anchor, holding the suspensory components in place.

LONG PASTERN BONE

Increases the flexibility of the fetlock joint while also reducing concussion.

Two groups:

The SUSPENSORY apparatus carries weight, absorbs shock and prevents excessive exertion of the joints. The STAY apparatus allows for the relaxation of muscles, to the point where horses can sleep while standing with no muscular effort.

SHORT PASTERN BONE

Assists the hoof of the horse to twist or move from side to side on uneven ground.

NAVICULAR BONE

Aids in the horses movement while also protecting the coffin joint. This bone is ALWAYS under pressure due to its position, even while the horse is just standing.

PLANTAR CUSHION

Dissipates shock and assists with blood circulation by contracting and expanding with each step and stride.

COFFIN BONE

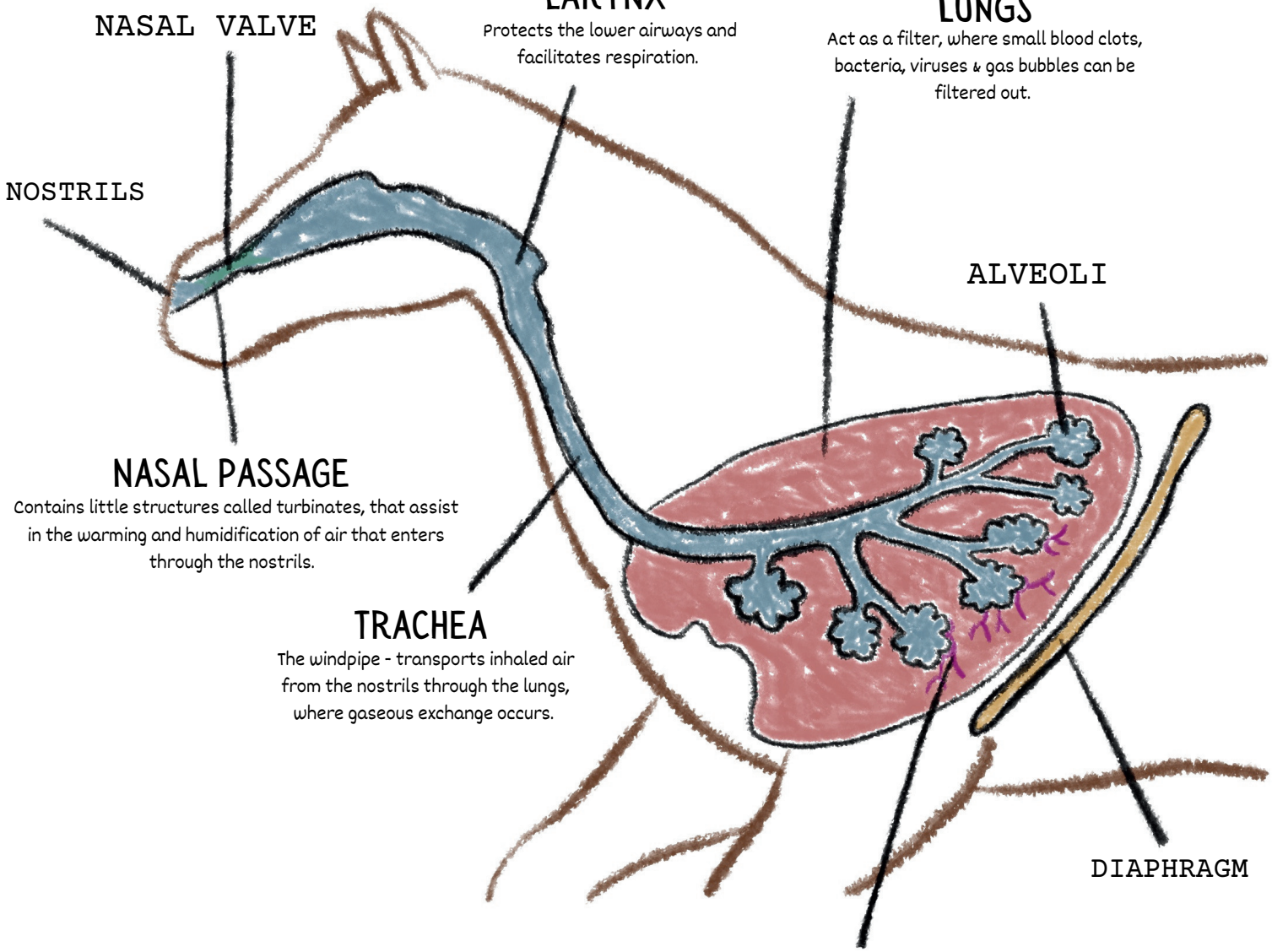
Provides an attachment point for the deep digital flexor tendon to the hoof.

THE RESPIRATORY TRACT

The respiratory tract is a passageway that works primarily to transport oxygen to the blood and remove CO2 from the body. This system also assists in body temperature regulation.

Respiratory Loco-Motor Coupling

Occurs in a canter and gallop. This is when the horses breathing is directly linked with their stride.



Respiratory Facti

The respiratory system of the horse cannot be trained. The amount of air that enters and leaves the horses airways at a fixed speed or rate will be the same whether the horse is at peak fitness levels or in paddock condition.

THE SUPERFICIAL MUSCLES

The superficial muscles are those closest to the skin and create the power and propulsive forces necessary for movement.

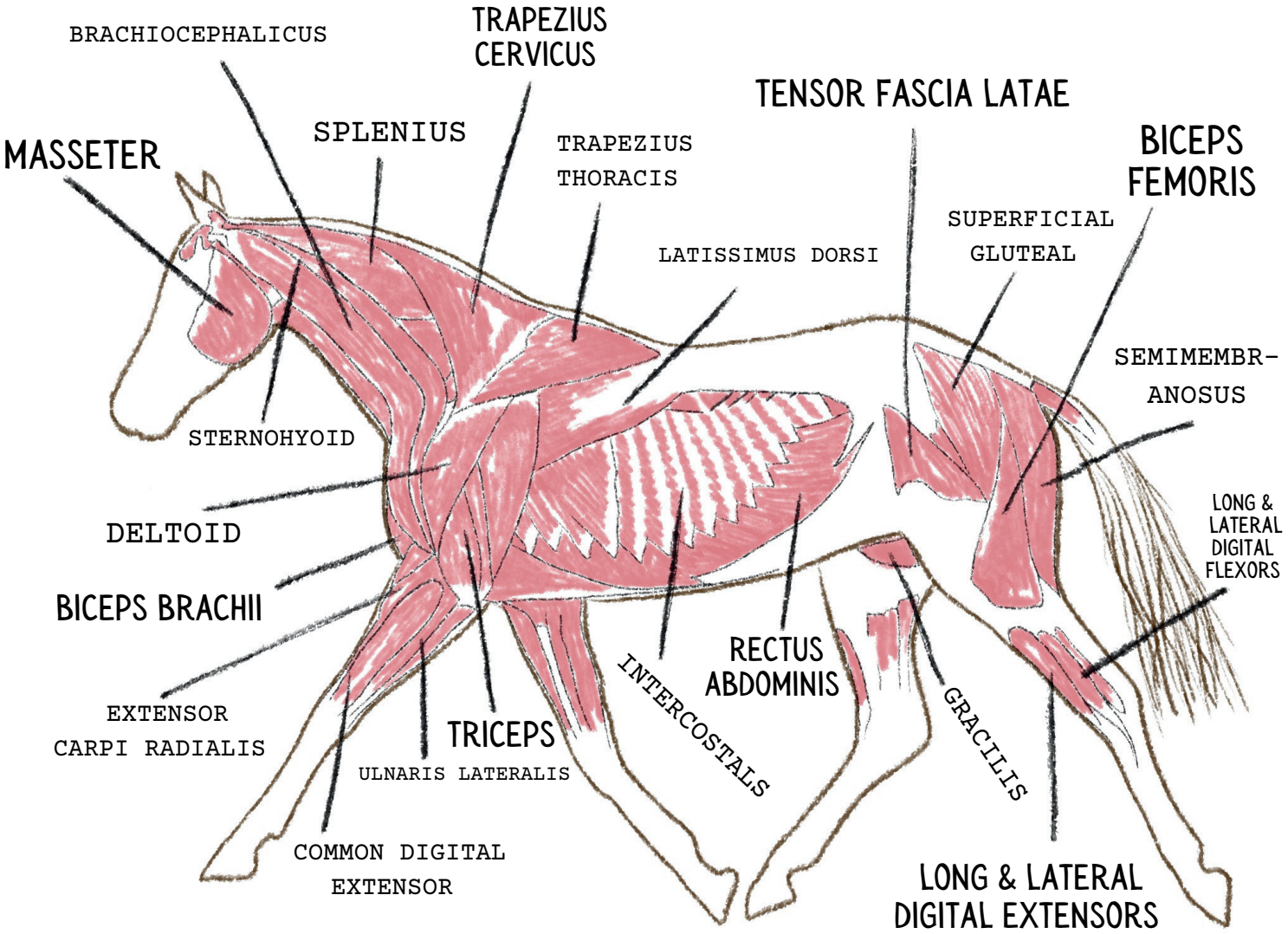
Skeletal Muscle

Made up of a group of muscle fibres. There are three different type of muscle fibres:

1 SLOW TWITCH (TYPE I) contract slowly. Used during long amounts of exercise such as endurance and are very resistant to fatigue.

2 FAST TWITCH (type II) contract much faster. Used during explosive types of exercise such as sprints and tire very quickly.

3 TYPE IIA fibres sit in between the above fibres in terms of speed and fatigue resistance.



Muscles & Fibres

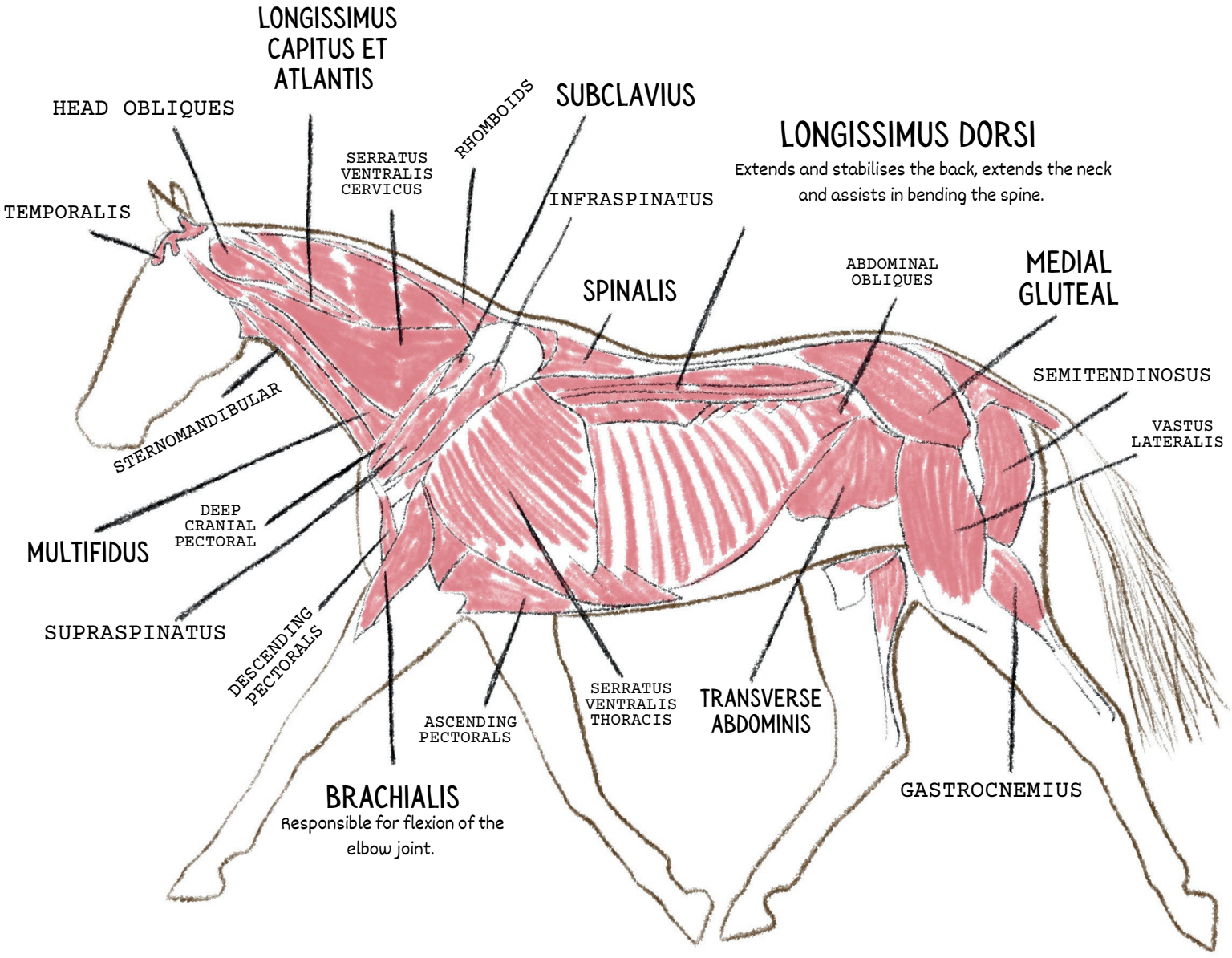
P O S T U R A L muscles are comprised mainly of slow twitch fibres whilst solid weight bearing muscles like the G L U T E A L muscle contain a lot of fast twitch fibres!

THE DEEP MUSCLES

The deep muscles are those closest to the bones/internal organs and are responsible for supporting and stabilising the joints.

Movement

Occurs when muscles 'pull' on the bones to initiate operation of the joints. Muscle action is initiated by electrical signals from the brain that run through nerves (neural pathways), indicating to the muscles that either contraction or relaxation is needed.



Three types of muscles:

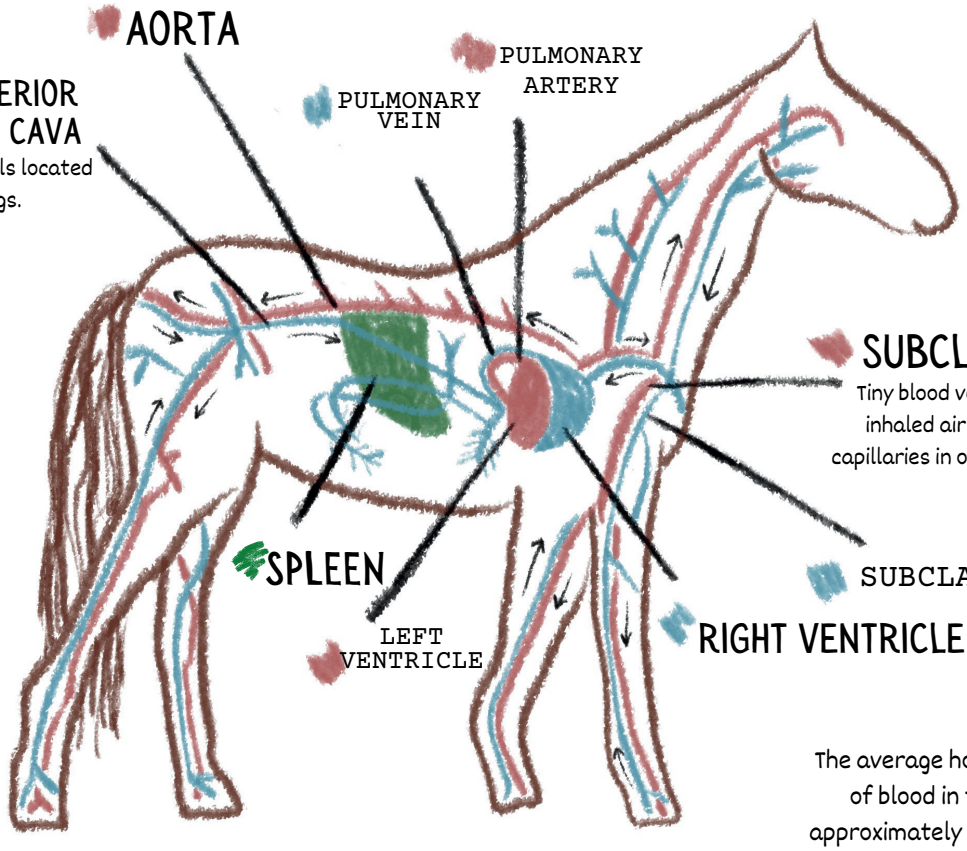
1 - SKELETAL muscles connect different bones to each other.

2 - SMOOTH muscle is found in the digestive tract, the oesophagus and the walls of blood vessels. Horses have no voluntary control of smooth muscle.

3 - CARDIAC muscle is found only in the heart.

THE CIRCULATORY SYSTEM

The circulatory system includes of the heart and spleen, which are connected by blood vessels. The main function of this system is to deliver oxygen and remove waste products from cells.



The average horse has approximately 40L of blood in their body. They can lose approximately 10L before they develop any serious problems.

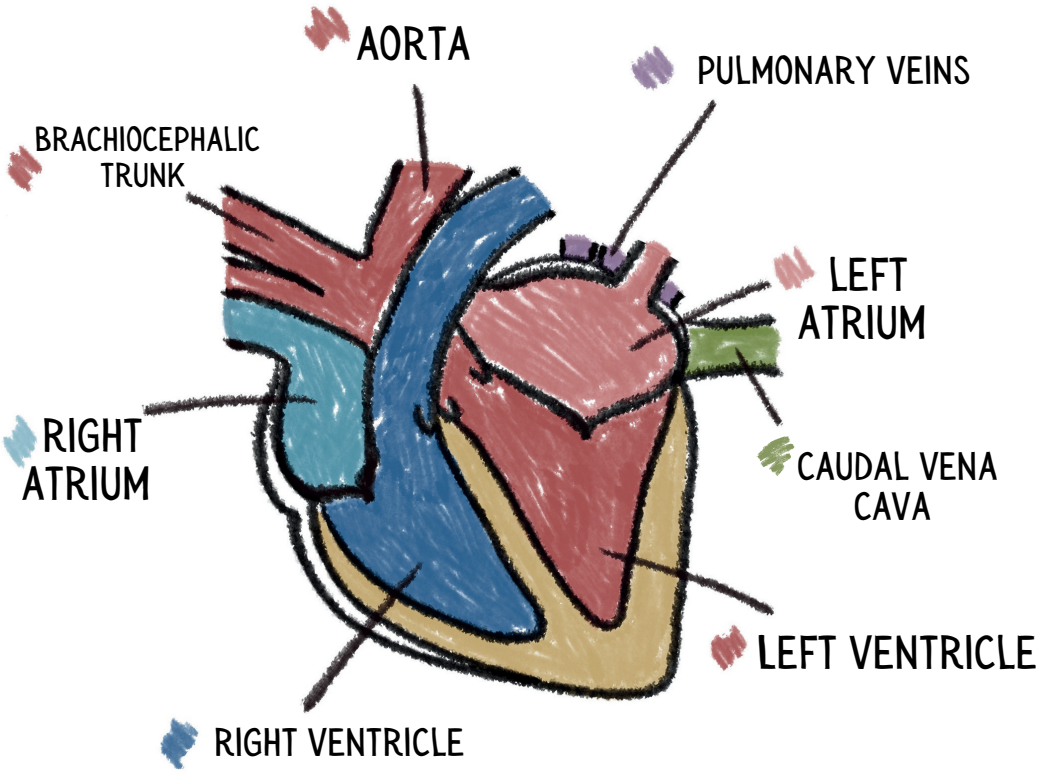
Components of Blood

1 WHITE BLOOD CELLS initiate an immune response. They fight infections & foreign bodies.

2 RED BLOOD CELLS are transport cells and contain haemoglobin that assist in carrying oxygen around the body.

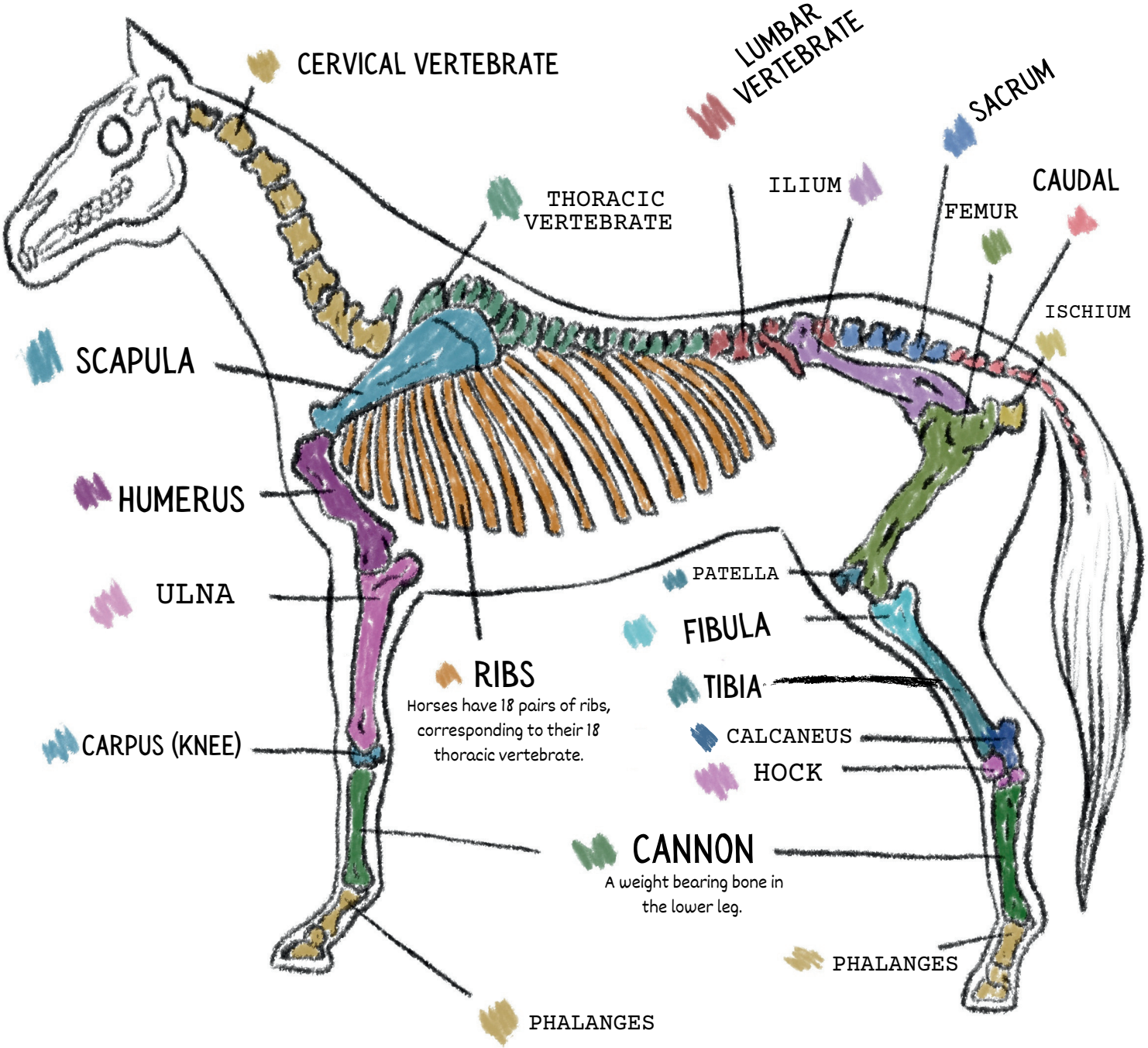
3 PLASMA is the liquid portion of the blood and transports the blood cells throughout the body.

4 PLATELETS assist with blood clotting by gathering at an injury site.



THE SKELETAL SYSTEM

The skeletal system protects the vital organs, provides framework/structure and supports soft organs and tissues within the body.



The horses skeletal system is made up of 205 bones in total and can be divided into two sections; the trunk and the limbs.

The skeleton is primarily held together by ligaments through bone to bone attachments and tendons through bone to muscle attachments.

THE EQUINE MOUTH

Horses are herbivores and have strong, specialised teeth that faciliate their plant based grazing needs.

Cheek Teeth

Cheek TEETH (pre-molars and molars) are made up of three materials called enamel, dentin and cementum. These components work together to create an abrasive surface, allowing the grinding and breaking up of plant material for digestion.

INCISORS

+ Deep rooted.
+ Used to grasp and tear.
+ 6 upper and 6 lower.

CANINE

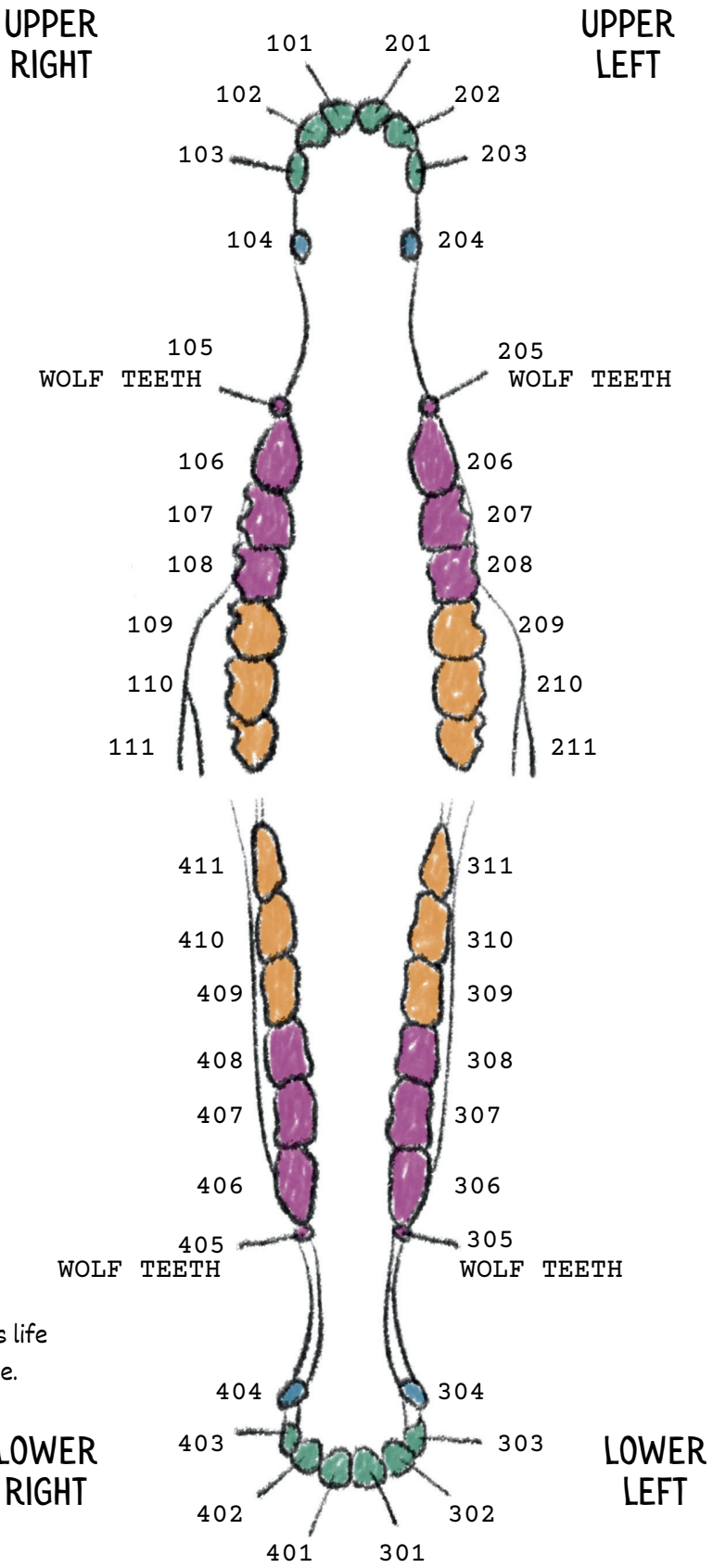
+ Short and sharp teeth.
+ Generally only found in males.
+ Erupt at 4 to 5 years of age.
+ No function in the modern horse.
+ Original function was for fighting.

PREMOLARS

+ 6 upper and 6 lower.
+ The baby premolar teeth shed as 'caps'
+ Grind and break up food material.

MOLARS

+ 6 upper and 6 lower.
+ Continually erupt throughout the horses life while wearing away at the grinding surface.



THE EQUINE FIRST AID KIT

A fully good quality first aid kit kept in your horse trailer is a MUST for horses at home and on the road. Here are some absolute essentials to keep on hand.

ADHESIVE BANDAGE

GLOVES

YELLOW LOTION

EPSOM SALTS

MELOLIN DRESSINGS

GREEN OINTMENT

SODIUM CHLORIDE

DUCT TAPE

VET WRAP

SYRINGE

BETADINE

RAPIGEL

SCISSORS

CETRIGEN

BUTE

HOOF PICK

WHITE HEALER

GAUZE PADS

BABY NAPPIES

COLIC

Colic is defined simply as “abdominal pain” however can relate to many types of gastrointestinal conditions. These can be identified through symptoms such as pain, becoming restless, rolling, shaking, lying down and presenting vital signs outside of normal ranges.

VITAL SIGNS & COLIC SYMPTOMS

HEART RATE

Resting: 28 to 40 beats per minute.
Mild Colic: 40 to 60 beats per minute.
Moderate Colic: 60 to 80 beats per minute.
Severe Colic: over 80 beats per minute.

PASSING GAS

Normal: yes, passing gas.
Mild Colic: yes, passing gas.
Moderate Colic: no gas.
Severe Colic: no gas.

PAIN LEVEL

Mild Colic: sweating, pawing, looking at stomach, lifting hind leg, stretching.
Moderate Colic: continuous mild symptoms, trying to roll.
Severe Colic: continuous moderate symptoms, rolling, thrashing.

RESPIRATORY RATE

Normal: 12 to 20 breaths/minute.
Mild Colic: 20 to 30 breaths/minute.
Moderate Colic: 30 to 40 breaths/minute.
Severe Colic: over 40 breaths/minute.

GUM COLOUR

Normal: pale pink.
Mild Colic: pale pink.
Moderate Colic: pale pink.
Severe Colic: bluish, purple.

BOWEL MOVEMENTS

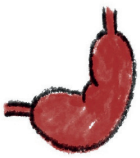
Normal: glossy, soft balls.
Mild Colic: normal.
Moderate Colic: small, hard balls.
Severe Colic: none or diarrhoea.

TEMPERATURE

Normal: 37.2 to 38.5 C
Mild Colic: 37.2 to 38.5 C
Moderate Colic: 37.2 to 38.5 C
Severe Colic: Under 37.2 or over 38.5 C

CAPILLARY REFILL RATE

Normal: less than 2 seconds.
Mild Colic: less than 2 seconds.
Moderate Colic: 2 to 4 seconds.
Severe Colic: over 5 seconds.



GUT SOUNDS

Mild Colic: normal or slightly decreased.
Moderate Colic: decreased frequency.
Severe Colic: completely absent.

Colic Causes

There are several reasons as to why colic can occur:

1 - IMPACTION, caused by feed material build up in the gut.
2 - EXCESSIVE GAS produced by microbes in the colon, stretching the gut wall.
3 -COLON SHIFT, where the colon moves out of position.
4 - POOR BLOOD SUPPLY to the gut.
5 - POOR MOTILITY.